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HWA Expanded Scopes of Practice program evaluation: Physiotherapists in the Emergency Department sub-project final report

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Abstract

The Physiotherapists in the Emergency Department (PED) sub-project draws on models of expanded scope of practice physiotherapy developed by State and Territory health authorities. These models equip physiotherapists with the skills and experience to work in Primary Contact Physiotherapy (PCP) roles in Emergency Departments (EDs). The role allows physiotherapists to assess, treat, refer and discharge patients presenting with a specified set of musculoskeletal (MSK) conditions. The model has the potential to improve patient outcomes, reduce waiting times and ease pressure in times of high demand. To date, the published evidence supporting the introduction of PCP roles into emergency departments is sparse and characterised by methodological limitations.

Keywords

scopes, practice, program, evaluation, physiotherapists, emergency, department, hwa, sub, expanded, final, report, projec, t

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Final Report

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Table of contents

List of acronyms	v
Key messages	vi
Executive summary	vii
1 Introduction and background	1
1.1 Description of HWA's strategic agenda in ESOP	1
1.2 The case for change	1
1.3 Objectives of the Physiotherapists in ED sub-project	1
1.4 Description of sites	2
1.5 Structure of report	2
2 Implementation and program delivery	4
2.1 Service delivery models and scopes of practice	4
2.2 Requirements for ESOP physiotherapists	6
2.3 Role of the lead sites	7
2.4 Set-up and establishment phase	8
2.5 Implementation of Expanded Scopes of Practice	9
2.6 Barriers and enablers in relation to implementation	11
3 Training evaluation	14
3.1 Structure of training programs	14
3.2 Experience of the ESOP physiotherapists	16
3.3 Training timeline and time to completion of requirements	19
3.4 Scope, content and relevance	20
3.5 Staff qualifications	22
3.6 Facilities and resources	22
3.7 Teaching and learning environment	23
3.8 Assessment methods	24
3.9 Modifications to the training program	25
3.10 Training program sustainability	26
3.11 Training program capacity and impact	26
3.12 Budget and expenditure	27
3.13 Summary and conclusions	27
4 Impact	30
4.1 Introduction	30
4.2 Activities of Primary Contact Physiotherapists	30
4.3 Impact on consumers	35
4.4 Impact on providers	40
4.5 Impact on the system	53
4.6 Unintended consequences	70
5 Economic evaluation	73

5.1	Introduction	73
5.2	Differences in utilisation – the case of X-ray.....	73
5.3	PCP contribution to reduction of length of stay in ED	75
5.4	Summary.....	80
6	Sustaining innovation	81
6.1	Innovation characteristics	82
6.2	Context.....	85
6.3	Capacity	87
6.4	Processes and interactions.....	91
6.5	Sustainability outcomes	93
6.6	Dissemination	96
6.7	Summary.....	97
7	Prospects for wider implementation	99
7.1	Suitability of the model.....	100
7.2	Requirements for success	101
7.3	National scalability	103
8	Key achievements	104
8.1	Effectiveness, efficiency and access (HWA Domain 1)	104
8.2	Workforce capacity and skills development (HWA Domain 2).....	107
8.3	Leadership and sustainability (HWA Domain 3)	109
8.4	Workforce planning (HWA Domain 4).....	112
8.5	Workforce policy, funding and regulation (HWA Domain 5).....	113
8.6	Conclusion	114
	References.....	115
Appendix 1	Funding allocation and dates by project.....	118
Appendix 2	Methods of the national evaluation, HWA-PED	119
Appendix 3	Mapping PED10 Diagnosis Codes.....	132

List of figures

Figure 1	Report structure.....	3
Figure 2	PED1 training pathway.....	15
Figure 3	PED7 extended scope of practice physiotherapy training pathway	15
Figure 4	PED1 training sites aggregate domain scores	17
Figure 5	PED7 training sites aggregate domain scores	18
Figure 6	The proportion of primary and secondary contact ESOP activity by site – implementation period ^a	33
Figure 7	Number of PCP presentations during the implementation ^a period: Lead site PED1 and implementation sites PED2, PED3, PED4, PED5 and PED6.....	34
Figure 8	Number of PCP presentations during the implementation ^a period: Lead site PED7 and implementation sites PED8, PED9 and PED10	35
Figure 9	Responses to PED patient experiences and satisfaction survey (all sites except PED6).....	37
Figure 10	Responses to PED patient experiences and satisfaction survey, PED6	38
Figure 11	Experience of PCPs (n = 25, sites = 9).....	42
Figure 12	Responses to PED non-ESOP staff survey.....	45
Figure 13	Number of all ED presentations that were in the MSK patient cohort and number who were treated by PCPs by site – implementation period ^a	56
Figure 14	Percentage of triage category 3, 4 and 5 MSK patients discharged within 4 hours by volume of MSK patients during implementation – comparison between baseline and implementation periods.....	58
Figure 15	Average number of patients treated by the ESOP physiotherapists per week and average per 1 FTE – implementation period ^a	61
Figure 16	Average total length of stay* (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period ^a	63
Figure 17	Average total waiting time* (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period ^a	64
Figure 18	Average total treatment time* (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period ^a	66
Figure 19	Variation of daily ED presentations by month and MSK patients seen by PCP ...	80
Figure 20	Influences on sustainability (adapted from Stirman et al., 2012)	82
Figure 21	Evaluation framework	120

List of tables

Table 1	Description of sites	2
Table 2	Summary of PED models	5
Table 3	Proposed changes to scope of practice for the PED sub-project.....	6
Table 4	Physiotherapists in the ED staff summary.....	7
Table 5	Overview of implementation	10
Table 6	Descriptive statistics for PED trainee survey (PED1 training)	17
Table 7	Descriptive statistics for PED trainee survey (PED7 training)	18
Table 8	Opportunities for training program development	29
Table 9	Total ED presentations by site and triage category – implementation period ^a	31
Table 10	Total ESOP-PED presentations by site and triage category – implementation period ^a	32
Table 11	Descriptive statistics for ESOP personnel survey items.....	41
Table 12	Responses by lead versus implementation sites, HWA-PED	46
Table 13	Responses by professional affiliation, HWA-PED	47
Table 14	MSK patient cohort by site and triage category – comparison across all periods	54
Table 15	MSK patient cohort by site, triage category and primary practitioner – implementation period ^a	54

Table 16	Number of all ED presentations that were in the MSK patient cohort and number who were treated by PCPs by site and triage category – implementation period ^a ...	55
Table 17	Percentage of triage category 3, 4 and 5 MSK patients discharged within four hours – comparison across all periods.....	57
Table 18	Number and percentage of triage category 3, 4 and 5 MSK patients discharged within 4 hours by primary practitioner – implementation period ^a	58
Table 19	Triage category 3, 4 and 5 MSK patients treated by PCPs that required medical imaging by site – implementation period ^a	59
Table 20	Average number of patients treated by the ESOP physiotherapists (either as a primary or secondary practitioner) per week – last quarter of implementation period ^a	60
Table 21	Average total length of stay [*] (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period ^a	62
Table 22	Average total waiting time [*] (in minutes) for triage category 3, 4 and 5 MSK patients by site, triage category and primary practitioner – implementation period ^a	63
Table 23	Average total treatment time [*] (in minutes) for triage category 3, 4 and 5 MSK patients by site, triage category and primary practitioner – implementation period ^a	65
Table 24	Safety and quality outcomes for triage category 3, 4 and 5 MSK patients by primary practitioner – implementation period ^a	67
Table 25	Number of all triage category 3, 4 and 5 MSK patients who re-presented within 96 hours for the same health care problem by site – comparison across all periods....	67
Table 26	Number of all triage category 3, 4 and 5 MSK patients who were readmitted within 28 days – comparison across all periods	68
Table 27	Number of all triage category 3, 4 and 5 MSK patients who died following admission from the ED within 28 days – comparison across all periods.....	68
Table 28	Number of all triage category 3, 4 and 5 MSK patients who ‘did not wait’ – comparison across all periods.....	69
Table 29	Number of triage category 3, 4 and 5 MSK patients treated by PCPs that required medication for pain relief by site – implementation period ^a	69
Table 30	Number of triage category 3, 4 and 5 MSK patients treated by PCPs that required a post discharge referral or certification by site – implementation period ^a	70
Table 31	Diagnosis groups and correspondence between ICD-9 and ICD-10	74
Table 32	Comparison of X-ray utilisation	74
Table 33	PCP shifts.....	75
Table 34	All patients – shift comparison.....	76
Table 35	MSK patients – shift comparison	77
Table 36	Length of stay in ED (minutes) – shift comparison (Mean (SE))	77
Table 37	Waiting times (minutes) – shift comparison (Mean (SE)).....	77
Table 38	Treatment times (minutes) – shift comparison (Mean (SE)).....	78
Table 39	All patients – comparison to baseline.....	78
Table 40	MSK patients – comparison to baseline	78
Table 41	Length of stay in ED (minutes) – comparison to baseline (Mean (SE))	79
Table 42	Waiting times (minutes) – comparison to baseline (Mean (SE))	79
Table 43	Treatment times (minutes) – comparison to baseline (Mean (SE)).....	79
Table 44	Sustainability prospects – PED sub-project	94
Table 45	Australian studies involving PCPs in EDs	99
Table 46	Attributes of the PCP model.....	100
Table 47	HWA Domains and corresponding KPIs, evaluation methods and tools used in the PED sub-project evaluation.....	122
Table 48	National evaluation tools completed by PED sub-project.....	124
Table 49	Additional evaluation tools (PED sub-project)	126
Table 50	Interviews with ESOP practitioners and key stakeholders, HWA-PED	130
Table 51	Professional roles of key stakeholders by site, HWA-PED	130
Table 52	PED10 diagnosis code mapping from ICD9 to ICD10 – PCP presentations during implementation ^a	132
Table 53	Diagnosis codes included in the MSK patient cohort	133

List of acronyms

ACT	Australian Capital Territory
CEO	Chief Executive Officer
ED	Emergency Department
ESOP	Expanded Scopes of Practice
ET	Evaluation Tool
FTE	Full Time Equivalent
GP	General Practitioner
HWA	Health Workforce Australia
ICD10	International Classification of Disease version 10
ICD9	International Classification of Disease version 9
KPI	Key Performance Indicator
MSK	Musculoskeletal
NEAT	National Emergency Access Target
NHS	National Health Service (United Kingdom)
PCP	Primary Contact Physiotherapist
PED	Physiotherapists in the Emergency Department
RPL	Recognition of Prior Learning
SCP	Secondary Contact Physiotherapist
SD	Standard Deviation
SE	Standard Error

Key messages

- Health Workforce Australia funded eight Expanded Scopes of Practice physiotherapy projects which were implemented across 11 sites, recruiting and training Primary Contact Physiotherapists (PCPs) targeting musculoskeletal patients in triage categories 3, 4 and 5.
- Two training programs were developed to support implementation of the model of care. A competency-based training pathway based on adult learning principles appears to offer most flexibility. Broader professional recognition would enhance the sustainability of this pathway. The alternative – a post-graduate course delivered in a university setting – has the advantage of leading to a recognised qualification but modifications are needed to ensure it is comprehensive and relevant for trainees from different jurisdictions. Both training programs include a period of supervised practice and competency assessment.
- A total of 14,512 patients presenting with musculoskeletal problems suitable for Expanded Scope of Practice care were seen by the PCPs during the implementation period. This represented 2.4% of all Emergency Department presentations at participating hospitals. Primary contact cases made up around 85% of their total work load.
- Averaged across all sites, almost 93% of eligible patients treated by Expanded Scopes of Practice physiotherapists were discharged within 4 hours, compared to less than 75% for similar patients seen by other practitioners during the implementation period.
- Patients seen by PCPs waited on average 30 minutes less than comparable patients seen by other practitioners had a shorter treatment time and their overall length of stay was reduced by 70 minutes. These differences were statistically significant.
- Preliminary indications are that the model may help reduce resource use in the area of X-ray ordering by facilitating prompt and expert assessment of patients with suspected fractures.
- On weekdays when PCPs were rostered on in the Emergency Department, National Emergency Access Target performance improved and patient throughput was higher. Waiting times, treatment times and total time spent in the Emergency Department was also lower on these days at most sites.
- Patients reported good experiences and high levels of satisfaction with the care they received and the time it took to be seen by PCPs. They felt they had been listened to, their problems were understood, and the physiotherapists were comfortable and competent in dealing with their problems.
- Stakeholders were satisfied that the PCP model operated safely and provided high-quality care. This was confirmed by the available evidence and reinforced by the existence of strict clinical governance mechanisms at all sites including protocols, clinical guidelines and regular peer review of PCP cases.
- The education and consultation role was seen as adding value to the Emergency Department and to the effectiveness of the PCPs, although it was acknowledged that this – and other – benefits of the model were difficult to demonstrate and quantify.
- PCPs who adhered very closely to a narrow scope of practice tended to be less accepted by other staff members and managers. Pressures to see as many primary contact patients as possible and perform against the National Emergency Access Target were seen as barriers to collegial practice.
- Both lead sites had well-developed models of care that had been trialled over four to five years before the program began. The structure of the program, with two lead sites each leading a number of implementation sites, had a number of advantages. It reduced duplication of effort, as training pathways, modules and resources were already established. Grouping the implementation sites with lead sites in jurisdictions with similar legislative and policy structures was advantageous.
- Most PCPs indicated their intention to continue in the role for the foreseeable future. Given the relatively high investment in training for each staff member, and the need for a sufficient cohort of PCPs at each site to provide a continuous service and mentoring for less experienced PCPs, retention is a key contributor to the sustainability of the model.

Executive summary

The Physiotherapists in the Emergency Department (PED) sub-project draws on models of expanded scope of practice physiotherapy developed by State and Territory health authorities. These models equip physiotherapists with the skills and experience to work in Primary Contact Physiotherapy (PCP) roles in Emergency Departments (EDs). The role allows physiotherapists to assess, treat, refer and discharge patients presenting with a specified set of musculoskeletal (MSK) conditions. The model has the potential to improve patient outcomes, reduce waiting times and ease pressure in times of high demand. To date, the published evidence supporting the introduction of PCP roles into emergency departments is sparse and characterised by methodological limitations.

Methods

Evaluation of the PED model was based on a broad evaluation framework developed by the Centre for Health Service Development which has been used for several large-scale program evaluations. The framework recognises that programs aim to make an impact at three levels – consumers, providers and the system (structures and processes, networks, relationships) – and is based on six domains: project delivery, project impact, sustainability, capacity building, generalisability and dissemination. The evaluation employed a range of data sources including interviews, surveys, log books, specific tools, site visits, project documentation and routine administrative data. There were three data collection periods – baseline, implementation and sustainability – and data analysis was facilitated with the use of Excel, SAS 9.2, SPSS and NVivo.

Implementation

Implementation was led by two sites (PED1 and PED7), each with an established model of care involving physiotherapists in ED treating patients with MSK conditions in triage categories 3, 4 and 5. Both lead sites were responsible for implementation in their own organisations, involving refinement of their existing models. Implementation also occurred at nine other sites, five in Victoria and one in the Northern Territory working with PED1; two in Queensland and one in South Australia working with PED7.

PED1 implemented an ESOP-PED model underpinned by the Australian Physiotherapy Association (2009) definition of advanced scope of practice i.e. whilst the scope of practice includes roles and responsibilities traditionally undertaken by the medical profession which require additional training and credentialing, it does not extend beyond the current legislation and hence is not extended scope of practice. At PED7 in addition to established primary contact MSK tasks the physiotherapist could autonomously order additional imaging including ultrasound, Computed Tomography (CT) scan and Magnetic Resonance Imaging (MRI), interpret medical imaging, manage fractures, perform joint and fracture reductions and joint aspirations. These tasks could only be undertaken after training and credentialing occurred. Both models emphasised a team-based approach closely linked to the physiotherapy department in each hospital. The PED1 model relied on establishing a critical mass of PCPs facilitating a team-based approach. Not all the implementation sites working with the PED1 lead site were able to implement the team-based approach of the PED1 model.

The lead sites provided varying assistance depending on the needs of each implementation site and the project management style of the lead team. Lead sites played an important role engaging key stakeholders within their own organisations and at the implementation sites. Interviews with PCPs and key stakeholders and comments in project final reports indicated that implementation sites were generally positive regarding the contribution of the lead sites and described them as very helpful and approachable.

The criteria for selecting physiotherapists to participate in the project varied slightly at each site. In total, 29 PCPs were recruited, many with extensive experience and the majority (83%) with post-graduate qualifications. Seventy-five per cent of respondents to a survey of ESOP Physiotherapists agreed that they planned to “stay on in the role for the foreseeable future”.

The project teams worked with existing clinical governance mechanisms within their organisations and all project teams monitored patient safety and quality data and most involved their steering committee in reviewing this data. The support of medical staff within EDs to mentor and supervise PCPs greatly assisted implementation. Clinical log books and associated documentation explaining the practical assessment tasks of PCPs were very useful in demonstrating to other members of the health care team the 'appropriateness' of their scope of practice.

Progress with implementation was influenced by the training program. Clinicians could only increase their scope of practice upon completion of the relevant training module and assessment of clinical competencies. During the set-up phase, project teams identified a range of legislative and policy barriers to implementing aspects of the model, with impediments to prescribing most commonly reported.

Training

The two lead sites each developed a training pathway. The PED1 lead site developed an in-house training program where the emphasis was on a competency based framework, supported by external learning modules. The competency standards were developed collaboratively with the input of clinical leads from all Victorian-based sites. The training program included a self-assessment tool to be used by PCPs to identify areas for development. Clinical supervision was provided by senior ED medical staff and / or an experienced clinical lead physiotherapist. The program proved to be flexible, cost effective and adaptable but relies heavily on in-kind support and the allocation of non-clinical time so that participants can manage study requirements. Without an appropriately experienced clinical lead there are significant demands upon medical mentors to manage learning needs and assessment.

The PED7 lead site provided each of their implementation sites with a training resource which had previously been developed in collaboration with the International Centre for Allied Health Evidence at the University of South Australia. The PCPs enrolled in a study program at the University of Canberra (Graduate Diploma of Extended Scope Physiotherapy). The credentialing component involved supervised practice of the expanded scope skills and completion of a competency log book. Competencies were assessed by ED medical staff or other physiotherapists working in a PCP role. The program relies on in-kind support from specialist physiotherapy and medical staff, without which smaller physiotherapy departments would have great difficulty sustaining the program. Feedback from participating organisations raised issues about the structure of the program, delivery, content and assessment methods.

Impact

Across all implementation sites, PCPs treated 2.4% of ED presentations: 7% of Triage Category 5 presentations, just under 4% of Triage Category 4 presentations and less than 1% of Triage Category 3 presentations. On occasion PCPs were required to undertake secondary contact activities. When these cases are included, the percentage of total ED presentations seen by expanded scope physiotherapists increased to almost 3%. On average at each site, 29 patients per week were treated by PCPs including both primary and secondary contact cases.

Ninety-seven per cent of patients treated by PCPs had MSK conditions; PCPs treated 9.5% of total ED MSK presentations in triage categories 3, 4 and 5. The percentage of these patients discharged from ED within 4 hours increased from 72.6% to 77.6% from the baseline period to the post implementation period. Across all sites, 92.7% of patients seen by PCPs were discharged within the four-hour target period, compared with 74.5% of similar patients seen by other practitioners. The waiting time and length of stay for MSK patients treated by PCPs were shorter than for patients treated by other practitioners.

Based on limited data, re-presentations to the same ED for the same health condition within 96 hours and 28 days were similar for PCPs and other practitioners. The number of unexpected deaths was similar for the baseline and implementation periods and decreased post implementation. The number of patients who did not wait for treatment was very low.

Patients were extremely positive about their experiences of care under the PED sub-program. In general, they felt they had been listened to, their problems were understood, and the physiotherapists were comfortable and competent in dealing with their problems. The least positive responses related to recovery: a small group of patients felt more information could have been provided on how to prevent future problems and how long it would take to recover. There were also high levels of satisfaction with the time taken to be seen by the physiotherapist, and with the overall ED experience. Both models of care received similar ratings for patient experiences and satisfaction.

ESOP physiotherapists saw their role as highly beneficial to patient care. All 25 of the 29 PCPs who responded to a survey strongly agreed or agreed that the model had improved care for specific patient groups. Most also agreed the model improved access to care and enhanced the effectiveness of the ED. They reported that patients appeared comfortable with the new model.

The PCP role was strongly endorsed by other staff. The PCPs' skills and knowledge in providing patient care and education, ordering imaging and referring for further treatment were extremely highly regarded. An overwhelming majority of stakeholders responding to a survey agreed that the model improved the quality of ED care and made the ED team more effective. There were no differences between the two models in terms of respondents' understanding, support and attitudes. Junior doctors and nurses highlighted a need for better communication about the model and scope of practice, and more information regarding rosters and availability. Some respondents, mainly senior medical staff, expressed concerns about the efficiency and safety of the model, suggesting that undifferentiated patients would be better assessed by doctors before being treated by physiotherapists.

Conclusion

The PCP model is compatible with current physiotherapy and ED practice. The model and associated clinical guidelines need to be clearly documented (so that the model is readily understood by professional colleagues). The model requires physiotherapists to change their thinking from one of accepting referrals to one of seeking out referrals. The PCP model can be introduced as a separate model, or combined with an existing secondary contact physiotherapy service. The model could be slowly introduced by increasing the skills and expertise of existing staff to take on increasing responsibility for MSK patients. Training of PCPs is relatively complex, but can be broken down into smaller parts. This can include an early focus on key competencies to facilitate commencement of PCP practice and reduced need for supervision.

The availability of additional funding was the single most important determinant of sustainability for most project teams. Funding to maintain the model has been secured at six organisations and two organisations were able to at least partially transition the project into normal business following the cessation of HWA funding, maintaining elements of the service. The model was not sustained at one site, due in part to the recent opening of an Urgent Care Centre adjacent to the ED.

The PCP model has been implemented in a wide variety of settings, including major metropolitan hospitals, smaller metropolitan hospitals, regional hospitals and rural / remote locations. There are no major structural impediments to the model being widely adopted. Key requirements for successfully implementing the model rely heavily on a receptive context for change, particularly the support of local managers and medical staff, and the availability of staff with the necessary skills. Wider implementation would benefit from a 'help it happen' approach, with the 'help' coming in the form of seed funding to support implementation, funding to support 'lead' sites in the provision of support and guidance to implementation sites (for any implementation sites which would like such support), dissemination and ongoing updating of training resources and changes to funding and legislation to support PCP practice. Much of the 'help it happen' should occur at a State/Territory level, rather than a Federal level. However, there may be some economies of scale in taking a national approach to the training of ECPs. The very significant training resources developed by both lead sites should be made widely available.

1 Introduction and background

1.1 Description of HWA's strategic agenda in ESOP

Implementing new models of care is a promising approach to achieving the large-scale workforce reform necessary to meet Australia's future healthcare needs (Australian Health Workforce Advisory Committee, 2005). Health Workforce Australia (HWA) launched the Expanded Scopes of Practice (HWA-ESOP) program in 2012 with the goal of exploring innovative ways to increase workforce productivity, recruitment and retention. Four sub-projects were funded, each focusing on a different model of expanded roles for health professionals.

One of the four sub-projects, Physiotherapists in the Emergency Department (PED), draws on innovative models of expanded scope of practice physiotherapy have been developed by State and Territory health authorities (Productivity Commission, 2005; ACT Health, 2008; Victorian Department of Health, 2010; Kilner and Sheppard, 2010; Queensland Department of Health, 2014). These models equip physiotherapists with the skills and experience to work in primary contact roles in an emergency department (ED) setting. The ESOP role allows these physiotherapists to assess, treat, refer and discharge patients presenting with a specified set of musculoskeletal (MSK) conditions, thus freeing medical staff and nurse practitioners to attend patients in more urgent triage categories. The model has the potential to improve patient outcomes, reduce waiting times and ease pressure in times of high demand.

There was a need to implement and evaluate the models systematically and to assess whether they were suitable for wider (national) roll-out and the conditions under which they were most likely to succeed. Eight organisations received funding to implement the model at eleven sites. The Centre for Health Service Development, University of Wollongong, was appointed in June 2012 to undertake the program evaluation.

1.2 The case for change

The PED sub-project responds to the increasing number of presentations to EDs (AIHW, 2013) and the pressures on local systems from the national four-hour rule, the National Emergency Access Target (NEAT), implemented in 2013 as part of the National Partnership Agreement on Improving Public Hospital Services (Standing Council on Federal Financial Relations, 2011). The models target Australasian Triage Scale triage category three, four and five patients, many of whom present with MSK conditions that could be appropriately managed by physiotherapists working with an expanded scope of practice. They are designed to increase access to high-quality physiotherapy care while reducing workforce issues for emergency medicine specialists arising from the combination of increased demand and stringent performance targets.

The two lead sites selected for this sub-project had established models of ESOP physiotherapy care in place. Both models were seen as relatively robust with evidence of successful implementation in metropolitan settings. Of particular interest, therefore, was the adaptability of this model to regional and remote settings (Gill and Stella, 2013; Anaf and Sheppard, 2007; Anaf and Sheppard, 2010; Taylor et al., 2011; Gilmore et al., 2011).

1.3 Objectives of the Physiotherapists in ED sub-project

As reported in the Request for Proposals documentation, the objectives of the PED sub-project were to:

- Implement new workforce roles, on a national basis with consideration of national training pathways, by building on work already undertaken on extended scope of practice in physiotherapy roles;
- Facilitate the redesign of the workforce to match the changing needs of the service and not the determination of professional boundaries;

- Implement innovative roles that operate as standalone practitioners in the ED environment, with the scope to assess, order diagnostics, treat and discharge patients without intervention from a medical practitioner;
- Identify models of extended scope of practice for physiotherapists in EDs that demonstrate improved productivity by improving patient flow, decreasing waiting time for patients in the ED and meeting KPIs for triage times by category and for 4 hours waiting time;
- Support medical staff in the environment of recruitment issues and shortage of ED medical practitioners;
- Develop toolkits and implementation guidelines including consideration of training requirements and training programs to support national implementation.¹

1.4 Description of sites

HWA funded eight organisations across Australia to develop and put in place programs to expand the scope of work of physiotherapists in EDs. The lead sites were PED1 and PED7. Each implemented a primary contact physiotherapy model of care in their own ED as well as supporting several implementation sites. PED1 supported implementation at PED2, PED3, PED4 which was in a partnership arrangement with PED5, and PED6. PED7 supported implementation within its own organisation and PED8, PED9 and PED10. PED11 had an existing PCP in the ED and no significant changes occurred with this implementation site. A description of PED project sites is provided in Table 1. The funding allocated by Health Workforce Australia is included in Appendix 1.

Table 1 Description of sites

Project site	Location	Brief description	Bed number range*
PED1	Victoria	Major tertiary referral teaching hospital	>500
PED2	Victoria	Community hospital	50-100
PED3	Victoria	Outer metropolitan hospital providing a comprehensive range of health services for the outer-east	200-500
PED4	Victoria	Major tertiary referral teaching hospital	200-500
PED5	Victoria	Large regional hospital and the principal referral hospital for the region	200-500
PED6	Northern Territory	Specialist teaching hospital	100-200
PED7	Australian Capital Territory	Major tertiary referral teaching hospital	>500
PED8	Queensland	Regional teaching hospital and referral centre	>500
PED9	Queensland	Metropolitan teaching hospital in south-east	200-500
PED10	South Australia	Specialist teaching and referral hospital	>500
PED11	Victoria	Major acute hospital providing a range of services to outer suburban region	200-500

* Information taken from MyHospitals website.

1.5 Structure of report

This final report provides a summative evaluation of the PED sub-project, building on three formative evaluation progress reports previously submitted. The structure of this report is shown in Figure 1.

¹ HWA Request for Proposals Extended Scope of Practice for Physiotherapists in Emergency Departments (Lead Organisations) HWA-RFP/2011/007 and HWA Request for Proposals Extended Scope of Practice for Physiotherapists in Emergency Departments (Implementation Sites) HWA-RFP/2011/008.

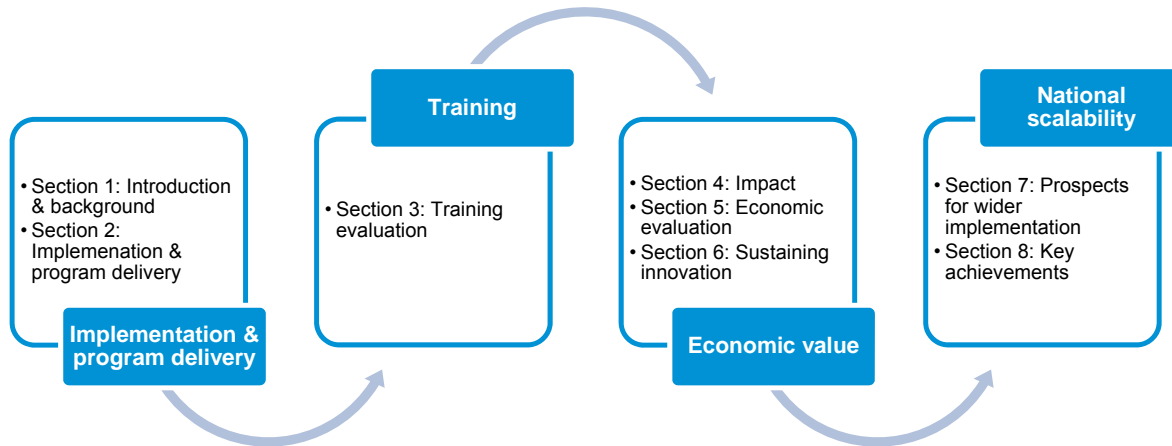


Figure 1 Report structure

A synthesis of the key findings of the overall HWA-ESOP program evaluation (including all sub-projects) is provided in a separate report (Thompson et al., 2014). Methods of the evaluation including data collection and analysis are described in Appendix 2.

2 Implementation and program delivery

2.1 Service delivery models and scopes of practice

Throughout this section of the report the ESOP physiotherapist role is referred to as a primary contact physiotherapist (PCP) to distinguish the practitioner from other physiotherapists that may be working in the ED in a secondary contact physiotherapist (SCP) role. There were some differences in terminology across the projects.

The two lead sites (PED1 and PED7) each had an established model of care involving MSK physiotherapists working in the ED with an expanded scope of practice which included tasks such as:

- assessment, diagnosis and treatment of the patient
- independent management of simple fractures
- independent ordering and interpretation of X-rays
- limited prescribing (dependent upon the legislative requirements of the State / Territory)
- provision of local anaesthetic joint injections for relocation of small joints (dependent on legislative requirements in each jurisdiction)
- direct onward referral or discharge of the patient.

The ACT Health Directorate in partnership with the International Centre for Allied Health Evidence at the University of South Australia has been developing an expanded scope physiotherapy model since 2007. Scoping projects, pilot studies, and extensive consultation and literature reviews culminated in a model which allows the ESOP physiotherapist to assess, treat and diagnose MSK presentations to the ED, as well as provide limited prescribing services, manage simple fractures and interpret X-rays.

Both lead sites were responsible for implementation in their own organisations, involving refinement of the existing models. Each lead site worked with implementation sites to adapt the existing model as necessary and establish it at the new sites.

Both models focused on physiotherapists managing MSK conditions for patients triaged in categories 3, 4 and 5, located in fast-track areas for those EDs which had them. PED1 implemented an ESOP-PED model underpinned by the Australian Physiotherapy Association (2009) definition of advanced scope of practice i.e. whilst the scope of practice includes roles and responsibilities traditionally undertaken by the medical profession which require additional training and credentialing, it does not extend beyond the current legislation and hence is not extended scope of practice. The PED1 model relied on establishing a critical mass of PCPs facilitating a team-based approach. Not all the implementation sites working with the PED1 lead site were able to implement the team-based approach of the PED1 model. At PED7 in addition to established primary contact MSK tasks the physiotherapist could autonomously order additional imaging including ultrasound, Computed Tomography (CT) scan and Magnetic Resonance Imaging (MRI), interpret medical imaging, manage fractures, perform joint and fracture reductions and joint aspirations. These tasks could only be undertaken after training and credentialing occurred.

The models aim to support PCPs in their management of the full patient episode of care, by extending their competencies to areas such as advanced assessment, prescribing, ordering and interpreting of diagnostic imaging. They can effectively assess, treat and discharge patients without medical intervention, although most choose to collaborate with their medical and nursing colleagues when they believe this will improve patient care. However, for many simple cases the PCP is the only person to interact with the patient in any meaningful way.

PCPs should be registered with the Australian Health Practitioner Regulation Agency and work in a MSK team environment. All implementation sites had either a PCP service or SCP service

in their EDs prior to the ESOP initiative (Table 2). When physiotherapists commenced training for their expanded role, they worked under the supervision of an ED physician and / or physiotherapy clinical lead until they completed the training program and were deemed competent.

Changes introduced as a result of the ESOP initiative included the introduction of a PCP service, extending the hours of operation of existing PCP services, and separating the roles of PCP and SCP services (at a site which previously had a combined role). No significant change took place in the ED at one site (PED11) other than the introduction of a soft tissue review clinic.

Table 2 Summary of PED models

Project implementation site	PCP in place prior to project start	SCP in place prior to project start	Changes to the model as a result of the project
PED1	Yes (since 2008)	Yes (discharge planning role)	Existing PCP service increased by 20 hours per week to provide cover 8 hours per day, 7 days per week.
PED2	No	Yes (by referral)	Introduction of PCP. Service provided for 40 hours per week, across five days.
PED3	No	Yes	Introduction of PCP, 7 days per week, from 9.30am to 6pm.
PED4	Yes (since 2008)	Yes (available 7 days per week)	Hours of PCP service increased, treating a wider range of patients. Service available Monday to Saturday from 9:30am to 7:30pm and on Sunday from 9:30am to 6pm.
PED5	Yes (combined primary and secondary contact role)	Yes (combined primary and secondary contact role)	Separated the PCP and SCP roles. SCP provided on-call service to ED from 8:30am to 3:30pm. PCP position extended to cover 30 hours per week, Monday, Tuesday and Thursday from 8:30am to 5pm and Friday from 9am to 3pm. Although hours varied throughout the project to test the viability of various service models.
PED6	No	Yes (on-call service)	PCP service provided 5 days per week (Thursday to Monday), from 8.30am to 4.30pm.
PED7	Yes (since 2007)	Yes	Recruitment of a second PCP (HWA funded) to work with the existing PCP, providing a service 7 days per week, from 8.30am to 10pm.
PED8	No	Yes (dedicated presence in ED)	Existing physiotherapy service extended from 5 to 7 days per week, from 7 to 10 hours per day (from 8am to 6pm). Initially functioned as a hybrid primary and secondary contact service.
PED9	No	Yes	Introduction of PCP role, Monday to Friday, from 9:30am to 6pm. In January 2013 a weekend roster commenced with the service remaining at 5 days per week from Sunday to Thursday.
PED10	Yes (since 2009)	Yes	Increase in PCP staffing. Service provided 7 days per week, from 8am to 4.30pm.
PED11	Yes (since 2010)	No	No change.

A summary of the main elements of the expanded scope of practice physiotherapy model of care is provided in Table 3.

Table 3 Proposed changes to scope of practice for the PED sub-project

Expanded scope of practice elements	Implementation
Prescribing	Enabling physiotherapists to prescribe requires a national approach to changing legislation.
Imaging: X-ray	At all sites physiotherapists could already initiate X-rays and most could interpret the X-rays. PCPs have the capacity to review X-rays to determine the presence of fractures, in the majority of cases without the benefit of a radiology report.
Other imaging: e.g. ultrasound, CT scan	There was minimal change proposed with initiating and reporting on other imaging such as ultrasounds and CT scans. Although this type of imaging was covered in the PED7 model training, only two sites reported that PCPs would be able to order ultrasound (one of these also can order a CT scan with consultant sign off).
Pathology	Although this was seen as a potentially useful aspect of the model, it was not able to be implemented at any sites due to concerns about the following up of results.
Plastering	Sites took different approaches to this task according to the mix of resources in the ED. For example, some sites employed plaster technicians for this purpose.
Providing pain relief / analgesia	All sites could see the benefit of being able to provide pain relief but mostly had to rely on the assistance of medical or nursing professionals as access to prescribing and administering medication was restricted by legislation.
Injections of local anaesthesia	PCPs under the PED7 model were trained to give injections of local anesthesia (such as ring blocks for finger dislocations). Implementation varied according to local procedures and legislation.
Certification: sick leave and work cover	At most sites the PCPs were able to provide sick leave certificates or certifications of attendance. PED10 could already provide both sick leave and WorkCover certificates as part of the existing scope of practice. The other sites still require medical staff to complete WorkCover certification.
Role in discharge: without medical review (incl. discharge summaries and letters for GPs)	Several sites prepare discharge summaries and letters for GPs. One site reports that they are able to discharge without a medical review (PED7), with another site working towards this expanded scope (PED10). PED1 is pursuing this but discharge would be based on using strict criteria. Legislative and policy impediments remain.
Referrals: e.g. to specialist services and hospitals, etc.	All sites were able to refer to outpatient clinics within their organisations where available.

2.2 Requirements for ESOP physiotherapists

All project teams successfully recruited to project management and clinical positions. Most projects received multiple applications for the PCP positions, predominantly internal. Several sites were slower to secure project management positions with this responsibility falling to allied health personnel with existing full-time roles.

Each project managed its own advertising and recruitment process with lead sites providing samples of position descriptions. Most project teams had to customise the position description to fit local requirements. For several project teams navigating internal human resource processes was challenging; even though the project manager could show that the positions were being funded from an external grant, there were barriers like caps on staff establishment numbers and delays in placing advertisements.

The selection criteria at each site varied slightly, but all PCP positions required the physiotherapist to have a tertiary degree in physiotherapy and Australian Health Practitioner Regulation Agency registration, evidence of relevant clinical experience (usually a minimum five years) and a Masters qualification (preferably in MSK physiotherapy and / or a clinically relevant field); or be able to demonstrate that they complied with the Australian Physiotherapy Association experiential pathway.

Many projects experienced delays in recruitment. In some cases this was a flow-on effect due to lack of engagement with the project at higher levels in the organisation (PED6). In other cases the processes involved in recruitment proved unexpectedly time-consuming (PED3) or complex

(PED10), or it was difficult to attract suitably qualified applicants, a problem compounded by existing staff shortages (PED5). PED8 noted that delays in recruiting a project officer to the lead site (PED7) had implications for implementation sites such as delays in the availability of resources. At PED3, planned leave by a key staff member coincided with the project's initiation and several people shared the role temporarily. The resulting delays in recruiting and the development of a service model made it more difficult to engage stakeholders and progress to the next stages, including development of resources and needs analysis. In total, 29 PCPs were recruited, many with extensive experience and the majority (83%) with post-graduate qualifications (Table 4).

Table 4 **Physiotherapists in the ED staff summary**

Organisation	# of PCPs	Years' experience	# trained overseas	# with post-graduate qualifications	# working in organisation prior to recruitment
PED1 and PED2	10	6-20	1	8	8
PED3	3	6-14	0	2	2
PED4	4	7-34	0	3	3
PED5	3	9-27	0	3	3
PED6	4	8-30	0	3	3
PED7	1	13	0	1	1
PED8	1	15	0	1	1
PED9	1	20	0	1	1
PED10	2	13-15	2	2	2
Total	29	6-34	3	24	24

Note: # of PCPs refers to individuals and not FTE positions.

2.3 Role of the lead sites

HWA advertised the implementation sites before they chose the lead sites. The implementation sites were then assigned to a lead site by HWA. The logic behind this clustering was to try to group together States and Territories with similar legislative barriers or restrictions on the various elements of the expanded scope of practice role. For example, given PED7's intention to secure permission to inject local anaesthesia for digital ring blocks, it was identified that South Australia and Queensland were more likely to support injecting by PCPs than, for example, Victoria or the Northern Territory.

Within the group of hospitals working with the PED1 lead site, PED4 had primary responsibility for supporting PED5 (based on historical links between the two) however PED1 (as the lead site) also had a role. When the decision was made to fund PED5 this project design issue should have been reviewed as it generated some role confusion. The good working relationships between the project leads have reduced the impact of this issue over time.

Lead sites were concerned that implementation sites did not always have clear objectives, as their model of care was not based on that of the lead site. Implementation sites similarly commented that it would have been beneficial to their initial proposal if they had understood the lead site's model from the outset. One of the lead sites (PED1) observed in their final report that there were no contractual arrangements between the lead sites and the implementation sites, making it difficult for lead sites to influence what was implemented and how project funding was allocated.

Interviews with the PCPs and key stakeholders and comments in final reports indicated that implementation sites were generally positive regarding the contribution of the lead sites and described them as very helpful and approachable. The workshops conducted on-site and the provision and sharing of material by lead sites greatly assisted with the training and implementation of the PCP role. Having someone from the lead site on-site for a couple of days in the very early stages facilitated project establishment. The previous experience of lead sites and the provision of the training pathway, resources and educational modules enhanced

confidence that the model would succeed, reduced duplication of effort and helped avoid potential pitfalls in the set-up phase. Lead sites also provided invaluable assistance with local data collection and analysis and assisted project teams with less experience in evaluation.

The lead sites provided varying assistance depending on the needs of each implementation site and the project management style of the lead team, including support with developing project plans and progress reports and securing ethics approval. They kept in touch via email, telephone and teleconferencing. Lead sites played an important role engaging key stakeholders within their own organisations and at the implementation sites.

Results from surveys issued to lead and implementation sites reinforced these qualitative findings. Two versions of the tool were developed; one for lead sites and one for implementation sites. Only one response was required per site.

The survey results confirmed that the lead-implementation model appeared to add value to the sub-project. Implementation sites reported that the frequency of contact with their lead sites was 'about right' at each project phase. One-to-one email and telephone contact were perceived by lead and implementation sites as the most effective communication modalities and were used most frequently. Group email communication and web forums were not effective.

The engagement of each lead site with the other lead site in certain activities (exchanging information for mutual benefit, altering activities for a common purpose, sharing or pooling resources, and enhancing the capacity of the other lead site) was very limited. There was very little consensus between the two lead sites about the activities they were engaged in. Importantly, neither lead site felt that they enhanced the capacity of the other lead site.

Relatively infrequent contact between lead sites seems to have been suitable for their needs; it is difficult to ascertain if more frequent contact would have had benefit or resulted in improved outcomes. It is possible that more interaction between lead sites earlier in the project set-up may have assisted the sub-project (as noted by one lead site), for instance for the purposes of clarifying terminology at project commencement.

2.4 Set-up and establishment phase

The ability to recruit an experienced project manager and strong team support from other members of the ED and physiotherapy departments greatly facilitated the set-up and establishment phase. The Victorian Department of Health co-funded several of the ESOP projects, specifically the PED initiatives at PED1 and PED2, PED3, PED4 and PED5. This financial assistance with project management was welcomed and created some envy amongst sites in other jurisdictions. The involvement of the Victorian Department of Health was an advantage for the Victorian project teams. The Department's engagement not only provided practical assistance through the provision of additional funds, coordination and oversight, but also signalled an interest in the sustainability of the PCP role in the longer term.

All projects reported a high level of investment in project management during the set-up phase. Most sites engaged a project manager / officer position, with lead sites supplementing this role 'in-kind' with significant contributions from existing PCP staff and allied health managers. The project teams that functioned best included PCP personnel who were already known within the organisation. The benefit of having a staff member who is familiar with the model of care and can respond to questions from other clinicians should not be understated.

The two lead sites each developed a training pathway. The PED7 lead site provided each of their implementation sites with a training resource which had previously been developed in collaboration with the International Centre for Allied Health Evidence at the University of South Australia. The PCPs enrolled in a formal program of study at the University of Canberra (Graduate Diploma of Extended Scope Physiotherapy) and were supported with a designated clinical supervisor or mentor in their own ED. Those associated with the PED7 lead site were

unprepared for the costs and time associated with the Graduate Diploma course. In addition to the course fees, there were significant travel and accommodation costs for clinicians based outside Canberra and the expense of backfilling the clinical role for this training period. This issue was not unique to the PED7 lead site: the PED6 project team identified similar difficulties in attending the pharmacology module organised by the PED1 lead site. This is because the module was not offered in an intensive mode and required periodic attendance over several weeks.

The credentialing component of the PED7 training model involved supervised practice of the expanded scope skills and completion of a competency log book. The log book included assessment of clinical skills in interpretation of imaging; relocation of small joints, including administration of local anaesthetic; simple fracture management; and prescription of limited medications. The purpose of the log book was to formalise the acquisition of skills and competencies required of the PCP. On completion, the log book demonstrated that the physiotherapist was able to perform the outlined skills with confidence, expertise and minimal risk of adversely affecting the patient. The competencies were assessed by ED consultants or other physiotherapists working in a primary contact role.

The PED1 lead site developed an in-house training program where the emphasis was on a competency based framework, supported by external learning modules. The set-up phase involved intensive and time-consuming development of workplace competencies and related assessment methods. The competency standards were developed collaboratively with the input of clinical leads from all Victorian-based sites. The standards recognise that competency is a combination of knowledge, skills and attributes. The training program included a self-assessment tool to be used by the physiotherapists to identify areas for improvement prior to assessment of competency by their supervisor. Clinical supervision was provided by senior medical staff in the ED.

For details and evaluation of both training programs see Section 3.

2.5 Implementation of Expanded Scopes of Practice

All project teams demonstrated a strong commitment to seeing the project through to its conclusion, with the best evidence of that commitment being the significant 'in-kind' resources invested by every project team. Several sites commented that they had no idea that such a significant level of 'in-kind' support would be needed. This included the input of senior managers to assist with overcoming implementation barriers, the contribution of data and information staff and quality improvement personnel as well as the use of scarce research resources to support local evaluation plans. In general, the project teams were highly skilled, well organised and motivated. They had effective decision-making structures in place and demonstrated good capacity to identify and address project risks. The inclusion of lead sites was an important design feature and it is unlikely that implementation would have proceeded in such a timely way without their input.

There was a good awareness of the importance of a strong clinical governance framework, with most projects using their steering committee for this purpose. The project teams worked with the existing clinical governance mechanisms within their organisations such as clinical care review committees, patient safety and quality officers and systems for recording and reporting incidents and complaints. All project teams monitored patient safety and quality data and most involved their steering committee in reviewing this data. In several organisations, the steering committee also provided a mechanism to engage concerned clinicians. The support of medical staff within the ED through mentoring and supervision of the PCP greatly assisted implementation.

The clinical log books and associated documentation explaining the practical assessment tasks of the PCP were very useful in demonstrating to other members of the health care team the 'appropriateness' of the scope of practice. Protocols and clinical guidelines were an important

tool for ensuring PCPs operated within their scope of practice. Several project teams used peer review of clinical cases as a quality improvement mechanism.

Implementation progressed well at all sites, with the exception of PED11 as PED3 decided to focus implementation at PED3, maintain the existing service at PED11 and introduce a soft tissue review clinic. In general, there was significant organisational support for the ESOP program and a high level of interest in the efficiency and effectiveness of the PCP role in the ED setting. Factors influencing implementation were site-specific, generally involving staffing and organisational issues of one form or another (Table 5).

Progress with implementation was influenced by the training program. Clinicians could only increase their scope of practice upon completion of the relevant training module and assessment of clinical competencies. For some learning components, the absence of all PCPs at the same time to attend the training caused difficulties with staffing levels and rosters. The requirement to liaise with the ED consultant for all cases during the competency assessment or credentialing phase was problematic. The consultants were often very busy, resulting in long waiting times to discuss cases with them and review X-rays.

Limited non-clinical time was set aside for the training program, resulting in delays completing the modules and the other non-clinical requirements of the ESOP project. The workload associated with completion of the training pathways was reported to be considerable. Implementation was greatly facilitated by clinical mentors supervising expanded scope tasks and completing clinical skills log books.

Table 5 Overview of implementation

Implementation site	Changes made as a result of the PED sub-project
PED1	The hours of the existing service increased from October 2012 with the recruitment of additional physiotherapists, resulting in a total of 11 ESOP physiotherapists across the two sites (PED1 and PED2). All the physiotherapists had to undertake all or part of the training program. The new recruits gradually expanded their scope of practice as they achieved the required competencies. The number of patients they were able to treat increased over time.
PED2	The service provided by ESOP physiotherapists commenced in February 2013. Experienced PCPs were moved to PED2 from PED1 to establish the service, replaced by five new trainees employed at PED1. Clinical lead appointed to be responsible for implementation. The PCPs were particularly busy on Saturdays treating MSK sporting injuries.
PED3	Two ESOP positions and a part-time clinical lead commenced in October 2012. Implementation was interrupted with the resignation of an experienced physiotherapist. A new physiotherapist was recruited and commenced the training pathway. The number of patients seen at this site was high, with a high proportion of paediatric cases.
PED4	An established PCP service was already in place. Implementation proceeded well with a stable staff roster, high patient numbers and all PCPs working through the training pathway. Over time, the patient inclusion criteria for being seen by a PCP were expanded.
PED5	Three part-time physiotherapists based at PED5 recruited to the ESOP initiative. All had previously worked in the ED in which the ESOP role was based; one had previously worked in an existing ESOP role since May 2008 and the other two commenced in October 2012. The PCP and SCP roles were separated. From April to June 2013 they trialed a weekend PCP service (Saturday, Sunday, and Monday).
PED6	The ESOP physiotherapy service commenced in October 2012. Hours of service delivery were adjusted in March 2013. The new ED opened officially in June 2013, which had a significant impact on implementation as it necessitated the development of a range of documentation for the PCP role. Patient throughput was initially low, attributed to lack of space in the ED, but increased with the opening of the new ED. Over time, the service was expanded to include a Soft Tissue Review Clinic, providing one-off reviews by physiotherapists following discharge from ED.
PED7	The project-funded physiotherapist commenced in December 2012 and training started in February 2013. Implementation progressed smoothly, primarily because the model, training and

Implementation site	Changes made as a result of the PED sub-project
	credentialing were already in place. There were no changes to the model. The existing ESOP physiotherapist reduced hours of work in March 2013, reducing the staffing to 1.6 FTE (from 2.0 FTE).
PED8	Seven-day per week service commenced in November 2012, provided by existing, experienced, physiotherapist and new recruit who was being developed to eventually complete PCP training. The experienced practitioner undertook the postgraduate diploma offered by the University of Canberra; the new recruit undertook a locally developed self-directed professional development pathway (which was not available until 10 weeks after the new recruit was appointed. The new recruit resigned in June 2013 and was replaced with a base grade physiotherapist.) The ESOP physiotherapist had many years of experience in the role and was able to work at their full scope of practice.
PED9	One ESOP position was recruited, commencing in August 2012. Implementation proceeded well. The ESOP physiotherapist achieved a high patient throughput and conducted independent X-ray review.
PED10	The PCP role was already well established in the ED prior to project commencement. Expansion of the service and hours of delivery commenced in October 2012 with the appointment of one full-time and two-part time physiotherapists. Only the full-time physiotherapist undertook the diploma program at the University of Canberra. The winter months generated a high volume of paediatric sporting injuries. The PCP was frequently called on to provide some secondary contact support, even though a secondary contact physiotherapist was based in the ED.
PED11	Well-established PCP service which continued with the inclusion of a Soft Tissue Review Clinic.

2.6 Barriers and enablers in relation to implementation

2.6.1 Communication and stakeholder management

All sites reported an ongoing process of stakeholder engagement, including communication with both internal and external stakeholders. Internal engagement strategies included:

- Meetings and consultation with directors from within the hospital including radiology, pharmacy, orthopaedic and neurosurgical directors regarding provision and development of training resources and clinical governance documents.
- Regular meetings with and presentations to steering committees and working groups to update and inform stakeholders regarding training and implementation progress.
- Meetings with relevant staff regarding the development of the work-based competency standards.
- Formal and semi-formal consultations with ED physicians to provide updates on the project.
- Training sessions for new medical staff to update and inform them regarding the role of the PCP within the ED.
- Education sessions for triage nurses to assist with identifying suitable patients for the PCPs.
- Monthly email updates to key staff within the organisation regarding progress and implementation.

The main strategy for stakeholder engagement was inclusion on project steering committees, with members representing a wide range of specialties including nursing, emergency medicine, orthopaedics, pharmacy, medical imaging, specialist outpatients, general practitioners and allied health. Key internal stakeholders included senior managers, clinicians and members of various committees. External stakeholders were engaged for a variety of reasons, such as consultation, learning and project development and external support.

The development of project materials such as 'model of care' documents and information pamphlets provided opportunities to gain input from personnel based in the ED, physiotherapy,

occupational therapy and other clinical areas. Consumer engagement was generally limited to participation in project steering committees at some sites.

All project teams identified the support of the CEO and senior managers as enabling factors during the set-up phase. Early consultation with departments likely to be impacted by the PCP role was useful. The involvement of senior managers provided guidance and a management perspective on models of care and staffing issues. The role of a medical champion at some sites was pivotal to implementing and sustaining project activities. Several project teams (e.g. PED7, PED9, PED4) had marked success in engaging a broader group of senior medical officers, particularly from orthopaedics and radiology.

Several sites (both lead and implementation) pointed out that within their organisation there were particular key stakeholders who required additional time and effort to ensure the smooth progression of the training and implementation of the program. Many sites identified that early and broad stakeholder engagement was crucial to successful implementation. Many of the PCPs were already working within their organisations, which greatly facilitated the process of stakeholder engagement and the development of professional trust.

All implementation sites identified the benefit of regular communication and sharing of information and insights. Several project teams promoted 'early wins' in avoiding admissions for patients with back pain or lower limb injuries as a way of promoting the PCP role and gaining wider organisational support. All sites reported how time consuming they found liaison and communication, as this needed to occur at so many levels during the set-up phase.

The sites raised a variety of communication issues. At PED10, communicating about the project and the changes it involved proved challenging because of the scale of task, with more than 200 nursing and medical staff working in the ED. At PED8, the challenge was to maintain contact and communication among all physiotherapists working in the ED once a seven-day roster was instituted. At PED4, project implementation necessitated changes to information technology systems and therefore liaison with these staff was critical to ensuring access to the necessary software and processes.

2.6.2 Competition for patients

Several sites pointed to the possibility that the PCPs could impinge on territory traditionally occupied by junior medical officers and, more recently, by nurse practitioners in training. All three groups need to gain a required amount of clinical experience, and the patients targeted by the ESOP physiotherapy model are also those most eminently suitable for the training activities of these other providers.

The final report of the PED8 site noted that the PED project was facing competition for eligible patients from nurse practitioners and doctors. This means fewer patients were available to the PCP in training, and also had the potential to strain relations between ED staff, and create confusion for patients and referring health professionals. Other sites have also identified the problem of medical staff taking responsibility for patients in the ED that clearly had MSK conditions. The PED1 report states:

"Concurrently at this time there was an increase in the hours of the Nurse Practitioner (NP) service in the fast track area at PED1 from 20 to 30 hours a day. For several hours in the day this meant there were three NPs rostered on in the fast track area of ED. During quiet times this meant increased competition for patients and consequently less throughput for the physiotherapists. At PED2 there were less NP hours and one of the NPs had expertise in women's health so the doubling up of the NP and physiotherapist was less of an issue for throughput." (PED1 site final report)

Ongoing explanation is needed to help ED staff be clear about the role of the PCP and the difference between the primary and secondary contact physiotherapy roles. Several PCPs

commented on their surprise at having to constantly repeat information about their role and the project in the first months of commencing in the ED.

2.6.3 Legislative and policy issues

During the set-up phase project teams identified a range of legislative and policy barriers to implementing aspects of the ESOP model of care. Impediments to prescribing were commonly reported with project teams understanding that this was part of a much bigger issue.

Several project teams encountered barriers to ordering medical imaging. For PED8 this was a radiation safety issue. Radiation Health is the Queensland government's radiation safety agency. It has state-wide policy, licensing and legislative responsibility for radiation health standards and radiation safety. Radiation Health is a unit within the Division of the Chief Health Officer. It administers Queensland's Radiation Safety Act 1999 and the Radiation Safety Regulation 2010. PED3 experienced some reluctance to the PCP ordering ultrasound, CT scan and MRI; this is most probably related to billing issues as the hospital receives reimbursement from the Commonwealth if a consultant orders these tests in an outpatient clinic. The Queensland Radiation Safety Act currently prohibits physiotherapists requesting X-rays. Queensland Health has processes to allow physiotherapists to undertake this task however medical officers are still required to countersign these requests. The sites are working with the Australian Physiotherapy Association to lobby Queensland Health for legislative change.

At some sites, legislative restrictions limited full implementation of the ESOP physiotherapy model of care. These restrictions include limitations on administering and prescribing medications, requesting and interpreting X-rays, and completion of Workers Compensation forms. In most States and Territories prescribing is currently outside the physiotherapists' scope of practice.

Examination of the provisions in the Workplace Safety / Worker's Compensation Acts indicates that only South Australian clinicians are legally able to complete Worker's Compensation forms. This restricted the autonomy of the PCPs as they were unable to provide a complete service to work-injured patients.

3 Training evaluation

The training evaluation was structured around quality education factors. These factors are broadly reflected in the headings for each sub-section which were designed to capture important aspects of program design that impact on overall quality. This analysis reflects the tertiary education standards endorsed by the Australian Tertiary Education Quality and Standards Agency. It has been generated from triangulating multiple data sources. A description of these sources is included in the 'Methods' section in Appendix 2. The key objective relating to the training evaluation was a review of the training programs and their delivery and an analysis of the extent to which they result in 'work ready' participants.

3.1 *Structure of training programs*

A brief overview of the different approaches to training deployed through the ESOP-PED initiative is included to provide a context for the training program evaluation. The training pathways were described comprehensively in previous evaluation reports (Thompson et al., 2013) and are referred to in Section 2 of this report. The two lead sites (PED1 and PED7) each had an established model of care involving MSK physiotherapists working in the ED with an expanded scope of practice.

3.1.1 **PED1 training pathway**

The PED1 MSK training pathway is underpinned by the Victorian Department of Health Clinical Governance Framework. The Operational Framework includes details about the model of care, scope of practice, implementation and evaluation issues. The PED1's model of care is a team-based approach to service delivery. This includes senior physiotherapists with a minimum of five to seven years MSK physiotherapy experience and the integration of the ED role into the existing MSK physiotherapy team to create the critical mass needed for a seven day per week service and avoid professional isolation. The PED1's ESOP-PED scope of practice is underpinned by the Australian Physiotherapy Association (2009) definition of advanced scope of practice i.e. whilst the scope of practice includes roles and responsibilities traditionally undertaken by the medical profession which require additional training and credentialing, it does not extend beyond the current legislation and hence is not extended scope of practice.

The training pathway is a competency based framework delivered predominantly 'in-house'. The Clinical Education Framework includes the learning needs analysis, internal and external learning modules, a professional portfolio, supervision and mentoring in the expanded scope of practice role and work based competency assessment. Commencement of the program starts with an analysis of learning needs. This varies according to the level of expertise and prior experience of the physiotherapist and determines the number and nature of modules to be completed. The Operational Framework provides implementation guidelines for ESOP physiotherapy services. The PED1 Advanced Musculoskeletal Physiotherapy Framework is a combination of the Victorian Department of Health Clinical Governance Framework, Clinical Education Framework and Operational Framework as depicted in Figure 2.

The combination of materials and assessments has produced a program that meets industry requirements. Established at PED1 and replicated at PED2, PED3, PED4, PED5 and PED6, the ESOP training pathway has been successfully implemented across all sites. This has incorporated the principles of adult teaching and learning and provided a comprehensive approach to prepare participants for the ESOP role.

In comparison to the other ESOP-PED training pathway implemented through the HWA program, this pathway offers significantly less theory and clinical practice time.

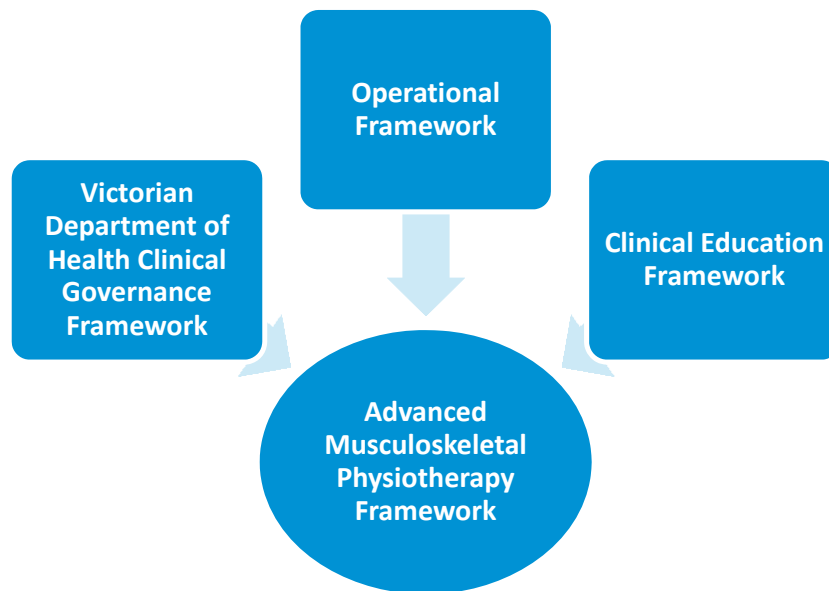


Figure 2 PED1 training pathway

3.1.2 PED7 training pathway

Working with PED8, PED9 and PED10; this sub-project provided a physiotherapy training pathway in partnership with the University of Canberra (Figure 3). The outcome was the implementation of the Graduate Diploma in Extended Scope Physiotherapy. This is claimed to be the world's first tertiary degree in extended scope of practice physiotherapy.

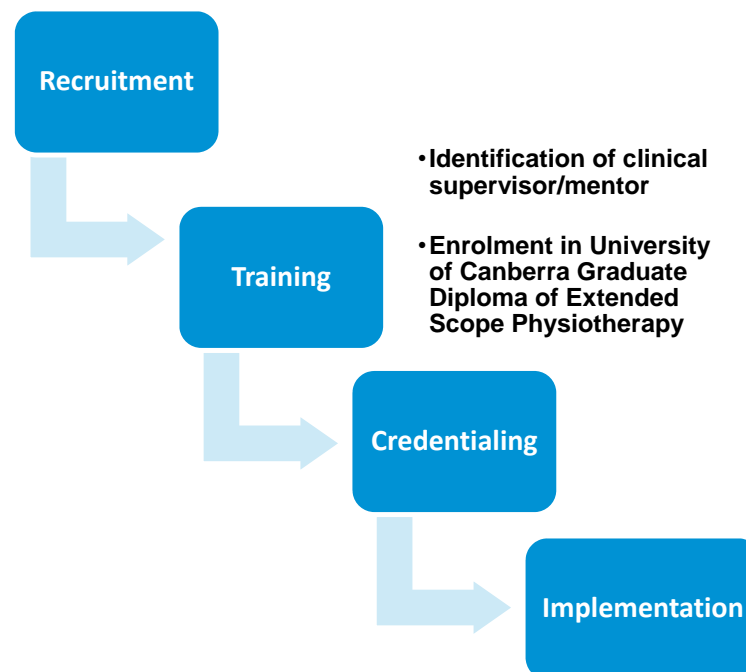


Figure 3 PED7 extended scope of practice physiotherapy training pathway

PED7 in partnership with their State/Territory Health Department has a well-developed Expanded Scope of Practice physiotherapy model and educational framework (the term

extended scope is used in this organisation to differentiate from advanced practice in-scope physiotherapy roles). At PED7, the extended scope of physiotherapy practice model introduced through the HWA initiative is built upon well-established ED primary and secondary contact physiotherapy services as well as the successful introduction of a 12 month pilot Extended Scope Physiotherapy (ESP) service. PED7 had developed a range of resources including: operational frameworks; systems of clinical and project governance; change management processes; models of training, education and supervision; and established models of care. These were supplied to implementation sites in the form of a 'Starter Pack'. The training pathway employed by PED7 has four key stages: recruitment, training, credentialing and implementation. In addition to established primary contact MSK tasks the physiotherapist can autonomously order additional imaging including ultrasound, Computed Tomography (CT) scan and Magnetic Resonance Imaging (MRI), interpret medical imaging, manage fractures, perform joint and fracture reductions and joint aspirations. These tasks can only be undertaken after training and credentialing occurs.

The Graduate Diploma comprises six units. On successful completion of the first three units (Extended Scope Physiotherapy: Injection therapy, Pharmacology and Radiology) provision is made for an exit point with the award of a Graduate Certificate in Extended Scope Physiotherapy. The Graduate Diploma in Extended Scope Physiotherapy is awarded on successful completion of a further three units (Physiotherapy Advanced Problem Based Clinical Practice: Leadership, Evidence based practice and Clinical practice). The program structure makes provision for: lectures (104 hours), tutorials (28 hours), workshops (16 hours), simulation (20 hours) and clinical supervision (1600 hours). A mentorship model is used for supervised clinical components of this program. This represents a greater investment in theory and practice time when compared with the PED1 training pathway.

The program descriptors for both the Graduate Certificate and Graduate Diploma both indicate that completion will allow the graduate to practice within an extended scope of practice within their discipline. If the Graduate Certificate provides an exit point where the graduate can essentially practice in the ESOP role it is unclear why the Graduate Diploma is necessary. The three additional units required for the Graduate Diploma may aim to develop the ESOP physiotherapist as a clinical leader, however without access to these unit materials this is difficult to determine.

3.2 Experience of the ESOP physiotherapists

The lead sites developed different training pathways with the intention of generating the same outcomes, that is, physiotherapists competent to work in a primary contact context with MSK patients presenting to the ED. For both models the training pathway extended over approximately 12 months (this varied according to the previous experience of each physiotherapist). A survey was conducted in 2013 to capture the ESOP physiotherapists' overall impressions of the training program that they completed. ESOP physiotherapists were asked to rate a range of factors across four domains relating to: program delivery, content, assessment processes and teaching and training staff. A response rate of 81% was achieved over all sites. PED1 training sites achieved 78% response rate (18 out of 23) and PED7 training sites achieved 100% response rate (four out of four). It is acknowledged that the small sample size poses limitations to the use of this data. Any data set with a small number of respondents requires caution with interpretation.

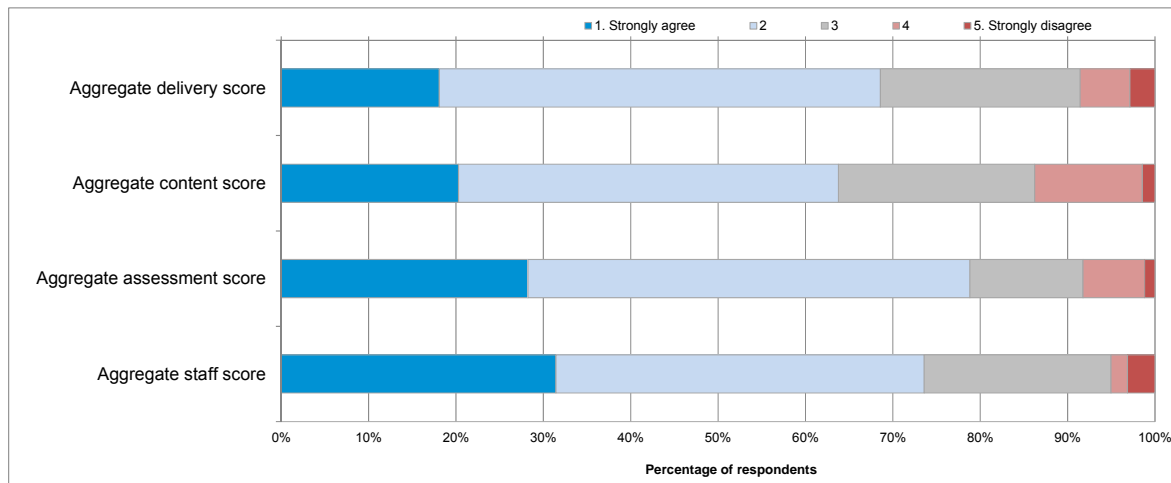


Figure 4 PED1 training sites aggregate domain scores

The findings for the PED1 training program are included in Figure 4 and Table 6. This demonstrates a positive trend in each domain with respondents indicating a high level of agreement with the statements listed in Table 6. From the descriptive statistics displayed it is evident that the training program content domain was consistently rated lowest for the PED1 training program (referring to statements 4-11).

Table 6 Descriptive statistics for PED trainee survey (PED1 training)

Item	Full sample		
	N	Mean (SD)	Range
1. The training program met my expectations	18	3.67 (0.91)	2-5
2. The training program was well organised	18	3.61 (0.85)	2-5
3. The objectives of the training program were clearly identified	18	3.83 (1.15)	1-5
4. Content was delivered in a logical manner	18	3.50 (1.04)	2-5
5. Training materials (work books, readings, handouts) were appropriate for my needs	18	3.83 (0.62)	3-5
6. There was an appropriate balance between theoretical and practical components	18	3.78 (1.06)	1-5
7. Content was pitched at a level appropriate to the expanded scope of practice role	18	4.06 (0.80)	2-5
8. Necessary equipment and resources were available to complete the training program	18	3.78 (1.06)	2-5
9. Techniques used to present material were appropriate for the training program	18	3.72 (0.96)	2-5
10. The training program provided for debriefing and / or clinical supervision	17	3.35 (1.17)	1-5
11. Learning through simulation assisted me to prepare for the expanded scope of practice role	13	3.38 (1.04)	2-5
12. Assessment tasks were relevant to the training program	18	3.83 (0.99)	2-5
13. The assessment requirements were clearly explained	18	3.72 (1.13)	1-5
14. The assessments were challenging and at an appropriate level	17	4.06 (0.75)	2-5
15. Assessment tasks were graded fairly	15	4.33 (0.62)	3-5
16. Assessment feedback was timely	17	4.00 (0.87)	2-5
17. I was provided with accurate, timely information about the training program	17	3.59 (0.87)	1-5
18. I was informed of any changes within the training program in a timely manner	16	3.81 (1.05)	1-5
19. Training program staff had good knowledge of the subject material	16	4.00 (0.73)	3-5
20. Training program staff facilitated independent practice and decision making with appropriate guidance	16	4.06 (0.77)	3-5
21. Training program staff helped trainees to develop professional confidence and competence	16	4.13 (0.81)	3-5
22. Training program staff provided supportive clinical supervision	16	3.88 (1.15)	1-5
23. Training program staff assisted trainees to relate theory and practice	16	3.88 (1.02)	1-5
24. Training program staff challenged trainees to think critically and problem solve	16	4.00 (0.82)	2-5
25. Training program staff encouraged trainees to ask questions and / or ask for assistance	16	4.00 (1.10)	1-5
26. Training program staff guided students to identify their own learning needs	16	4.06 (1.06)	1-5
27. Training program staff provided individual constructive feedback, identifying both	15	4.00 (0.93)	2-5

Item	Full sample		
	N	Mean (SD)	Range
strengths and weaknesses			
28. Training program staff were accessible when assistance was required	16	3.69 (1.14)	1-5
29. I would recommend this training program to others	18	4.00 (0.69)	3-5

Qualitative data confirmed that there were some challenges implementing the program. This was evidenced in that the full training program content was not available until April / May 2013 when most sites were six months into implementation; this made it difficult for implementation sites to understand the full scope of the training program. This delay also had an impact on the ability of participants to meet program requirements in a timely manner.

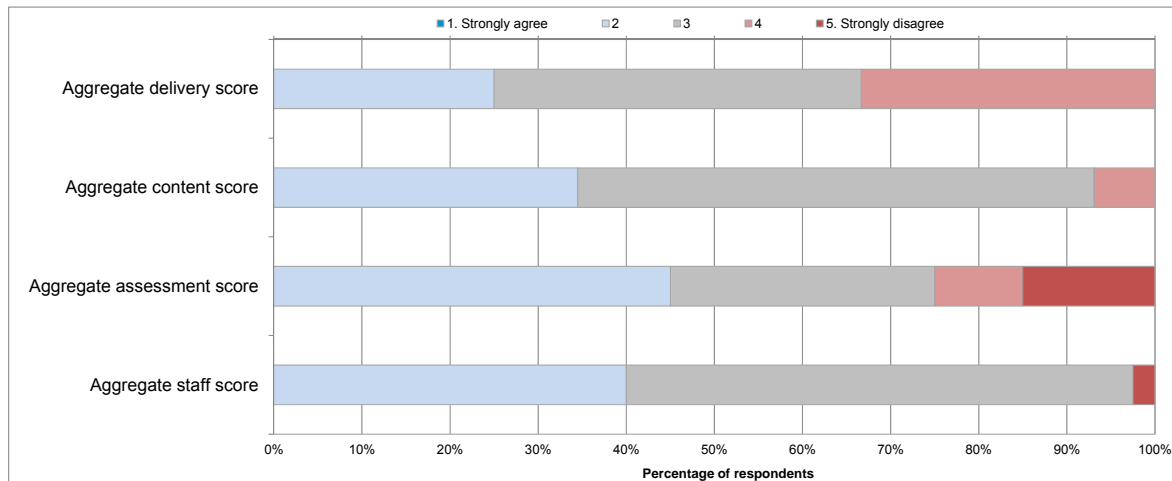


Figure 5 PED7 training sites aggregate domain scores

Figure 5 displays the total aggregate scores for the four domains for the PED7 training program. There was no strong agreement with any item in any domain.

The results displayed in Table 7 show that each item in all domains was rated less positively (as evidenced by the lower mean scores) for the PED7 training program. As the standard deviation shows there are diverse opinions amongst the four respondents.

Table 7 Descriptive statistics for PED trainee survey (PED7 training)

Item	Full sample		
	N	Mean (SD)	Range
1. The training program met my expectations	4	2.75 (0.50)	2-3
2. The training program was well organised	4	2.75 (0.96)	2-4
3. The objectives of the training program were clearly identified	4	2.75 (0.96)	2-4
4. Content was delivered in a logical manner	4	3.50 (0.58)	3-4
5. Training materials (work books, readings, handouts) were appropriate for my needs	4	3.00 (0.00)	3-3
6. There was an appropriate balance between theoretical and practical components	4	3.00 (0.82)	2-4
7. Content was pitched at a level appropriate to the expanded scope of practice role	4	3.25 (0.50)	3-4
8. Necessary equipment and resources were available to complete the training program	4	3.50 (0.58)	3-4
9. Techniques used to present material were appropriate for the training program	3	3.00 (1.00)	2-4
10. The training program provided for debriefing and / or clinical supervision	4	3.50 (0.58)	3-4
11. Learning through simulation assisted me to prepare for the expanded scope of practice role	2	3.50 (0.71)	3-4
12. Assessment tasks were relevant to the training program	4	3.00 (1.41)	1-4
13. The assessment requirements were clearly explained	4	3.00 (1.15)	2-4
14. The assessments were challenging and at an appropriate level	4	3.00 (1.41)	1-4
15. Assessment tasks were graded fairly	4	3.25 (0.50)	3-4

Item	Full sample		
	N	Mean (SD)	Range
16. Assessment feedback was timely	4	3.00 (1.41)	1-4
17. I was provided with accurate, timely information about the training program	4	3.25 (0.96)	2-4
18. I was informed of any changes within the training program in a timely manner	4	3.25 (0.96)	2-4
19. Training program staff had good knowledge of the subject material	4	3.50 (0.58)	3-4
20. Training program staff facilitated independent practice and decision making with appropriate guidance	4	3.50 (0.58)	3-4
21. Training program staff helped trainees to develop professional confidence and competence	4	3.50 (0.58)	3-4
22. Training program staff provided supportive clinical supervision	4	3.50 (0.58)	3-4
23. Training program staff assisted trainees to relate theory and practice	4	3.50 (0.58)	3-4
24. Training program staff challenged trainees to think critically and problem solve	4	3.50 (0.58)	3-4
25. Training program staff encouraged trainees to ask questions and / or ask for assistance	4	3.50 (0.58)	3-4
26. Training program staff guided students to identify their own learning needs	4	3.25 (0.50)	3-4
27. Training program staff provided individual constructive feedback, identifying both strengths and weaknesses	4	3.00 (0.00)	3-3
28. Training program staff were accessible when assistance was required	4	2.75 (1.26)	1-4
29. I would recommend this training program to others	4	2.75 (0.50)	2-3

Analysis of qualitative data supports the view that trainees had multiple concerns about the organisation and delivery of the program. For example, it was reported that there needed to be more engagement with clinical supervisors based in implementation sites to ensure there was full understanding about the clinical component to be completed in the ED.

Both training programs used mixed delivery modalities. The participants in the PED1 program found it challenging at times to work through the predominantly on-line program, this required self-direction and non-clinical hours for work based study, which were not consistently available. The participants in the PED7 program found attendance at the four study blocks, each of one week in duration, burdensome and saw opportunities to condense the face-to-face study. The majority of ESOP physiotherapists participating in the programs highly valued the mentoring opportunities with another member of the health care team.

3.3 Training timeline and time to completion of requirements

3.3.1 PED1

The PED1 training program accepted participants who met the recruitment and selection criteria for the ESOP physiotherapist role. Project teams have suggested review of the entry criteria as several participants were in the process of completing Masters programs. Given the additional work commitments to complete the ESOP-PED training pathway it is now thought that the program would be better suited to those who have finished a Master's program. This however would remove the value of pursuing the award of credit toward Masters programs for the training program. The extent of experience and qualifications of the ESOP physiotherapists engaged across the lead and implementation sites is reported in Table 4.

The competency-based learning and assessment program was expected to take 6-12 months to complete depending on the experience of the physiotherapist. Some questioned whether this was a realistic expectation, for example:

"...no-one's going to get independent in 12 months, from zero to 12 months because you're always going to be doing something different, you're always going to be pushing the scope of what your knowledge actually is and what you feel comfortable actually doing." (Stakeholder-Clinical lead)

Nine of the 25 trainees were awarded Recognition of Prior Learning (RPL) and at the end of the project (December 2013) five trainees had completed the clinical education framework with the

majority of others (13) on track to complete the training program. Twenty of the 25 participants enrolled part time and one trainee suspended their learning due to maternity leave. The delay in finalisation of the Clinical Education Framework, motivation required to progress through the self-directed learning modules and limited availability of non-clinical time for study adversely impacted the ESOP physiotherapists' ability to complete the training program. The majority of participating staff worked in the ED in a part-time capacity and reported that frequently their shifts did not align with those of their mentors which delayed assessment of competencies.

3.3.2 PED7

Eligible applicants applied directly to the University for admission as a standard postgraduate entry student, which was confirmed on establishment of a suitable supervisor.

At the commencement of the program the total numbers of enrolments from implementation sites was four. There were two additional students enrolled in the Graduate Diploma outside the HWA cohort. All participants studied a full-time load in addition to working full-time.

Unless recognition of prior learning (RPL) was awarded most participants required the duration of the University course to achieve competency. The estimate of time to complete the full training pathway was nine months. It commenced at the beginning of the academic year in March and was completed by the end of November 2013. ESOP physiotherapists had to ensure they had completed the necessary competency assessments which were included in the Clinical Skills Log-Book. ESOP physiotherapists reported that they frequently completed more competency assessments than required to ensure they felt confident.

"...everyone was very conscious of not tipping the apple cart too much so I think we had to be kind of better than competent before we would sort of want to be signed off...and acting independently." (PCP)

On completion of the program all four of the trainees involved in the ESOP sub-project successfully met program requirements, as did the other two students.

3.4 Scope, content and relevance

3.4.1 PED1

The PED1 training program design, content and resources were adapted from previous experience in implementing ESOP in MSK physiotherapy. Input from expert clinicians throughout the Victorian public health sector resulted in a flexible and adaptable training program that has the capacity to be tailored to meet the needs of individuals and organisations. The program has a clearly articulated learning pathway that has provided standardised education and assessment, relevant to meet the needs for expanding the capability of physiotherapy roles in the ED. The program is supported by robust documentation, including ten self-directed learning modules and supporting competency assessment tools. The program includes mentorship with each trainee assigned a mentor to support workplace learning.

The ESOP physiotherapists participating in this training program frequently referred to being 'overwhelmed' by the scale of the modules. For some the program was seen as too onerous and unrealistic in its expectations. It took some time before participants realised that they didn't have to be an expert in all aspects of the learning modules but identify the components that were pertinent to them and be guided by their mentor.

"It's really quite a big package, a competency package; really quite in depth. It was good at identifying holes in knowledge and giving you resources to be able to go back and build on those bits that you need to work on." (PCP)

3.4.2 PED7

The PED7 training program was developed as a result of integrating three bodies of work. This included a review of the national and international literature, establishment of a steering committee and gathering data from potential participants regarding preferred delivery modes. Contributions from these works and partnerships with the State/Territory jurisdiction, the International Centre for Allied Health Evidence at the University of South Australia and the University of Canberra resulted in the development of the program. The program was moderated externally prior to approval and while details of this were not available it was assumed that the University of Canberra applied robust approval and accreditation processes.

Delivery modes included face-to-face, online and supervised clinical practice utilising a clinical mentorship model. Face-to-face delivery included four one-week intensive sessions. Competency assessment used a tested credentialing tool from ACT Health. The ESOP physiotherapists participating in the PED7 training program found elements of the content quite specific to one State/Territory context and modifications were needed to address learning needs important for other jurisdictions. There was wide criticism of the content of most units of study. The most consistent criticisms related to the radiology module, particularly the lack of information about radiation safety. Participants described the course as 'ACT-centric' and felt that it had not been sufficiently adapted to account for differences in practice in other States and Territories.

"I just thought it was very much focused on one situation, it was very limited by its inability to actually look at what national best practice was. This is a big thing because it is a national program. Unfortunately they were teaching it to four different ED departments all with four different processes..." (PCP)

The pharmacology module was consistently rated highly and identified as a benchmark for how other units could be improved.

"The pharmacology was well structured, well delivered, well assessed and I walked away from that thinking "Yes, I know what to do about writing a prescription, I know about what's required and where you can get into trouble, I know what to do to look up about medicines if I need to find information and the ramifications of, you know, the interactions of different medications and that" If it was all structured like that, it would have been fine." (PCP)

3.4.3 Legislative barriers

PED7, in its capacity as a lead site, invested considerable energy in assisting implementation sites to understand and where possible address legislative barriers to the ESOP role.

According to the Australian Physiotherapy Association (2009) proposed new roles that include an expansion of current practice are regulated by "Acts of Parliament". These include the various Physiotherapists' Registration Acts, Poisons Acts and Radiation Safety Acts. Others relate to funding under the Pharmaceutical Benefits Scheme and the Medicare Benefits Schedule. This issue is complicated by differences in legislation between States and Territories and custom and culture. In order to extend a scope of practice to include prescription, injecting medicines, diagnostic procedures including ultrasound such as the content included in this program, legal barriers that sanction practice would need to be amended (e.g. the Medicines, Poisons and Therapeutic Goods Act (Regulation 30), Medicines, Poisons and Therapeutic Goods Regulations 2008 (Section 164), Medicines, Poisons and Therapeutic Goods Act 2008 (Section 37).

Differences in legislative requirements pose a risk to implementation outside of the legal jurisdiction of the education provider and have implications for program capacity, impact and

sustainability nationally. This may have some bearing on graduates' eligibility to be registered or have the qualification recognised at a local level.

3.5 Staff qualifications

3.5.1 PED1

The PED1 implementation sites each appointed a clinical lead physiotherapist to support the implementation of the training pathway. A position description was developed for this role. All sites except PED6 had a clinical lead with previous experience in advanced MSK physiotherapy services. In this facility the ED senior consultants were required to support the project by providing supervision and assessing clinical competencies of the ESOP physiotherapists. The clinical lead from the PED1 provided additional support with clinical assessment tasks. The qualifications and experience of the clinical leads was impressive as was their demonstrated commitment to ongoing professional development and competency based learning. The potential for the program to be recognised at a post graduate level and worthy of credit, would be strengthened by supporting clinical staff in scholarly activities and including quality measures such as teaching evaluations and appraisals.

3.5.2 PED7

The University of Canberra course involved seven specialist teaching staff in delivery of the units with diverse expertise in sports physiotherapy, pharmacy and physiotherapy. The limited information provided about the staff employed for specialist content precludes evaluative comment. Course participants did raise the possibility of employing other professionals with more relevant clinical experience for components of the injecting module.

"I think the clinical practice side of things like injecting and all of that need improvement because until there are lots of people doing these sorts of jobs, we're better off, I think, trying to recruit from other professions that have been doing it for years rather than trying to do it internally within our own profession." (PCP)

There has been a high level of engagement from medical staff in the mentoring process. It is unclear how the clinical staff were selected and prepared for education roles within the lead and implementation sites. The processes for clinical staff selection and preparation for supervisory and assessment roles should be addressed.

3.6 Facilities and resources

3.6.1 PED1

PED1 led the development of the online modules. These were well developed with clear learning objectives, expectations of prior knowledge, content to be covered and recommended resources. Supplementary learning resources provided by other educational institutions and/or professional associations were appropriately incorporated e.g. University of Melbourne, radiology module. The online design and hyperlinks to resources were reliant on effective internet and library access which was not consistently available to all participants. Further consideration should be given to access to resources for trainees in rural and remote locations.

Future development of learning materials needs to include a clear indication of the approximate time for completion and would be enhanced by including guidance on which sections are 'revision' as opposed to 'new content'. An overarching document that briefly orientates the participant to the learning materials and expected use would improve the functionality of each module. This context information was included in Module 2 but not consistently presented in the other modules. Simulation was not a component of the program. This may be of value in future iterations of the program, for example in developing skills associated with assessment and plastering, and may reduce the workload of supervising medical staff.

3.6.2 PED7

As a recognised and accredited education provider the University of Canberra provided a wide range of quality resources. These included teaching and learning spaces, access to research and clinical journals library, online learning management system (Moodle), simulation injecting kits and injecting consumables, and access to real time ultrasound imaging equipment. Twenty hours of simulation were included in the program to assist students develop confidence. This included soft tissue injecting practice and aspiration tasks. Good use was made of the HWA model library. There is scope for further simulation activities for example in assessment and plastering. The University Canberra is currently engaged in research surrounding simulation, modelling and clinical training and relevant findings may be incorporated in future offerings.

Criticism from implementation sites regarding the quality or absence of learning objectives in some units and limitations of large self-directed learning components (for example in the radiology module), raise questions regarding the quality of some course materials. An appraisal of unit outlines available online identifies the need for refinement of unit aims and learning outcomes.

3.7 Teaching and learning environment

3.7.1 PED1

The PED1 training program addressed the varying experience and educational background of the participants, through developing a learning needs analysis tool to comprehensively assess priority learning needs. This provided the framework for RPL and individualised teaching and learning programs. While the program makes provision for RPL there is a need to clarify the link between the learning needs analysis, RPL and establishment of the individual study plan. The analysis of learning needs is based on confidence as a measure of performance and it is questionable that trainee perceptions of confidence can be equated with competence. While the principles of assessment within the clinical education framework address this, how these are incorporated into the process of awarding RPL is unclear. There is a risk that the practice of awarding RPL may vary from organisation to organisation.

Participant evaluation of program materials indicates that the clinical education framework can be difficult to navigate. The materials are very detailed and the breadth of information while comprehensive may be overwhelming. There is a risk that participants may find this too arduous and not complete the program. The allocation of paid study leave varied amongst sites and in several instances, leave may have been allocated but staffing constraints meant that the physiotherapist could not be released. The variability of access to study time created significant pressures for trainees (particularly in smaller organisations) and resulted in the physiotherapists spending significant amounts of personal time to address study requirements.

ESOP physiotherapists identified that the ability to complete most of their learning within their own organisation was a significant advantage of the training program. This provided flexibility and facilitated links with both the ED and physiotherapy departments within their hospitals.

3.7.2 PED7

A significant strength of the PED7 training program was the involvement of medical staff which allowed trainees to undertake clinical training within the environment of their home ED. Release from the clinical environment to attend the four one-week intensive schools was a challenge for all implementation sites. Delay in providing information about the dates of the intensive on campus teaching sessions was problematic for participants. While information was provided within University timeframes, this was too late for students in clinical roles who were required to give several weeks' notice when making leave applications to enable backfill arrangements. The mentorship aspect of the program makes an important contribution to supporting students in practice. The success of this aspect of the program has been influenced by the availability of experienced staff to provide supervision and in-house training and assessment.

3.8 Assessment methods

3.8.1 PED1

The PED1 training program competency assessment schedule was extensive and provided a useful indicator of competence. There was some criticism of the need for physiotherapists with extensive experience to complete competency assessments. The expectation that all participants regardless of RPL should undertake competency assessment was appropriate. While trainees may have completed previous education, there is a need to demonstrate they have maintained the skill level required for the ESOP role. This should be considered when awarding RPL for course work in competency based programs. The development of a 'train the trainer' program for medical staff would strengthen the program by promoting consistency in assessment methods and outcomes.

Trainees criticised the large amount of time required to complete the required assessments. During interviews with ESOP physiotherapists and stakeholders concerns were expressed about the potential for bias. Assessment and workload pressures in smaller EDs on the medical mentor or consultant responsible for competency assessment posed a challenge.

"Keep it simple, make it easy for people to do what you want and be realistic about your resources in terms of who you're asking to do stuff and what the rest of their workload is..." (Stakeholder-Medical Mentor)

In order to provide assurances that competency has been demonstrated modes of competency assessments should be further considered. The Bondy (1983) clinical assessment rating scale has been modified to include pre-entry, supervision, independent and clinical lead levels of practice. While performance cues provide examples of trainee practice, there is insufficient information describing behaviours that allow assessors to differentiate between levels of practice, this could be addressed by extending the descriptors for the levels of practice to clarify expected levels of performance and guide assessors regarding requirements. The program document was moderated externally prior to approval. Extension of moderation practices to address inter-marker reliability would provide further assurances regarding reliability and validity of assessment outcomes.

The final assessment and award of the ESOP Certificate is completed locally and the successful candidates name is added to an internal list of qualified staff. The development team acknowledge that practices surrounding the award of the certificate may vary from organisation to organisation depending on local governance. Opportunities should be explored with the appropriate professional body to record and manage certification.

3.8.2 PED7

The PED7 training program review did not provide specific details regarding assessment procedures and the competency assessment framework. It is reported that a tested competency credentialing tool and clinical log book were used to record achievement. Criticism from implementation sites included poorly developed assessment and units without formal assessment raises questions about assessment practices. Representatives from implementation sites expressed concern that competencies assessed locally without any oversight of the university called into question assessment practices and the reliability and validity of assessment outcomes. Concerns relating to assessment could be addressed by including clear criteria and specifying marking criteria/ minimum level of practice to meet competency requirements.

Trainees shoulder the responsibility for establishing clinical supervision and 'must enter a contract with a clinical supervisor' who oversees and assesses clinical competence against standardised competency checkpoints in a clinical skills log-book. The University plays a role in approving a suitable mentor and needs to take an active role in clinical aspects of the program. If the program is to be recognised, and professional bodies assured that graduates have

attained competence at an extended scope of practice level, quality measures need to be implemented. This will ensure that clinical staff are prepared for supervisory and assessment roles and moderation extended beyond the University to include clinical practice. One student was awarded RPL; however the criteria for awarding RPL and the management of this process was unclear.

The University has identified that as the Australian Physiotherapy Association is not involved with post graduate education at this time that it will notify the Australian Health Practitioner Regulation Agency of successful graduates eligible to be recognised as an Extended Scope Physiotherapist. Due to the professional implications and the need for a nationally agreed standard for education at this level, consultation is needed with the Australian Physiotherapy Association and others (as appropriate) to establish appropriate processes for notification and credentialing.

3.8.3 Lead site role

Neither lead site had any form of formal agreement with their respective implementation sites. As a result the lead site had no authority over how implementation sites chose to implement the program and who was appointed to undertake assessments. Reference to adaption of competency assessment raises further questions concerning consistency in application of assessment processes and validity and reliability of assessment outcomes. Where lead sites are used in future initiatives it is strongly suggested that a Memorandum of Understanding or contract (as appropriate) is established and that the lead site has a clear role in overseeing key aspects of the implementation of the program.

These formal agreements should include information detailing agreed:

- Education provider staff responsibilities
- Clinical provider responsibilities
- Trainee responsibilities / scope of practice, supervision model, mentoring requirements and competency assessment needs
- Health and safety provision / restrictions

3.9 Modifications to the training program

3.9.1 PED1

While no major changes or modifications were made to the program, one implementation site modified the observation assessment check list by reducing the four-page document to one page. The rationale for this was the assessment was too time consuming for ED physicians to complete. The need to monitor and manage the impact of multisite delivery has previously been addressed. Several medical mentors recommended further input on assessing the undifferentiated patient. ESOP physiotherapists identified several areas that could be considered in subsequent iterations of the program including further information relating to:

- Paediatric X-ray interpretation
- Pathology
- Fracture and joint reduction
- Wound assessment
- Foreign bodies in eyes

The training program entry was linked to recruitment to the ESOP physiotherapist role and these recruitment criteria specified postgraduate qualifications. A clear distinction between program entry criteria and essential and desirable criteria relevant to the position is necessary, to optimise access to the program.

3.9.2 PED7

The lead site collaborated with the University of Canberra to implement changes to the curriculum to meet the needs of the cohort; this was primarily necessitated by different legislative boundaries in jurisdictions outside the ACT. There is evidence the program has been modified and additional content delivered (e.g. the radiology module was delivered completely online and students felt the online delivery needed to be supported with face-to-face training for the interpretation of imaging. Additional clinical input from an expert in orthopaedics was arranged to provide teaching on X-ray interpretation).

ESOP physiotherapists identified several areas for future inclusion:

- Wound assessment
- More about pathology (blood tests and interpretation of results)
- Medical management of related MSK conditions e.g. gout.

3.10 Training program sustainability

3.10.1 PED1

The Victorian Department of Health has maintained a close interest in the development of the Clinical Education Framework and contributed resources to this process. This jurisdictional engagement is likely to increase the potential for wider adoption of the ESOP-PED model of care and training program within this State. HWA has supported access to many of the learning resources through the development of a web-based ESOP-PED toolkit. While several implementation sites developed processes for allied health credentialing to recognise the ESOP physiotherapists completing the training program, there appears to have been limited progress in securing some form of broader professional recognition which was an ongoing source of frustration for most trainees.

“There needs to be some recognition of that assessment and I think that should be at a higher level than within your organisation, like a university thing and, given that the advanced practice framework which is the one that we’re following, is about to be rolled out by the Department of Health, the Victorian Department of Health. So I think that’s perhaps a solution.” (PCP)

3.10.2 PED7

The University of Canberra has committed to continuing to offer this small postgraduate specialty training program. For organisations without advanced MSK physiotherapy services, experienced physiotherapists, medical champions or other external support, additional funding would be needed to implement and support the program. Issues regarding scope of practice and program content that crosses legislative boundaries has been addressed previously. These have implications for program sustainability nationally.

3.11 Training program capacity and impact

The vast majority of training participants reported that the training programs developed their capacity and prepared them adequately for their role as an ESOP physiotherapist within the ED setting. There was a strong view expressed that having a good level of prior experience in MSK physiotherapy was integral to the capacity to work effectively in the role.

The HWA-funded ESOP-PED initiative has successfully implemented a training program to support the extension of the scope of practice for physiotherapists in EDs and demonstrated productivity gains by improving patient flow, decreasing waiting time for patients in the ED and meeting Key Performance Indicators for triage times by category and four hour waiting time. The impact of the role on ED performance is discussed in detail in Section 4.

3.12 Budget and expenditure

The cost of developing the PED1 training program has been difficult to quantify. This is because of the long development trajectory (which commenced before HWA funding) and the significant input of other physiotherapists and experts (including those at PED1) which was provided 'in-kind'. The lead site has attested to the enormous amount of work that developing a competency based package entails and the significant support needed for project teams in the early months of implementation. The costs for participants in the training program were met by their organisations and mostly included support with study leave and attendance at the University of Melbourne radiology module. The 'in-kind' costs of mentoring and clinical supervision have not been quantified. Implementation sites found the training program affordable.

The University of Canberra has not provided details relating to the cost of course development. The history of development of the ESOP physiotherapist role at PED7 attests to the significant investment made by both the hospital and ACT Health over several years. The cost for participants included the University course fee of \$18,000 which was met by their organisation in addition to support with study leave, attendance and back-filling of their position. Management representatives from implementation sites identified the cost of the training program as a significant barrier to future participation. The majority of ESOP physiotherapists were of the view that it did not represent value for money in its current form.

3.13 Summary and conclusions

The lead sites developed different training pathways with the intention of generating the same outcomes – physiotherapists competent to work in a primary contact context with MSK patients presenting to the ED.

3.13.1 PED1

The PED1 training program was designed to meet the learning and competency assessment requirements of ESOP physiotherapy roles. The program proved to be flexible, cost effective and adaptable which indicates its suitability for implementation in other hospitals and jurisdictions. However the program relies heavily on in-kind support and the allocation of non-clinical time so that participants can manage study requirements. Without an appropriately experienced clinical lead there are significant demands upon medical mentors to manage learning needs and assessment. Smaller EDs and physiotherapy departments would have difficulty sustaining the program because of these mentoring requirements and the need to establish a critical mass of ESOP physiotherapists to cover leave. The major limitation of the program is the link between the learning needs analysis and the establishment of a study plan for the ESOP physiotherapist, strengthening the link between these tools would help with identifying priorities for development. The inclusion of an overarching document that briefly orientates the participants to the learning materials in all modules would improve navigation through the modules. The inclusion of simulation in learning activities and competency assessment should be explored. The compilation of a resource manual with key references to improve access for practitioners with limited internet or library access would be a useful inclusion. Exploration of a partnership with a tertiary institution to facilitate the recognition and award of post-graduate credit would enhance the sustainability of the training program.

The training program has several strengths, it:

- provides a comprehensive, consistent and clearly articulated learning pathway for ESOP physiotherapy roles
- incorporates the principles of adult teaching and learning
- provides a standardised approach for education and assessment
- comprises content that is relevant and meets the needs for ESOP physiotherapy roles in ED
- uses a competency assessment framework and links with professional requirements

- includes modules with well-developed learning objectives, content and recommended resources
- appears flexible and adaptable to other contexts
- includes a mentorship model to support workplace learning.

3.13.2 PED7

The University of Canberra is well placed to offer this program and has a range of high quality teaching resources. The program is reliant on in-kind support from specialist physiotherapy and medical staff in clinical practice. Without advanced MSK physiotherapy service staff and mentor appointments to support and assist with managing learning needs and assessment, smaller physiotherapy departments would have great difficulty sustaining the program.

Feedback from participating organisations has raised issues about the structure of the program, delivery, content and assessment methods. Representatives from the majority of implementation sites indicated that in its current form it was difficult to recommend the program. The program has four one-week on campus intensive courses which may be challenging for participants in other States and Territories. Exploring opportunities to replace some face-to-face components with online offerings may address this issue to some degree. While it would appear that the impact of the ESOP has been positive, if this initiative were expanded, further consultation with physiotherapy, medical and nursing stakeholders would be required nationally.

According to the University of Canberra the Graduate Certificate and Graduate Diploma are recognised and transferable qualifications. While the Australian Physiotherapy Association encourage education providers to develop courses for physiotherapists that equip them with the appropriate skills and competencies to expand their scope of practice, the legislative barriers to core course components are likely to preclude their use in practice in the medium term.

While proposing that these qualifications should be recognised by the Physiotherapy Board of Australia and Australian Physiotherapy Council, and graduates registered with the Australian Health Practitioner Regulation Agency as eligible to practice within an extended scope of practice, acceptance of this and implications for offering a standardised post graduate qualification for this area of practice have yet to be addressed by regulatory authorities. Further consideration by both professional bodies and health institutions nationally is required and national standards for professional education for physiotherapy at this level formulated.

The training program has several strengths and:

- provides a co-ordinated training pathway for ESOP physiotherapy roles
- includes a clearly articulated learning pathway
- utilises resources to support the program that are of a high quality
- provides supplementary learning resources
- utilises a mentorship model to support workplace learning
- plans to convene a Course Advisory Committee to advise on course related matters
- employs staff with appropriate qualifications and experience.

3.13.3 Future development

Table 8 identifies opportunities for training program development applicable to both training pathways. These improvements would enhance program sustainability and prospects for wider implementation.

Table 8 Opportunities for training program development

Training component	Opportunities for improvement
Program content and structure	Provide an estimated indication of the approximate time to complete each program component
	Include content to reflect the unique demographics of certain populations (e.g. indigenous content and culturally safe practice)
	Enhance the clinical competency framework through extending descriptors for minimum levels of practice and ensure robust assessment criteria and processes
	Establish a more formalised structure to supervision / mentoring / learning sessions
Program delivery	Review pre-entry requirements
	Establish robust processes for RPL including assessment criteria
	Provide orientation and training to clinical leads and medical mentors to promote consistency in expectations and assessment outcomes
	Explore how non-clinical time to complete all learning elements of the program can be factored into workload
	Extend moderation practices to address inter-marker reliability
	Introduce quality measures such as teaching evaluations and appraisals for staff facilitating the program
	Address the availability of clinical mentors through joint or external staff appointments including the medical team
	Establish agreements/contracts for program delivery and processes between lead and implementation sites
Program scalability	Explore in partnership with the Australian Physiotherapy Association opportunities for credentialing and wider professional recognition of the role
	Support initiatives to remove legislative barriers to prescribing for the PCP role

4 Impact

4.1 Introduction

Sections 2 and 3 of this report have addressed the plain-language evaluation question, “What did you do?” Section 4 addresses the question, “How did it go?” It begins with a description of the activities of physiotherapists both within and outside the ESOP model. This addresses key questions around the numbers and types of patients seen, providing an essential context for the evaluation results. Findings on the impacts of the ESOP physiotherapy model are then presented, organised around the three levels of the evaluation framework:

- Level 1 – impacts on, and outcomes for, consumers (including carers);
- Level 2 – impacts on, and outcomes for, health care providers (including the physiotherapists themselves, other ED staff and key stakeholders); and
- Level 3 – impacts on, and outcomes for, the health system (in this case, focusing mainly on effects on participating hospital EDs).

This summative component of the evaluation seeks to ascertain whether the innovation achieved the desired results and to provide essential information to guide future planning decisions, policy and resource allocation. The desired results are partly defined as a set of Key Performance Indicators (KPIs) which were developed by the national evaluation team in consultation with HWA and sites. The national evaluation team created and/or adapted evaluation tools to address these KPIs and these are described in detail in the *Compendium of Data Requirements and Evaluation Tools* (Thompson et al., 2012b). Performance against each of the relevant KPIs is reported below.

Data collection and analysis activities have gone far beyond the KPIs, with the goal of providing a comprehensive overview of the program’s achievements, limitations, lessons learned and requirements for success. Data collection activities of the national evaluation team, in collaboration with the sites, have generated a vast quantity of data from a variety of sources, including administrative data sets, surveys and semi-structured interviews. This has allowed genuine triangulation of sources and has established a rigorous foundation for the findings reported below. The methods of the national evaluation are described in Appendix 2.

4.2 Activities of Primary Contact Physiotherapists

Gill and Stella (2013, pp.559) explain that physiotherapists have two distinct roles within Australian EDs: the secondary contact role which is the traditional role to assess and treat patients following a referral from medical staff; and more recently, the primary contact role to assess and treat patients instead of medical staff. Throughout this section, as with the whole report, the acronym SCP refers to patients treated by the secondary contact physiotherapist and PCP refers to patients treated by the primary contact physiotherapist.

A PCP directly assesses and manages their patient after referral from triage. An SCP treats their patient in the emergency department after the patient has been assessed by a medical staff member, who then refers the patient to the physiotherapist (Taylor et al., 2011, pp.107-108).

Three time periods for analysis of the ESOP-PED data have been defined as follows:

- Baseline was the period that reflected ‘usual care’ in the ED prior to the introduction of the HWA funded ESOP-PED model (Data Submission 1), the period 1 October 2011 – 30 September 2012.

- Implementation was the period when the HWA funded ESOP-PED model was implemented (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.
- Post-implementation was the period after HWA funding had ceased (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

PED1 had an existing ESOP-PED model in place prior to the HWA-funded implementation period (beginning in February 2008). Monthly performance at this site from February 2008 till September 2012 was analysed and showed a consistent improvement since project implementation. The baseline period was chosen to be consistent with the other PED project sites and is the period 1 October 2011 – 30 September 2012, however a continuation of the incremental changes is likely from this point given that the ESOP-PED model was well embedded. A similar analysis would have been applied to the other PED project sites with an existing ESOP-PED model (PED4 and PED7) but the necessary data to complete this analysis was unavailable.

For the implementation period there were several variations across the PED project sites:

- The PED project for PED2 was not implemented till February 2013; hence the implementation period for PED2 was the 11-month period 4 February 2013 – 31 December 2013.
- PED5 did not submit data for the period 1 October 2013 – 31 December 2013 (Data submission 3a) as its project funding ceased from 30 September 2013; hence the implementation period for PED5 was the 12-month period 1 October 2012 – 30 September 2013.
- The PCP role at PED8 operated in the ED for the 13-month period 1 October 2012 – 31 October 2013, however limited PCP data were provided for the month of October 2012; hence the implementation period for PED8 was the 12-month period 1 November 2012 – 31 October 2013.
- PED9 did not provide PCP data for December 2013; hence the implementation period for PED9 was the 14-month period 1 October 2012 – 30 November 2013.
- PED3 submitted its post-implementation data after the cut-off date; therefore these data could not be included in the analysis.
- PED5, PED8 and PED9 did not submit post-implementation period data.

There were a total of 608,553 ED presentations across all of the sites during the implementation period (Table 9). The volume of presentations ranged from a monthly average of 2,767 at PED2 to 5,997 at PED10. The ESOP PCPs treated a total of 14,512 cases, representing 2.4% of all ED presentations across all sites during this period. The largest number of PCP cases were seen at PED4, with 2,975 patients or 5.7% of that site's total ED presentations. The next highest volumes of ESOP cases were recorded at PED2 and PED1, with 4% and 2.9% respectively of all ED presentations at these sites seen by ESOP PCPs. At PED5, PED6, PED7 and PED8 the ESOP PCPs saw less than 2% of their site's total ED presentations. It should be noted that PED3 was unable to provide their paediatric data and it is estimated that this data represents 45% of their ESOP activity and 30% of their total ED activity.

Across all sites, the PCPs treated 7% of all triage category 5 presentations and just under 4% of all triage category 4 presentations. Less than 1% of all triage category 3 presentations were treated by the PCPs.

Table 9 **Total ED presentations by site and triage category – implementation period^a**

Site	Total ED presentations	No. of months	Monthly presentations ^b	Total PCP presentations		Monthly PCP presentations ^b
				#	% of total presentations	
PED1	74,252	15	4,950	2,127	2.9	142

Site	Total ED presentations	No. of months	Monthly presentations ^b	Total PCP presentations		Monthly PCP presentations ^b
				#	% of total presentations	
PED2	30,436	11	2,767	1,222	4.0	111
PED3*	43,682	15	2,912	1,176	2.7	78
PED4	51,851	15	3,457	2,975	5.7	198
PED5	53,488	12	4,457	728	1.4	61
PED6	53,312	15	3,554	590	1.1	39
PED7	84,655	15	5,644	1,533	1.8	102
PED8	59,364	12	4,947	744	1.3	62
PED9	67,563	14	4,826	1,625	2.4	116
PED10	89,950	15	5,997	1,792	2.0	119
Triage category						
Triage Category 1	5,029	-	359	1	0.0	0
Triage Category 2	69,181	-	4,942	59	0.1	4
Triage Category 3	229,567	-	16,398	1,238	0.5	88
Triage Category 4	252,382	-	18,027	9,505	3.8	679
Triage Category 5	52,236	-	3,731	3,657	7.0	261
Total^c	608,553	-	4,378	14,512	2.4	104

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b Monthly presentations are calculated as the monthly average number of presentations during the implementation period, specific to each site.

^c Missing/invalid Triage Category are included in the total (i.e. total is by site). A total of 158 records had missing/invalid Triage Category.

* PED3 was unable to provide their paediatric data and it is estimated that this data represents 45% of their ESOP activity and 30% of their total ED activity.

- An average of 14 months was applied to Triage Categories.

Table 10 shows the number of cases seen by ESOP physiotherapists for each site and triage category, including both PCP and SCP presentations. Just under 3% of all ED presentations were treated by an ESOP practitioner either in a primary or secondary capacity. Of the 16,914 cases, approximately 86% were seen by a PCP and 14% were seen by a SCP. The percentage of SCP cases ranged from around 2% at PED4 and PED9 to 41% at PED6.

Table 10 Total ESOP-PED presentations by site and triage category – implementation period^a

Site	Total ESOP-PED presentations		PCP presentations		SCP presentations	
	N	% of all ED presentations	#	% of ESOP-PED	#	% of ESOP-PED
PED1	2,616	3.5	2,127	81.3	489	18.7
PED2	1,519	5.0	1,222	80.4	297	19.6
PED3*	1,271	2.9	1,176	92.5	95	7.5
PED4	3,032	5.8	2,975	98.1	57	1.9
PED5	761	1.4	728	95.7	33	4.3
PED6	993	1.9	590	59.4	403	40.6
PED7	1,696	2.0	1,533	90.4	163	9.6
PED8	955	1.6	744	77.9	211	22.1
PED9	1,653	2.4	1,625	98.3	28	1.7
PED10	2,418	2.7	1,792	74.1	626	25.9
Triage category						
Triage Category 1	3	0.1	1	33.3	2	66.7
Triage Category 2	163	0.2	59	36.2	104	63.8
Triage Category 3	1,741	0.8	1,238	71.1	503	28.9
Triage Category 4	10,955	4.3	9,505	86.8	1,450	13.2
Triage Category 5	3,991	7.6	3,657	91.6	334	8.4
Total^b	16,914	2.8	14,512	85.8	2,402	14.2

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b Missing Triage Category are included in the total (i.e. total is by site). A total of 158 records had missing/invalid Triage Category.

* PED3 was unable to provide paediatric data and it is estimated that these data represent 45% of that site's ESOP activity and 30% of its total ED activity.

These figures are presented graphically in Figure 6 and sites are presented in descending order of the proportion of primary contact ESOP activity.

All following ESOP-PED analysis in this report includes PCP activity only.

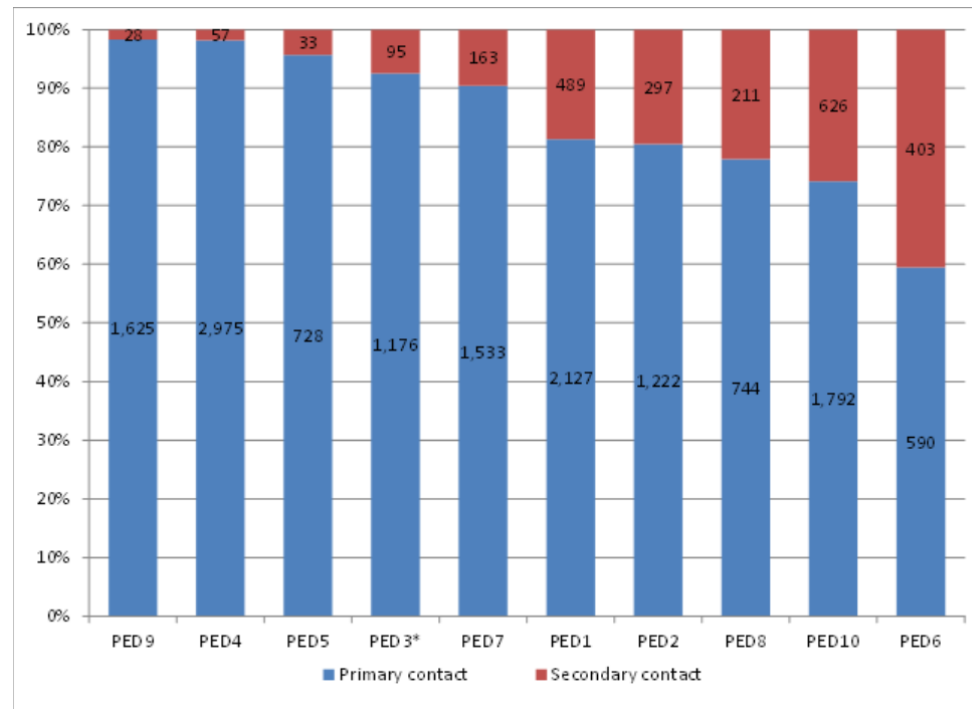


Figure 6 The proportion of primary and secondary contact ESOP activity by site – implementation period^a

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide paediatric data and it is estimated that these data represent 45% of that site's ESOP activity and 30% of its total ED activity.

The number of presentations seen in a PCP capacity each month during the implementation period (1 October 2012 – 30 September 2013) is presented in Figure 7 (PED1 lead site and implementation sites) and Figure 8 (PED7 lead site and implementation sites). These figures have not been adjusted for differences in workforce capacity.

PED1 was a lead site supporting the implementation in four sites (PED3, PED4, PED5 and PED6) as well as PED2. PED1 implemented a successful ESOP-PED service in 2008. As a result of the funding from HWA, weekday hours were increased to cover an extra 2.5 hours in the mornings and a Wednesday service was added. The ESOP-PED service commenced at PED2 on 4 February 2013 and operated from 9:30am – 6:00pm Tuesday, Wednesday, Friday – Sunday and one in four Mondays.

Due to ethics limitations, PED3 was unable to provide paediatric data. As a result, all PCP figures reported for PED3 only represent approximately 55% of that site's total PCP activity and all of ED figures represent approximately 70% of its total ED activity. The site's final report states that 1,859 patients were seen by the PCPs during the 12-month period 1 October 2012 – 30 September 2013, with a steep decline from that date, coinciding with the introduction of a 'split-flow' model into the ED. The new ED model included changes to triage processes, patient allocation and patient flow. In the first weeks following the introduction of the 'split-flow' model,

PCPs at this site noted that these changes affected their ability to see patients in a timely fashion.²

As a result of the HWA-funded project, existing PCPs at PED4 were able to expand their scope of practice and increase their clinical hours of service provision. PED3, PED5 and PED6 commenced the implementation of ESOP-PED services in October 2012.

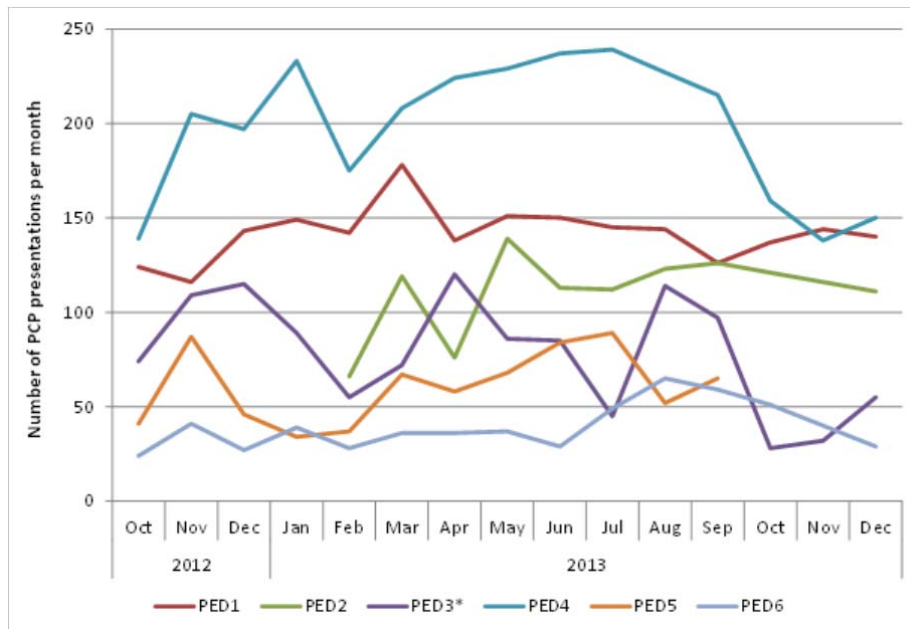
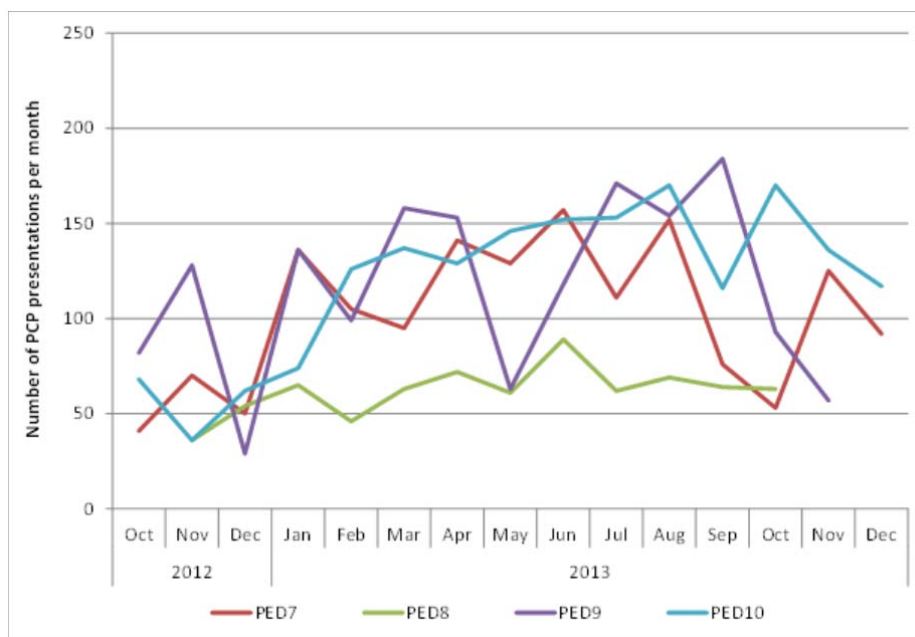


Figure 7 Number of PCP presentations during the implementation^a period: Lead site PED1 and implementation sites PED2, PED3, PED4, PED5 and PED6

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide their paediatric data and it is estimated that this data represents 45% of their ESOP activity and 30% of their total ED activity.



² PED3 Final Report December 2013

Figure 8 Number of PCP presentations during the implementation^a period: Lead site PED7 and implementation sites PED8, PED9 and PED10

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

PED7 already had a PCP service. Its model incorporated three levels of physiotherapy practice in the ED: secondary contact; primary contact services also known as 'advanced practice physiotherapy services'; and 'extended scope physiotherapy services'. The extended scope role most closely aligns to what is referred throughout this report as the Primary Contact Physiotherapist (PCP). PED7 employed one extra FTE PCP for ten months. However, the additional PCP was not available for clinic work for six weeks, which may explain the lower number of PCP presentations for PED7 during December 2012 and October 2013.

PED8 had an ED physiotherapy model of care in place. HWA funding allowed the introduction of the HWA-funded project which sought to extend the existing model of care. The full-time physiotherapist already based in the ED undertook training and subsequently functioned as a PCP. HWA funds were also used to employ an In-Scope Physiotherapist role which operated in a secondary contact role in the ED for 13 months (1 October 2012 – 31 October 2013). This position was part of PED8's succession planning strategy as they were developing the expertise of another experienced physiotherapist in the ED setting. Data collection commenced in November 2012, which explains the very few cases reported for October 2012.

The low points in PED9's data appear to reflect periods of leave. The PCP at this site participated in the University of Canberra training pathway which required attendance at residential study blocks. There were eight weeks of leave in total during the implementation period and five of these were not covered or 'back-filled' at all, with limited cover for the remaining three weeks due to the replacement physiotherapist's lack of expanded scope training.

4.3 Impact on consumers

The evaluation framework included one KPI for consumer impacts. High levels of consumer satisfaction and experiences with ESOP physiotherapy services (KPI 1.8) were expected; this was assessed using a survey. The national evaluation team developed a survey tool and provided support for implementation, including calculation of target sample sizes to maximise statistical power.

4.3.1 Patient survey

Consumer impacts were assessed using a 24-item patient survey tool, the 'Patient experience and satisfaction survey' (Thompson et al, 2012b). The first 16 questions were based on a validated questionnaire used in research for patient experiences of emergency or pre-hospital care (Cherkin, Deyo and Berg, 1991) and were answered on a Likert-type scale from (1) *Strongly agree* to (5) *Strongly disagree*. Scores were reversed before analysis. Questions on satisfaction with time to be seen and care received from the ESOP physiotherapist were adapted from a questionnaire designed for ambulance services (Kapulski and Bogomolova, 2011). The key measure of overall patient satisfaction was a single item asking respondents to circle a number reflecting their overall experience on an 11-point visual analogue scale. This item was obtained from the United Kingdom National Health Service Accident and Emergency Questionnaire (NHS, 2012). The remaining questions collected basic demographic data. Most sites, with the exception of PED6, used this tool, with some slight alterations for local contexts. To encourage participation by the many Indigenous patients at PED6, the survey was shortened and the response scale simplified to three points. In addition, a specially designed interview schedule was used with some patients at PED6.

Surveys took place in late 2013 and early 2014. All sites had ethics approval. At most sites, patients were given a printed copy of the surveys and asked to complete it and place it into a sealed box in the ED. A few administered the survey via Survey Monkey on iPad. Surveys were

completed anonymously. To avoid biasing the findings, sites planned to adopt a census approach by issuing surveys to all consecutive patients until the target number was reached. However, this was not always possible due to working constraints. For the same reason, response rates were not reported by all sites and varied widely from 38% at PED10 to 95% at PED8.

A total of 494 questionnaires were returned with signed consent forms. Of these, 60% were from sites using the PED1 model. About one fifth of respondents had been treated at lead sites. Most respondents were patients; 76 were relatives or carers. The average age was 34.3 years (SD 16.5 years, range 4 to 91) and 46.5% of respondents were female. The vast majority (95.7%) had not previously presented to an ED with a similar problem.

Data screening removed 17 cases where it was apparent that errors had been made in completing the survey, leaving 477 for analysis. The numbers (and valid percentages) of respondents from each site were as follows: PED1, 53 (11.1%); PED2, 52 (10.9%); PED3, 50 (10.5%); PED4, 62 (13.0%); PED5, 35 (7.3%); PED6, 35 (7.3%); PED7, 38 (8.0%); PED8, 37 (7.8%); PED9, 49 (10.3%); and PED10, 66 (13.8%).

Results

Figure 9 shows responses to each of the first 16 items on the survey for all sites except PED6 (n ranged from 418 to 439). Patient reports of their experiences were overwhelmingly positive. More than 90% of respondents strongly agreed that the physiotherapist listened carefully, believed their problems were real and seemed comfortable dealing with their problems. A further eight items elicited strong agreement from more than 80% of respondents, and the remaining five items had at least 70% of respondents strongly agreeing with the statements. Comparing across all the items, patients were a little less positive about the information provided on how to prevent future problems and how long it would take to recover (9.8% and 7.8% respectively were uncertain, disagreed or strongly disagreed). Twenty-seven patients (6.9%) disagreed or were unsure that the treatment had been effective.

Very high levels of satisfaction were reported with the waiting time. A total of 316 respondents (72.6%) were very satisfied with the time it took to be seen by the physiotherapist, and a further 92 (21.1%) were satisfied. Only four (less than 1%) were dissatisfied or very dissatisfied. Patients were also happy with the care they received, with 368 (84.4%) saying they were very satisfied and a further 65 (14.9%) satisfied, and no patients reporting dissatisfaction with care. Three quarters of respondents (355, 75.6%) rated their overall experience of the ED as 9 or 10 out of a possible 10.

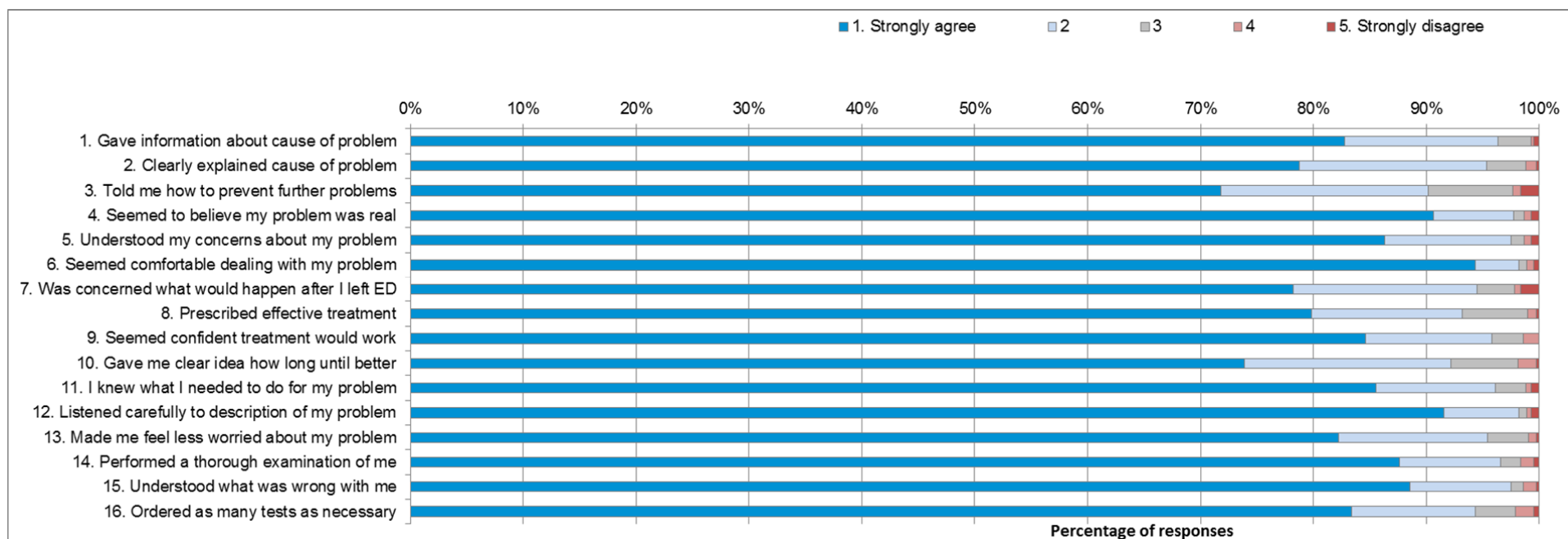


Figure 9 Responses to PED patient experiences and satisfaction survey (all sites except PED6)

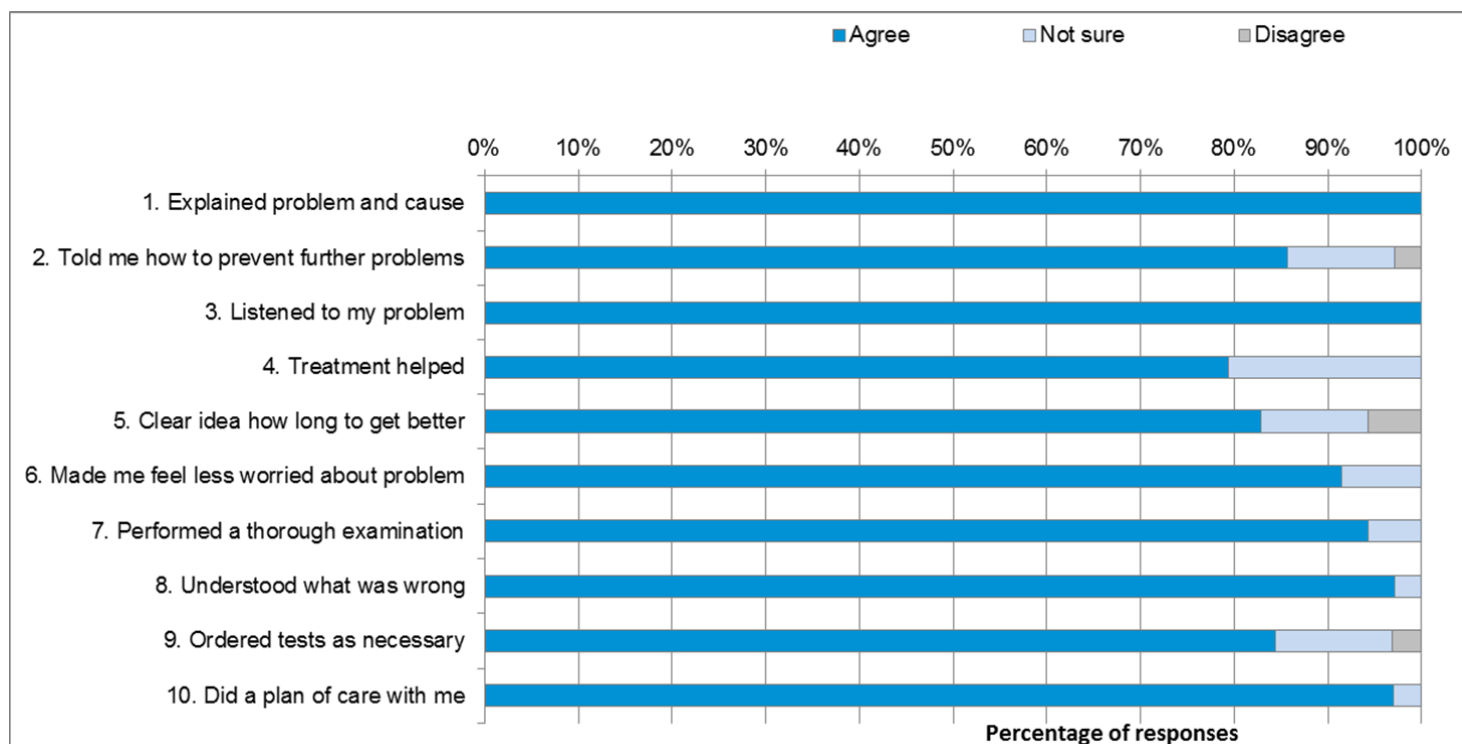


Figure 10 Responses to PED patient experiences and satisfaction survey, PED6

Figure 10 shows responses to the first 10 items on the modified survey used at PED6 (n ranged from 33 to 35). As for the other PED sites, patients were overwhelmingly positive about the service they received. All respondents agreed that the physiotherapist had listened carefully and had clearly explained the problem and its cause. More than 90% agreed that the physiotherapist had performed a thorough examination, understood what was wrong, reassured the patient and developed a care plan. Seven patients were unsure whether the treatment had helped, and six were either unsure or disagreed that they were given a clear idea how long it would take to recover from their problem. Responses to these items appeared consistent with the patterns observed in the larger data set from the other sites. All except one of the 35 patients at PED6 rated their overall ED experience as 8, 9 or 10 out of 10.

For the survey at PED6, 13 of the 16 respondents rated their overall experience as 5/5 and no respondents gave a rating lower than 3/5. The ESOP physiotherapists were described frequently as friendly, professional, helpful, courteous and thorough and almost all respondents spontaneously told the interviewer how happy they were with the service they received. Many were able to describe their treatment and management plans. Patients appreciated being given information about why they were seeing a physiotherapist rather than a doctor, and understood the difference between an illness and an injury. They also acknowledged the detailed information provided by the physiotherapist on their condition, its diagnosis and management plan. Finally, when asked what they liked about the care they received in the ED, almost all the patients referred to the shorter waiting time. Overall, the telephone interview data portrayed a very positive snapshot of patient experiences and highlighted aspects of the service that patients particularly valued. The study was limited by self-selection into the survey (as patients who had poorer experiences may not have agreed to be interviewed) and by inability to engage Aboriginal patients in the evaluation, despite efforts to design and conduct the survey in a culturally appropriate manner.

Factors that might affect patients' experiences include the model of care and characteristics of the site itself, including whether it was a lead or implementation site. Independent samples Mann-Whitney U-tests were used to check for differences in responses according to which model was used at the site and whether the site was an implementation or lead site. Patients' experiences and satisfaction did not vary depending on which model of care they received, or whether they were treated at a lead site versus an implementation site.

Kruskal-Wallis tests showed that certain sites consistently received lower experience ratings. PED4 was ranked among the lowest group of sites for five experience items and two satisfaction items, PED5 was among the lowest ranked for four experience items, while PED7, PED1, PED2 and PED10 were each among the lowest ranked for three experience items. Overall satisfaction ratings were highest for the PED1, PED6, PED3, PED8, PED10 and PED9 sites.

To identify the key factors that most strongly predicted overall satisfaction with the ED experience, variables were entered into a multiple regression analysis. Because overall satisfaction varied according to gender, this was controlled for in the first step. Satisfaction with the time to see the physiotherapist and with the physiotherapy care received (items 17 and 18) were entered in the second step, followed by the 16 experience items in the third step. The final equation explained 67% of the variance in overall satisfaction, F change = 11.08 ($df = 16, 335$), $p < .001$. The single strongest predictor of overall satisfaction was satisfaction with time to be seen by the physiotherapist ($\beta = .46$, $p < .001$), followed by two items that measured experiences of caring and reassurance: reducing the patient's worry (item 13, $\beta = .23$, $p < .001$) and believing the patient's problem was real (item 4, $\beta = .22$, $p < .01$). Satisfaction with the care provided by the physiotherapist also positively predicted overall satisfaction with the ED experience ($\beta = .11$, $p < .01$). Two items were negatively related to overall satisfaction: listening carefully to the patient (item 12, $\beta = -.31$, $p < .001$) and understanding the problem (item 15, $\beta = -.13$, $p < .05$).

Patient survey conclusions

On the whole, patients were extremely positive about their experiences of care under the PED sub-program. They were particularly pleased with the physiotherapists' manner: they felt they had

been listened to, their problems were understood, and the physiotherapists were comfortable and competent in dealing with their problems. The least positive responses related to recovery: a small group of patients felt more information could have been provided on how to prevent future problems and how long it would take to recover, suggesting some areas for possible improvement. Nevertheless, almost without exception, patients were satisfied or very satisfied with the care they received. There were also high levels of satisfaction with the time taken to be seen by the physiotherapist, and with the overall ED experience. Overall satisfaction was predicted by satisfaction with the waiting time and care received, and by a number of aspects of patient experience, especially caring, listening and reassurance.

The two models of care trialled in the PED sub-program received similar ratings for patient experiences and satisfaction. Ratings did not differ significantly according to whether the respondent was treated at a lead or implementation site, but there were differences among sites for some items. Findings from PED6, which used a modified version of the questionnaire, were very similar to those for the majority of respondents from other sites. Qualitative data from interviews at this site provided insight into aspects of the service that were particularly valued by patients, such as the physiotherapists' professional and courteous manner, the thoroughness of examination and treatment, the information and education provided, and the timeliness of the service.

4.4 Impact on providers

Three KPIs in the Evaluation Framework addressed the impact on providers. The turnover rate for ESOP physiotherapists (PED 1.2) was used as an indicator, along with a survey and interviews that explored their experiences and satisfaction with the role in greater depth. Attitudes of other stakeholders, particularly staff working alongside the ESOP physiotherapists, were measured using a staff survey tool developed by the national evaluation team. In addition, semi-structured interviews were conducted in the later stages of the program to assess perceptions of the impacts of the ESOP physiotherapist role on key stakeholders including medical and nursing staff, other allied health practitioners and managers in the ED.

4.4.1 Primary Contact Physiotherapists' views of the role

Two data collection methods were used to elicit the experiences and opinions of people working in ESOP roles. These staff members were given the opportunity to complete the 'ESOP personnel survey' and were also interviewed by the national evaluation team at the close of the program (Thompson et al., 2012b). Their responses provided valuable insights into the effectiveness and efficiency of the model of care, including relationships with other staff and consumer acceptability. Their views on role satisfaction and sustainability are included in Section 6.

ESOP practitioner questionnaire

The same survey tool was used by all personnel across the four Expanded Scope of Practice sub-projects, hence a certain level of generality was necessary, which is why respondents were asked to consider their overall experience. Items are listed in full in Table 11 with the results.

Table 11 Descriptive statistics for ESOP personnel survey items

Item	Full sample		
	N	Mean (SD)	Range
1. Staff have a good understanding of my new role & functions	25	4.24 (0.60)	3-5
2. Other key stakeholders have a good understanding of my new role & functions	25	4.08 (0.70)	3-5
3. My professional skills & expertise are acknowledged by other staff	25	4.52 (0.59)	3-5
4. Staff have a good understanding of how my skills & expertise differ from other nurses	25	3.80 (0.76)	2-5
5. Staff have a good understanding of the educational preparation required	25	3.32 (0.95)	1-5
6. Staff acknowledge that I have the skills & knowledge to provide appropriate care	25	4.36 (0.64)	3-5
7. Staff acknowledge that I have the skills & knowledge to provide education & information	25	4.56 (0.58)	3-5
8. I feel confident that I have the skills & knowledge to provide appropriate care	25	4.60 (0.50)	4-5
9. I feel confident that I have the skills & knowledge to provide education & information	25	4.76 (0.44)	4-5
10. Changes to practices, protocols & policies helped me implement my expanded role	24	4.17 (0.76)	3-5
11. Changes to attitudes & beliefs in my work place helped me implement my expanded role	25	4.12 (0.67)	3-5
12. I feel confident dealing with patients in my expanded role	25	4.52 (0.59)	3-5
13. Patients are comfortable that I have the skills & expertise to provide appropriate care	25	4.48 (0.51)	4-5
14. My expanded role makes the service where I work more effective	24	4.67 (0.56)	3-5
15. My expanded role improves access to emergency care	24	4.54 (0.66)	3-5
16. My expanded role improves quality of care for specific patient groups	25	4.92 (0.28)	4-5
17. I am comfortable approaching other staff for advice regarding patient management	25	4.80 (0.41)	4-5
18. Appropriate personnel are available to supervise / mentor me whenever needed	25	4.36 (0.76)	2-5
19. I am satisfied with my expanded role & feel it has enhanced my career	25	4.52 (0.71)	3-5
20. I am planning to stay on in my expanded role for the foreseeable future	24	4.00 (1.06)	1-5

There was a response rate of 86% (25 out of 29 ESOP physiotherapists across all sites). Figure 11 shows responses to each of the 20 survey items for all sites (24-25 responses were received for each item).

The views of ESOP physiotherapists of their experiences working in the ESOP role were particularly positive. The very high level of agreement with the majority of statements from respondents indicates their very positive experiences and perceptions of the role.

Respondents most strongly agreed with the statement that their ESOP role improved quality of care for specific patient groups, with 23 respondents strongly agreeing and the other two agreeing (item 16, mean = 4.92).

Disagreement was expressed with only four items. One respondent strongly disagreed and three disagreed with the statement that other staff had a good understanding of the educational preparation required to undertake the role (item 5, mean = 3.32). A few respondents also disagreed that other staff fully understood how their skills and expertise differed from other physiotherapists in the ED. Mentoring and retention in the role were other sources of disagreement, but only by very few respondents.

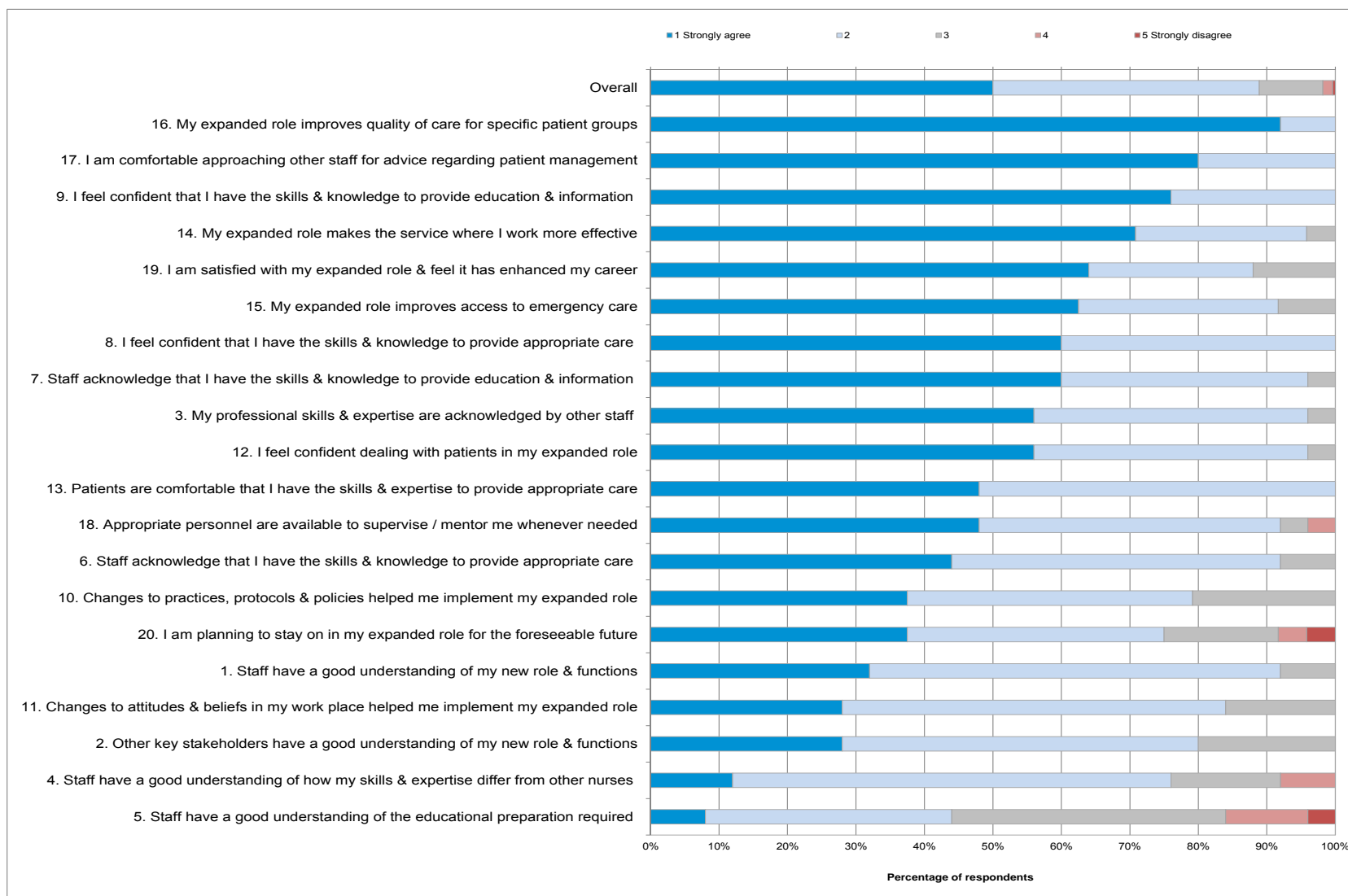


Figure 11 Experience of PCPs (n = 25, sites = 9)

Two respondents made additional comments that were relevant to the issue of efficiency and effectiveness. One stated that although established ED staff members were well aware of the skills PCPs have and the contribution they make to patients with MSK problems, medical staff from specialist units and rotating junior medical staff were often unaware of the role (which was said to be a common problem for all allied health professionals). Similarly, another respondent noted that rotating junior medical staff were not well educated about the PCP service, which caused difficulty as interns rotate every 10 weeks and registrars every six months.

4.4.2 Turnover and retention of ESOP physiotherapists

In their responses to the ESOP personnel survey, 75% of respondents agreed or strongly agreed that they planned to “stay on in the role for the foreseeable future”, and about 8% disagreed or strongly disagreed. One respondent commented that they were unable to stay in the role as funding had ceased. These data on the intentions of PCPs are consistent with information obtained from the sites’ progress and final reports. There was limited turnover amongst the PCPs during the program, with one leaving to pursue medical studies and another two finishing with their project at the end of the implementation period.

4.4.3 Staff and key stakeholder views

Other ED staff and key stakeholders were given the opportunity to express their views on the effectiveness, efficiency, quality and safety of the ESOP model of care via the ‘Staff experience survey’ and key stakeholder interviews (Thompson et al., 2012b).

All PED sites used a 20-item version of the survey for non-ESOP personnel, adapted by the national evaluation team from a questionnaire used in a published evaluation of the impact of a workforce innovation on other staff members (Considine and Martin, 2005). The first 19 items were scored on a Likert-type scale from (1) *Strongly agree* to (5) *Strongly disagree*. Scoring was reversed before analysis. Exploratory factor analysis resulted in three, highly reliable sub-scales: Understanding (6 items, $\alpha = 0.93$), Contribution (9 items, $\alpha = 0.96$) and Medication (2 items, $\alpha = 0.79$). These were very similar to the sub-scales found in the original study, even though that focused on a different workforce innovation (nurse practitioners in an ED setting; Considine and Martin, 2005). Two other items were used separately to measure attitudes to imaging and supervision. The final question asked for “any other comments”.

Data were collected in late 2013. All sites received ethics approval. Support was provided by the national evaluation team, including a draft participant information sheet, guidelines for administering the survey, an online version and spreadsheets for data entry for those who preferred to use a paper version. Response rates were: PED1 and PED2, 61%; PED3, 23%; PED4, not reported; PED5, not reported; PED6, 34%; PED7, not reported; PED8, not reported; PED9, 40%; PED10, 16%. Further information on the tool and methods are available on request.

A total of 386 non-ESOP staff and stakeholders responded to the survey. The largest group of respondents were medical staff (174, 45.1%), followed by nursing staff (160, 41.5%), allied health (29, 7.5%) and “non-clinical” or “other” (18, 4.7%); five (1.3%) left this question blank. One quarter of responses were from lead site staff and just over half (53.4%) were from sites using the PED1 model. Numbers (and valid percentages) of respondents from each site were as follows: PED1, 66 (17.1%); PED2, 43 (11.1%); PED3, 27 (7.0%); PED4, 11 (2.8%); PED5, 17 (4.4%); PED6, 42 (10.9%); PED7, 30 (7.8%); PED8, 52 (13.5%); PED9, 61 (15.8%); PED10, 37 (9.6%).

Results

Figure 12 shows responses to each of the first 19 items on the survey. Overall, understanding and acceptance of the primary contact or extended scope of practice physiotherapist role in ED was very high among other staff members. Of note are the very high levels of endorsement for items concerning the impact and benefits of the PCPs’ role (items 15-18). More than 80% of

respondents agreed or strongly agreed with the statement for 13 of the 19 items. There was very little disagreement; for all but two of the items, less than 5% of the sample strongly disagreed with the statement. The exceptions were items 6 and 12. Around one in ten respondents strongly disagreed with the statements regarding understanding educational requirements and physiotherapists' authority to prescribe medications. These two items also had the highest proportion of respondents who disagreed or were unsure. Less than half the respondents agreed that they fully understood the educational requirements. While 64% agreed or strongly agreed that the physiotherapist had the skills and knowledge to prescribe medication from a limited formulary, only 44% agreed they had the authority to do so. This is not surprising as prescribing or administration of medication was not part of the scope of practice for most sites (PED9 secured permission to prescribe and administer medication towards the end of their project).

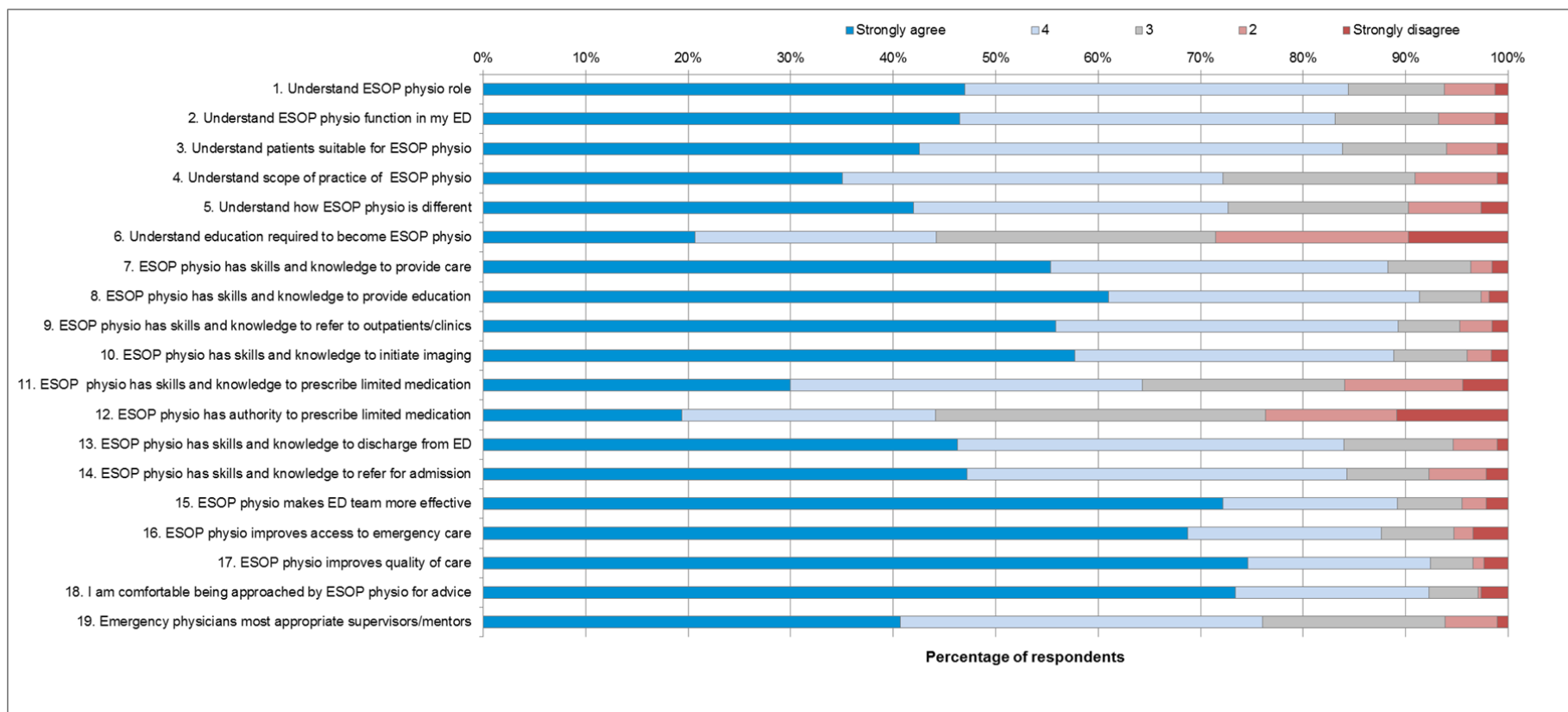


Figure 12 Responses to PED non-ESOP staff survey

Independent samples Mann-Whitney U-tests were used to check for differences in responses according to which model was used at the site and whether the site was an implementation or lead site. There were no systematic differences in responses across the two ESOP-PED models of care. There were, however, differences between lead and implementation sites in how they responded to the survey (see Table 12).

Table 12 Responses by lead versus implementation sites, HWA-PED

Sub-scale or item	Site	N	Mean (SD)	Mean rank	Mann-Whitney U
Contribution					
	All	385	4.43 (0.75)		
	Lead	96		173.76	12024.50*
	Implementation	289		199.39	
Understanding					
	All	385	3.98 (0.86)		
	Lead	96		166.49	11327.50**
	Implementation	289		201.80	
Medication					
	All	367	3.52 (1.08)		
	Lead	94		159.95	10570.50*
	Implementation	273		192.28	
Imaging skill					
	All	376	4.41 (0.85)		
	Lead	95		154.04	11529.50*
	Implementation	281		199.99	
Supervision					
	All	376	4.10 (0.94)		
	Lead	94		194.97	10015.50***
	Implementation	282		177.01	

*p<.05, **p<.01, ***p<.001

The differences in mean ranks show that implementation sites were more positive about the program overall than were lead sites. Respondents from implementation sites were more likely to understand the role and function of the PCP, to agree that the PCP contributed positively to the ED team, and to endorse items relating to skills and authority to prescribe medication and skills and knowledge to initiate imaging. Implementation site respondents were also more likely than lead site respondents to agree that emergency physicians were the most appropriate personnel to supervise and/or mentor PCPs.

Independent samples Kruskal-Wallis tests were used to check for differences according to the respondents' professional affiliations. To assist interpretation, specific job roles were allocated to four categories: nursing, medical, allied health and other. Respondents from these four professional affiliations did not differ in their opinions about the contribution of the PCP, their skills and authority to prescribe medication, the most appropriate supervisor, or their skills and knowledge to initiate imaging. They did differ in the extent to which they understood the PCP role and functions (Table 13).

Table 13 Responses by professional affiliation, HWA-PED

Sub-scale or item	Profession	N	Mean (SD)	Mean rank	Chi-square
Contribution	All	385	4.43 (0.75)		
	Nursing	160		204.88	5.82
	Medical	174		178.37	
	Allied Health	29		196.90	
	Other	17		168.47	
Understanding	All	385	3.98 (0.86)		
	Nursing	160		201.88	11.66**
	Medical	174		177.16	
	Allied Health	29		233.78	
	Other	17		146.09	
Medication	All	367	3.52 (1.08)		
	Nursing	155		185.25	0.56
	Medical	172		181.41	
	Allied Health	23		183.26	
	Other	14		164.29	
Imaging skill	All	376	4.41 (0.85)		
	Nursing	155		197.42	7.32
	Medical	172		176.51	
	Allied Health	29		207.37	
	Other	15		152.84	
Supervision	All	376	4.10 (0.94)		
	Nursing	156		189.58	1.79
	Medical	173		187.27	
	Allied Health	27		163.17	
	Other	16		178.60	

*p<.05, **p<.01, ***p<.001

Mean ranks indicate that the allied health and nursing staff had the strongest understanding of the PCP role and function, as could be expected. Non-clinical and other staff members, who were presumably more removed from the day-to-day working of the ESOP model, had the least understanding. Allied health and nursing staff also had the highest opinions of the PCPs' skills and knowledge about imaging; this difference was marginally non-significant, $p=.062$.

Qualitative analysis

A total of 140 respondents chose to make additional comments. Of these, 66 were nursing staff (primarily registered nurses), 30 were emergency consultants, 21 were emergency registrars and seven were residents or interns. Five allied health staff contributed comments, and the remainder left this question blank or described themselves as "non-clinical" or "other".

The vast majority were positive in their assessment of the value of having a PCP on the ED team; in fact, the words "invaluable", "valuable", "valued" and "asset" appeared frequently throughout the comments. The main positive themes arising from the data were the PCPs' expertise and their role in providing education and advice both to patients and to other staff, including junior doctors. There was also a perception that the physiotherapists' presence resulted in faster patient flow through the ED, particularly in fast track, and helped relieve workload pressures.

Comments about the PCPs' expertise often appeared alongside comments on their educational role, indicating these issues were strongly related. The PCP was seen by many respondents as a useful resource who could provide the most appropriate management of particular patients as well as impart knowledge to other members of the ED team.

“They offered extremely specialised advice and their experience with working with musculoskeletal injuries over the years exceeds my own – they have looked after the patients both for acute and chronic injuries and can offer unique insights into what to expect in terms of recovery. Also their knowledge about strapping and exercises is fantastic and reduces the need for analgesia...” (Stakeholder-Emergency Registrar)

“[Having a PCP in the ED] has definitely improved the X-ray requests coming through for basic extremity cases. The physiotherapist’s increased knowledge of fractures and mechanisms of injury has improved the patient’s process through the ED department, with many more relevant requests and many diagnoses have been made that might have been missed without [their] input.” (Stakeholder-Allied Health)

“... have been a great source of knowledge to me as a ED Resident Medical Officer in teaching me the basics and more intricate concepts of musculoskeletal presentations.” (Stakeholder-Emergency Consultant)

“... provide timely advice for junior doctors for best management of musculoskeletal problems.” (Stakeholder-Nurse Practitioner)

A few respondents expressed concerns that junior doctors would miss out on exposure to this group of patients and would therefore fail to develop skills in treating these presentations. One suggested that this “possible downside” could be addressed through increased direct teaching to the junior staff.

In general, the care provided by PCPs was regarded as extremely high quality and beneficial for individual patients.

“... they help us to provide more effective and holistic care...” (Stakeholder-Registered Nurse)

“I have received informal feedback from many patients who have been seen by the [PCP] as to the high level of care they provide...” (Stakeholder-Emergency Registrar)

“... patients can go home with a lot more things in place than before.” (Stakeholder-Registered Nurse)

“... [having a PCP in ED] was useful to facilitate patient discharge and provide optimum treatment for musculoskeletal problems.” (Stakeholder-Emergency Registrar)

Being able to allocate specific patients to the physiotherapist for management reduced waiting for those patients and contributed to a sense of greater overall efficiency in the ED. Numerous respondents asserted that having the physiotherapist on the ED team had improved patient flow, reduced waiting and helped meet NEAT. Registered nurses and junior doctors were especially appreciative of the physiotherapists and felt they had had a positive impact on workloads and patient flow.

“Better care than most doctors could give and makes triage much less stressful.” (Stakeholder-Registered Nurse)

“They provide excellent care to the relevant patients and make a positive difference to the workload.” (Stakeholder-Resident/Intern)

However, not all respondents were convinced that the PCP role was the most efficient use of limited resources. Limits on the scope of practice meant that patients who turned out to have more complex presentations than initially thought, had to be referred on to medical staff, requiring re-assessment and diagnosis. Many of these respondents agreed that having a

physiotherapist in the ED was important or indeed essential, but questioned the effectiveness of the primary contact model.

“... overall ‘access’ to emergency care is unchanged – timely access might be improved but at some cost. The total independence [of PCP] is overstated and I would like to see some measurement of what proportion of patients received advice / review / treatment / handover to a medical doctor. ” (Stakeholder-Emergency Consultant)

“A nurse practitioner has a broader range of skills ... We can call a physio ad hoc for physio specific needs ... Many nurses have been taught how to plaster, X-ray etc and it is possible to utilise their skills + ED doctor to work through this client group.” (Stakeholder-Nurse)

“Access to physiotherapy in the ED is extremely beneficial. I feel physiotherapists extending their scope to act as primary contact physiotherapists does not increase the efficiency or benefit of the service. In fact it is more time consuming and means less patients can be seen or treated. ” (Stakeholder-Emergency Consultant)

“Are we really getting better value for money with a [PCP] ... can only see and fully manage physio-specific patients, with very limited training in all the risks inherent in seeing ED patients?” (Stakeholder-Emergency Consultant)

A small but eloquent minority – mainly senior doctors – also questioned the safety of the PCP model. Specifically, the physiotherapist was seen as having particular strengths in therapy, but not necessarily in differential diagnosis. This led to perceptions of increased risk if PCPs were able to diagnose, treat and discharge patients without medical supervision.

“I am happy for physios who have done the training to be able to initiate pain relief and X-rays according to protocols, but not to diagnose, discharge or refer without discussion with a senior ED doctor. In this way, ED doctors can do what they are trained to do ... and physios can do what they are trained to do (add further diagnostic input to, and holistically manage, differentiated patients who have been diagnosed with musculoskeletal illnesses and injuries). I believe this would indeed make the ED more efficient, and provide a better service for patients. ” (Stakeholder-Emergency Consultant)

A related issue also raised by these senior doctors was the increased workload resulting from supervision of the physiotherapist. A few respondents from various professional groups suggested that other staff (emergency registrars, nurse practitioners, senior physiotherapists) could also serve as suitable mentors and supervisors.

Finally, about one in ten of the respondents felt they did not fully understand the primary contact model or wanted more information about its day-to-day implementation, such as rosters. Some junior doctors asked for the PCP's role to be included in the orientation of new medical staff. Nurses also requested more information about the scope of practice and also better communication regarding rosters and contact details. Non-clinical staff tended to feel the survey as a whole was irrelevant as they had little contact with the PCP, although one suggested that it would be useful for administrative staff to know “how to assist the clinical staff with referrals”.

Staff survey conclusions

The expanded, PCP role in ED was strongly endorsed by other staff members. The PCPs' skills and knowledge in providing patient care and education, ordering imaging and referring for further treatment were extremely highly regarded. An overwhelming majority of respondents agreed that the model improved the quality of ED care and made the ED team more effective. Nine out of ten respondents said they were comfortable providing advice to the PCP on patient management.

Educational requirements for the PCPs were not well understood. This gap in understanding could be addressed through stakeholder engagement and communication strategies in any future implementation of the model. Medical staff and those in non-clinical roles would benefit most from such strategies as these groups reported the lowest levels of understanding of the PCPs' roles and functions. In their qualitative comments, junior doctors and nurses highlighted a need for better communication about the model and scope of practice, and for logistical information regarding rosters and availability. The PED7 team noted, in their final report, that "appropriate nomenclature that resonates with ED culture is essential for role integration".

There were no differences between the two models of care in terms of respondents' understanding, support and attitudes. Surprisingly, respondents from implementation sites were more positive than those from lead sites. There were some minor differences among sites in the level of understanding of the physiotherapists' role and function, and endorsement of items relating to medication and imaging.

A very large number of staff members (n=140) chose to make additional comments, attesting to the depth of engagement with and interest in the ESOP physiotherapy model. The primary care physiotherapists were highly valued for their expertise and their educational role in the ED. They were viewed as having the most appropriate skills for managing a specific set of patients, and also having much to teach other members of the ED team. They were seen as reducing waiting times for these patients, providing excellent quality care and facilitating follow-up treatment.

A minority of respondents, mainly senior medical staff, expressed concerns about the efficiency and safety of the primary contact model, suggesting that undifferentiated patients would be better assessed by doctors before being treated by physiotherapists. While some aspects of the model were seen as acceptable – such as providing pain relief and ordering imaging – these respondents argued that diagnosis, referral and discharge were best handled by medical staff with specialised training in these areas. These concerns appeared to be related to the level of supervision required and a perception that many patients were referred back to medical staff for assessment. Nevertheless, these respondents agreed that the presence of physiotherapists in the ED was highly beneficial and their skill in providing therapy for differentiated patients was not in question. Further consultation with this powerful group of stakeholders is clearly required prior to any proposed wider implementation of the ESOP physiotherapy models.

Key stakeholder interviews

At the close of the program, semi-structured interviews were conducted with other physiotherapists, ED medical and nursing staff, managers and other stakeholders. Their views on the efficiency, effectiveness, safety and quality of care provided under the ESOP physiotherapy model are reported below.

The ED was seen as a 'unique' environment in which team work had to prevail over individual concerns about protecting 'turf' and status. PCPs who were flexible and willing to 'muck in' were seen as valuable; adhering too closely to a narrow scope of practice could lead to perceptions of 'cherry picking'. They also needed to be prepared for shifts and weekend work, as the ED was not a nine-to-five job. However, although many of the PCPs did contribute to secondary contact cases (as evidenced by the data in Table 10), this had to be balanced against the fact that they were relatively expensive resources and needed to be available for patients who did require primary contact physiotherapy care. Perceived pressure to improve performance against NEAT and individual reticence were barriers to collegial practice.

"...comments have come back at times like, 'Oh if I spend time doing that, it will look like ... it takes long enough to get the patients that I can see, seen', not knowing that we don't look at that ... I don't look at individual performance, I look at team performance so I want to see that everybody works." (Stakeholder–Manager)

"I don't think they feel empowered to ['pitch in'], to tell you the truth. I wouldn't want that to be a criticism of them because that's not on them, really." (Stakeholder–Medical)

One of the challenges to maintaining an efficient and sustainable service was managing leave absences by providing backfill. At many sites the scarcity of fully trained PCPs made it difficult to provide a continuous service. One respondent also noted the risk of raising consumers' expectations only to have them let down if the service could not be sustained.

Another aspect of managing consumer expectations involved placating some patients who felt they had been overlooked in favour of queue jumpers seen by the PCPs. This required delicate handling by the triage nurses.

"...one of the things we had to keep an eye on which I was worried about is – if I've got a waiting room with 40 patients ... and a number of those have been waiting quite a few hours and none of them are in the skill mix where the physio can see and he sees the next one out of turn, you could well imagine that it doesn't go so well ... people would react to that ... the triage nurse does the most with all these sort of things, like they have to be out there and they have to look in these people eyes all the time every day. And so they just gently try to explain to them that, that patient was seen by a different practitioner because their needs were able to be met by them ... Still not easy."
(Stakeholder–Nurse)

As already noted in the survey data, the PCP model has the potential to bring physiotherapists into conflict with junior medical officers and nurse practitioner candidates who need to gain experience in dealing with MSK cases. However, in their interviews many stakeholders stated that this risk was generally balanced by the specialist education these physiotherapists could provide, both formally and informally through consultation on particular cases. Senior doctors and the physiotherapists themselves could also gain from these interactions.

"It's given the junior doctors another resource to be able to refer and liaise with. I guess that's worked both ways; the [PCPs] have used them as well ... I think though due to the personalities of the people involved here that has actually worked quite well and there hasn't really been that territorial showdown over patients." (Stakeholder–Medical)

"... a teaching hospital is about knowledge translation as much as anything else and there's no point you being an expert if you're not sharing that skill." (Stakeholder–Medical)

"I think that's been evidenced by the fact that the medical staff who expressed concerns at the beginning have subsequently said they're actually very pleased with the way that the role has turned out because you have got that balance between not being exposed to as many patients but, in return, getting education and being able to see those patients in a much more meaningful way." (Stakeholder–Medical)

"It's something which a lot of us don't have a lot of experience in and we often don't give particularly good advice as doctors for people with musculoskeletal problems. It's been really helpful to educate us in things we just don't have a lot of experience in."
(Stakeholder–Medical)

The education and consultation role was seen as adding value to the ED and to the effectiveness of the PCPs, although it was acknowledged that this – and other – benefits of the model were difficult to demonstrate and quantify. The PCP model was seen as complementary to nursing and medical models, providing incremental benefits to the quality of care.

"I think that's really important and one of the important things of that is you can't judge them purely on a KPI of 'How many patients did you see'. If you try to do that you're going to always struggle to justify it." (Stakeholder–Medical)

"It's good having someone whose role is very different to any clinician that I've seen that they're going, 'Well, you know, do they have someone at home with them? Are they safe on their crutches? Should I put them on a frame instead of crutches?' and all these sorts of things that no-one in the ED who's not a physio is going to actually have any understanding or capability to do." (Stakeholder–Medical)

However, not all PCPs found a receptive audience for their education efforts. One lamented the fact that no-one seemed interested in attending a seminar about best practice in treating hyper-extended finger injuries since, as they put it, "it's common, but it's not life-threatening".

In general, stakeholders were satisfied that the ESOP-PED model had systems in place to monitor safety and quality. The PCPs meticulously documented their cases and their work was subject to constant scrutiny. Risk management procedures were seen as robust and there was no evidence of increased adverse events resulting from the model.

"So we haven't had increased re-presentations from them, we haven't had complaints that they've not been happy with who they've seen. In looking at the documentation, if we're looking at the patient presentations it's always very thorough, and in looking at their ability to ask for referrals or to consult with the medical clinicians, the registrars or consultants, that's always done as well." (Stakeholder–Nurse)

"So I think there's some general acceptance in the organisation that they do a good job and we're so, so, careful that we report every incident and we document every little thing and we'll tell you if we've done something wrong. But even the things that have gone wrong are all very reasonable...I mean, they have looked at some data of the same Diagnosis Related Groups when a physio sees someone or when a doctor sees them, but on the whole, we get there a lot quicker and we're so careful that if we're unsure, we always check." (Stakeholder–Allied Health Manager)

PCPs were seen as expert practitioners on whom doctors could rely to manage a discrete set of presentations within the boundaries of their scope of practice, seeking advice when needed. Unlike junior doctors, the PCPs were a continuous presence in the ED and individuals would gain experience and greater autonomy with time. The presence of senior medical staff was seen as an essential back-up due to perceived limitations in dealing with undifferentiated patients.

"... basically I can set and forget. If I know the physio is on and they're working in fast-track, they'll do the work they need and they'll do it competently. One of the team is less confident and requires a lot more supervision checking x-rays and stuff but that's fine. I would expect that from a junior doctor ..." (Stakeholder–Medical)

"... it has to be very tightly framed, I think, and fairly tightly bound by exactly what – patients are going to see and exactly what that extended role means. Because you don't want people just turning into quasi-interns, that – it's not their job, you know." (Stakeholder–Allied Health)

"I feel that in our department our physios are very sensible in picking up appropriate patients for physios but obviously if you had somebody who was maybe stepping out with their scope then I think that would be a different issue themselves." (Stakeholder–Medical)

"A purely primary role I think would be dangerous ... it's just because of the broad differential and that assessment process isn't necessarily as well-developed but as part of my team they're absolutely fantastic and I would love to keep them because I think they value-add." (Stakeholder–Medical)

Consistent with this last observation, one PCP mentioned that the ED director wanted the physiotherapists “to be in a more consultative role” with less primary contact time. Although this individual appeared content with this proposal, it would seem to run counter to some major goals of the model.

Finally, one respondent raised questions about whether this was the best way to improve ED productivity, given the sometimes low number of patients seen by PCPs. The opportunity costs of selecting a physiotherapy model over other possible approaches were aptly described by this interviewee:

“Only that ... well, one of the things is space is limited in the emergency department and every extra person takes up space. I think some people think, ‘Oh, an extra person. Great. Yes, yes, bring them along. The more the better.’ Whatever but you want the most efficient person to be sitting on that chair using that computer, whatever, and as I said before, if they’re not being utilised the whole time then that’s ... well it’s not entirely counter-productive but it distracts from the productivity at the other end.” (Stakeholder – Medical)

4.5 Impact on the system

The focus of the ESOP-PED project sites was patients presenting to the ED with triage categories 3, 4 and 5 MSK conditions. During the 15-month implementation period, 14,512 patients were seen by an ESOP physiotherapist in a primary contact capacity across all PED project sites.

- Fifty-two patients were missing a triage category; one was triage category 1 and 59 were triage category 2. These 112 patients were excluded from the cohort, resulting in a total of 14,400 patients in triage categories 3, 4 and 5.
- In addition, there were a total of 161 patients with no diagnosis code recorded. These patients were also excluded from the cohort.
- Although paediatric patients were treated by PCPs at PED3 and comprised about 45% of their total activity, paediatric data could not be used due to restrictions placed on this site by its ethics committee.
- The PCP model at PED5 specifically excludes patients aged less than 6 years; hence non-PCP patients aged less than 6 have been excluded from the patient cohort for PED5. These patients represented approximately 12% of total activity reported by that site.

Diagnosis codes for all patients seen by a PCP during the implementation period in triage categories 3, 4 and 5 (and excluding two paediatric patients from PED5 who were triage category 4) were considered. A list of all the diagnosis codes appropriate for inclusion in the MSK patient cohort can be found in Appendix 3. Note that PED10 submitted ICD9 diagnosis codes while all other sites submitted ICD10 codes. PED10 codes were mapped to ICD10 codes prior to defining the MSK cohort. Further details regarding this mapping and a list of the resulting codes can be found in Appendix 3.

Table 14 summarises the volume of activity in each project site attributable to the specific MSK patient cohort for all ED presentations for the three time periods. Averaged across all sites, the proportion of ED presentations defined as MSK was stable over the course of the PED sub-project. Approximately 25% of all ED presentations across all project sites were considered to be in the MSK patient cohort during the baseline and implementation periods, falling slightly to 24% during the post-implementation period.

Table 14 MSK patient cohort by site and triage category – comparison across all periods

Site	Baseline ^a		Implementation ^b		Post-Implementation ^c	
	# in cohort	% in cohort ^d	# in cohort	% in cohort ^e	# in cohort	% in cohort ^f
PED1	16,112	29.8	21,229	29.6	4,797	31.6
PED2	12,783	41.0	11,985	41.8	3,385	42.3
PED3 [*]	9,684	30.4	12,112	28.9	~	~
PED4	10,446	27.3	13,339	27.3	2,673	26.7
PED5	15,982	31.5	15,707	30.6	~	~
PED6	7,360	17.9	8,974	16.8	1,821	17.4
PED7	14,464	22.1	19,556	23.1	3,614	20.5
PED8	11,387	20.6	12,469	21.0	~	~
PED9	15,836	28.6	19,773	29.3	~	~
PED10	8,915	14.1	12,488	14.2	2,627	14.5
Triage category						
Triage Category 3	34,525	18.8	41,566	18.3	5,348	18.2
Triage Category 4	72,449	35.3	86,205	35.1	10,599	31.9
Triage Category 5	15,995	40.1	19,813	41.0	2,970	39.6
Total	122,969	25.3	147,632	24.8	18,917	23.8

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012.

^b Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^c Post-Implementation (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

^d Patients with missing diagnosis codes are excluded from the percentage calculation. A total of 14,272 (2.8%) of patients in the baseline period were missing diagnosis.

^e Patients with missing diagnosis codes are excluded from the percentage calculation. A total of 13,535 (2.2%) of patients in the implementation period were missing diagnoses.

^f Patients with missing diagnosis codes are excluded from the percentage calculation. A total of 1,569 (1.9%) of patients post-implementation period were missing diagnoses.

^{*} PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

~ Post implementation data was not provided.

The vast majority of patients seen by PCPs were defined as within the MSK cohort. During the implementation period 97% of presentations treated by a PCP were in the MSK patient cohort. This ranged from around 94% in PED8 to around 99% at PED3. As would be expected, other practitioners saw a more diverse range of presentations with around 23% on average defined as in the MSK patient cohort. This ranged from around 13% at PED10 to 39% at PED3 (Table 15).

Table 15 MSK patient cohort by site, triage category and primary practitioner – implementation period^a

Site	Treated by PCP		Treated by other	
	# in cohort	% in cohort ^b	# in cohort	% in cohort ^c
PED1	2,040	96.8	19,189	27.6
PED2	1,174	97.9	10,811	39.3
PED3 [*]	1,158	98.7	10,954	26.9
PED4	2,899	97.5	10,440	22.8
PED5	711	97.7	14,996	29.7
PED6	557	95.1	8,417	16.0
PED7	1,481	96.6	18,075	21.7
PED8	697	93.7	11,772	20.1
PED9	1,585	97.5	18,188	27.6
PED10	1,662	96.0	10,826	12.6
Triage category				
Triage Category 3	1,185	96.5	40,381	17.9
Triage Category 4	9,234	97.7	76,971	32.6

Site	Treated by PCP		Treated by other	
	# in cohort	% in cohort ^b	# in cohort	% in cohort ^c
Triage Category 5	3,497	96.8	16,316	36.5
Total	13,964	97.0	133,668	23.0

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

Table 16 shows the number of ED presentations that were in the MSK patient cohort by site. On average, one in four presentations to ED could be defined as MSK in nature but this varied widely among sites, ranging from around 14% for PED10 to 42% for PED2.

The table also shows the number and percentage of these patients who were treated by PCPs. PCPs treated one in ten MSK presentations across all sites during the implementation period. The proportion treated by PCPs ranged from around 5% for PED5 to 22% for PED4. Differences in the models and resources available at each site (see Section 2) need to be kept in mind when interpreting figures on relative productivity of sites.

Around 41% of all MSK ED presentations were of triage category 5 and 18% of these were treated by PCPs. Thirty-five percent were of triage category 4 and 11% of these were treated by PCPs. Triage category 3 contained the least number of MSK patients (18%) and only 3% of these were treated by PCPs.

Table 16 **Number of all ED presentations that were in the MSK patient cohort and number who were treated by PCPs by site and triage category – implementation period^a**

Site	In MSK patient cohort		Treated by PCP	
	#	%	#	%
PED1	21,229	29.6	2,040	9.6
PED2	11,985	41.8	1,174	9.8
PED3 [*]	12,112	28.9	1,158	9.6
PED4	13,339	27.3	2,899	21.7
PED5	15,707	30.6	711	4.5
PED6	8,974	16.8	557	6.2
PED7	19,556	23.1	1,481	7.6
PED8	12,469	21.0	697	5.6
PED9	19,773	29.3	1,585	8.0
PED10	12,488	14.2	1,662	13.3
Triage category				
Triage Category 3	41,566	18.3	1,185	2.9
Triage Category 4	86,205	35.1	9,234	10.7
Triage Category 5	19,813	41.0	3,497	17.7
Total	147,632	24.8	13,964	9.5

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^{*} PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

These figures are presented graphically in Figure 13 below and have been sorted in descending order of total ED MSK volume of activity to assist with interpretation. PED1 had the highest volume of potential PCP MSK patients, with over 21,000 MSK patients, closely followed by PED9 and PED7. At each of these sites, PCPs treated less than 10% of potential patients. In contrast, PED4 had a lower volume of potential PCP MSK patients but treated over 20% of those patients.

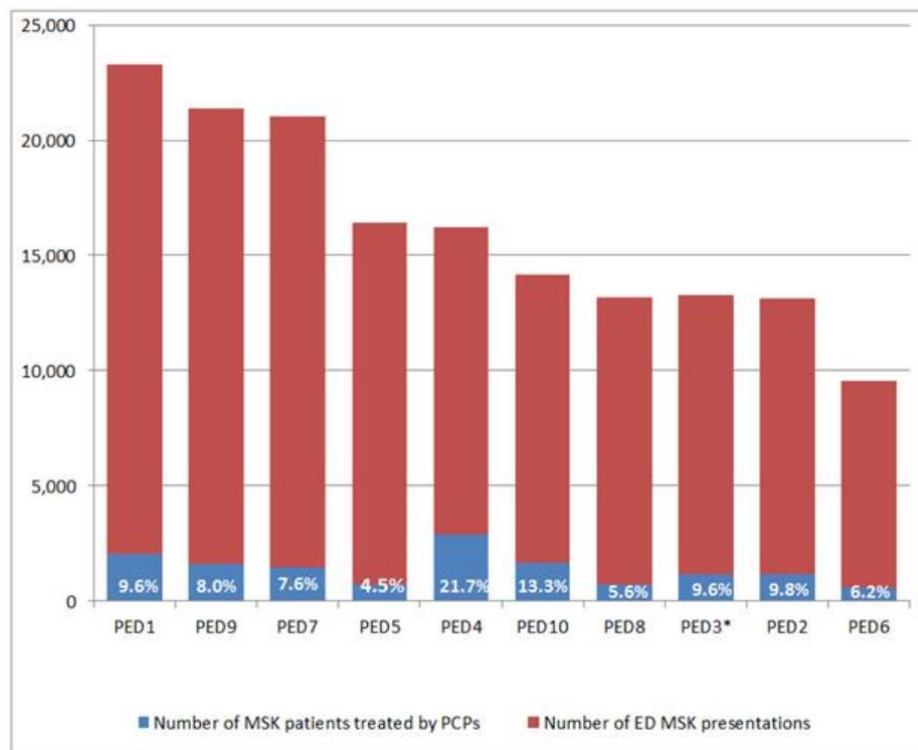


Figure 13 Number of all ED presentations that were in the MSK patient cohort and number who were treated by PCPs by site – implementation period^a

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

KPI 1.3 Increased number of Triage Category 3, 4 and 5 musculoskeletal consumers seen by ESOP physiotherapist discharged within 4 hours

This KPI has been calculated using data item 22 (Service episode end status; refer to Thompson et al., 2012a and 2012b). To be consistent with the definition of the National Emergency Access target (NEAT), 'discharged' refers to patients who physically left the ED via the following methods:

- Discharged
- Admitted to hospital
- Transferred to another hospital for treatment

All ED patients were included in the target and 'discharged' corresponds to episode end status 1, 2, and 3:

- 1=Admitted to this hospital
- 2=Non-admitted patient emergency department service episode completed – departed without being admitted or referred to another hospital, and
- 3=Non-admitted patient emergency department service episode completed - referred to another hospital for admission).
- Note that patients admitted to the ED are not included in the definition of 'discharged'. A patient who is admitted to the ED will subsequently either be admitted to a ward within the hospital, discharged or transferred to another hospital. It is the subsequent date and time that is used to calculate the total time spent in the ED for these patients.

- The total time spent in the ED is calculated by the time (in minutes) between when the patient presents to when the episode ends. For patients who were admitted to the ED we are unable to determine if their episode end date/time corresponds to the time they subsequently left the ED or to the time they were admitted to the ED.
- It was not possible to distinguish between patients who were admitted to the ED and patients who were admitted elsewhere in the hospital via episode end status=1. As a result, the figures for this KPI may be over-estimated, depending on the occurrence of patients admitted to the ED and the episode end date/times reported for these patients.

The following table shows the percentage of MSK patients who were discharged from the ED within four hours across all periods for each site and for Triage Categories 3, 4 and 5. From the baseline period to the implementation period there was an improvement in NEAT performance of around four percentage points across all sites. Performance was consistent across the two periods for PED7 and PED6, PED5 had a decrease in performance of almost two percentage points and at all other sites performance improved. This improvement ranged from around two percentage points at PED3 to 11 percentage points at PED9.

Of the sites that provided post implementation data, all showed a further improvement in performance from the implementation period except PED2 whose performance decreased back to the baseline level.

Triage category 3 had the largest improvement from baseline to implementation of almost six percentage points. Triage category 4 improved from 75.2% in the baseline period to 78.7% in implementation. There was a slight improvement in performance for Triage category 5 patients.

Table 17 Percentage of triage category 3, 4 and 5 MSK patients discharged within four hours – comparison across all periods

Site	Baseline ^a	Implementation ^b	Post Implementation ^c
PED1	73.9	83.0	87.1
PED2	81.3	84.4	81.0
PED3	71.7	74.1	~
PED4	59.3	63.3	68.7
PED5	82.2	80.5	~
PED6	80.7	80.9	84.8
PED7	56.4	56.3	61.1
PED8	73.5	82.3	~
PED9	77.3	88.4	~
PED10	67.3	70.1	73.1
Triage Category			
Triage Category 3	60.0	65.8	67.1
Triage Category 4	75.2	78.7	79.4
Triage Category 5	88.1	88.9	90.1
Total	72.6	76.4	77.6

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012.

^b Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^c Post-Implementation (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

~ Post implementation data was not provided.

This information has been presented graphically below and also shows the total volume of MSK patients during the implementation period to assist with interpretation. PED1 had the highest volume of MSK patients and was able to improve performance on this KPI to a high level of 83%. PED9 and PED7 also had high volumes of MSK patients and PED9 was able to improve performance to 88.4% (Figure 14).

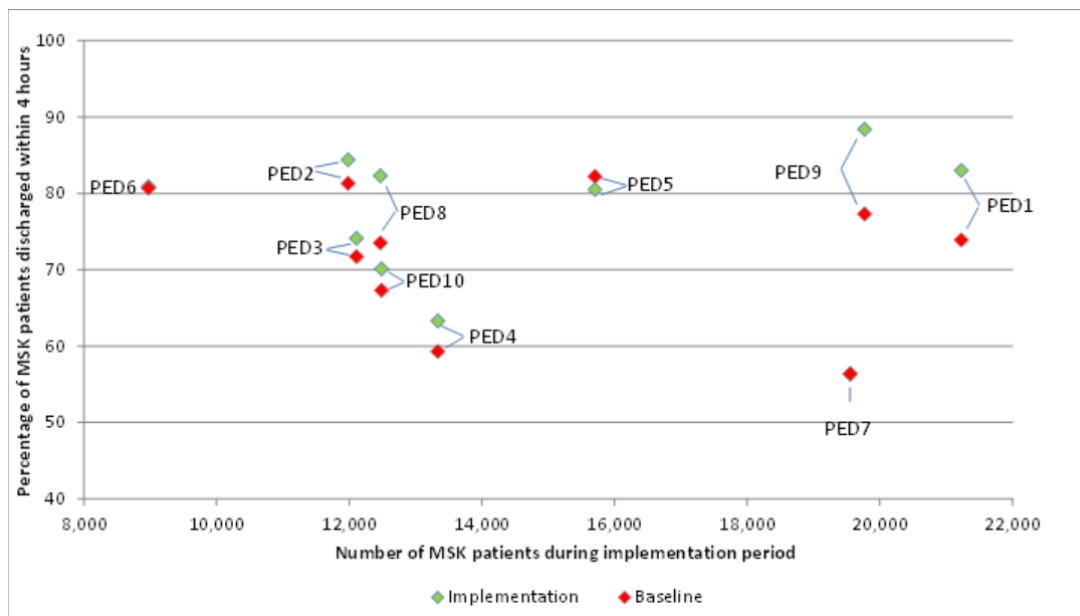


Figure 14 Percentage of triage category 3, 4 and 5 MSK patients discharged within 4 hours by volume of MSK patients during implementation – comparison between baseline and implementation periods

Across all sites, 92.7% of patients seen by PCPs were discharged within the four-hour target period, compared with 74.5% of similar patients seen by other practitioners (Table 18).

At all sites, performance on this KPI was better for PCPs than for other practitioners. These figures should be interpreted with caution, given that the proportion of patients eligible for ESOP was generally small and varied among sites (refer to Table 14 and Table 15).

Table 18 Number and percentage of triage category 3, 4 and 5 MSK patients discharged within 4 hours by primary practitioner – implementation period^a

Site	Treated by PCP		Treated by other	
	N	%	N	%
PED1	1,974	96.8	15,640	81.5
PED2	1,098	93.5	9,013	83.4
PED3	1,113	96.1	7,865	71.8
PED4	2,467	85.4	5,971	57.2
PED5	667	93.8	11,978	79.9
PED6	517	92.8	5,458	79.7
PED7	1,245	86.9	9,737	53.9
PED8	680	97.6	9,587	81.4
PED9	1,559	98.4	15,927	87.6
PED10	1,564	94.1	7,193	66.4
Triage category^b				
Triage Category 3	1,002	84.9	25,859	64.8
Triage Category 4	8,552	92.7	58,287	76.8
Triage Category 5	3,330	95.2	14,223	87.5
Total	12,884	92.7	98,369	74.5

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b the overall performance for Triage Category 3 was 65.8%, Triage Category 4 78.7% and Triage Category 5 88.9%.

^c PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

Monthly results for this KPI during the implementation period were examined for each site because the volume of both ED presentations and MSK presentations tends to vary by season but no patterns or seasonal influences were identified.

KPI 1.4 Number of Triage Category 3, 4 and 5 patients seen by ESOP physiotherapist that required medical imaging

PCPs have indicated that they are likely to order less medical imaging due to their advanced assessment skills for MSK problems. The following table shows the number of MSK patients treated by PCPs that required medical imaging during the implementation period. Only three sites collected these items for all MSK ESOP patients during the implementation period; the percentage requiring imaging has only been calculated for those patients where data are available. Where sites reported missing or invalid codes in greater than 5% of their total MSK ESOP patients, it has been footnoted in tables to highlight the potential inaccuracy of figures which may affect interpretation of results.

Although medical imaging information was only required for ESOP patients, PED1, PED3 and PED10 provided this information for similar patients treated by other practitioners.

A total of 56% of all MSK patients across all sites seen by a PCP required X-rays. It is possible that these figures are influenced by the differing scope of the PCP roles across the sites rather than being a reflection of the practice of individual PCPs. Only 2.6% of patients across all sites required CT scans and less than 1% required ultrasound. PED4 had the highest proportion requiring CT scan and PED3 had the highest proportion requiring ultrasound (Table 19).

Table 19 Triage category 3, 4 and 5 MSK patients treated by PCPs that required medical imaging by site – implementation period^a

Site	X-ray		CT scan		Ultrasound	
	#	% ¹	#	% ¹	#	% ¹
PED1	1,162	57.0	71	3.5	18	0.9
PED2	768	72.1	23	2.2	12	1.1
PED3*	642	55.4	24	2.1	27	2.3
PED4	1,007	43.8	119	5.2	29	1.3
PED5	51	7.3	0	0.0	1	0.1
PED6	273	50.4	15	2.8	8	1.5
PED7	447	56.4	39	4.9	6	0.8
PED8	394	64.2	11	1.8	0	0.0
PED9	1,132	78.9	8	0.6	7	0.5
PED10	1,046	62.9	12	0.7	13	0.8
Total	6,922	56.3	322	2.6	121	1.0

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

PED5 data appeared incomplete.

¹ Across all sites, this data item was missing/invalid for 13% of all MSK ESOP patients during the implementation period. The percentages of missing/invalid across the sites are: PED2 9.2%; PED4 21%; PED7 47%; PED8 12%; PED9 10%.

At the three sites that provided data for similar patients treated by other practitioners, fewer X-rays and more CT scans and ultrasounds were ordered. Thirty percent of MSK patients treated by other practitioners at PED3 required X-rays, compared to 55% of MSK patients treated by PCPs. CT scans were ordered for almost 19% of MSK patients treated by other practitioners at PED1 compared to just 3.5% of MSK patients treated by PCPs. Once again, it is possible that these figures are influenced by the differing scope of the PCP roles across the sites rather than being a reflection of practice of individual PCPs.

KPI 1.5 Average number of patients/consumers seen per day by the ESOP physiotherapist

On average, around 32 patients were treated by PCPs each week during the 12-week window of the implementation period (July 2013 – September 2013) but this varied across sites. This period of data is presented as for several sites it was the last quarter of implementation and provides a more accurate reflection of the capacity of the PCPs. The PCPs at PED6 treated an average of 21 patients per week while the PCPs at PED4 treated an average of 52 patients per week (Table 20). Once again, the data reported for PED3 does not represent total activity.

Weekly averages were adjusted to take into account the differing number of full-time positions available at each site. The far right column of Table 20 shows the number of patients treated per FTE PCP. On average, one PCP working full-time treated 21 patients each week. Again, this varied widely, from just 10 patients per FTE PCP per week at PED6 to 36 at PED9.

Table 20 **Average number of patients treated by the ESOP physiotherapists (either as a primary or secondary practitioner) per week – last quarter of implementation period^a**

Site	Total PCP and SCP patients	No. of weeks ESOP activity	Average patients seen p/w (Jul 2013 - Sep 2013)	Number of FTE PCPs	Average patients p/w per 1 FTE (Jul 2013 - Sep 2013)
PED1	2,616	66	40.8	2.0	20.4
PED2	1,519	48	34.1	1.4	24.3
PED3*	1,271	66	21.2	1.4	15.1
PED4	3,032	66	52.3	2.5	20.9
PED5	761	48	16.1	0.7	23.0
PED6	1,007	63	20.7	2.0	10.3
PED7	1,696	61	30.8	1.6	19.2
PED8	955	47	20.5	1.0	20.5
PED9	1,653	56	36.1	1.0	36.1
PED10	2,418	65	43.9	1.4	31.4
Total	16,928	586	31.6	12.2	21.1

^a Last quarter of implementation (Data Submission 2), the period 1 July 2013 – 30 September 2013.

Total PCP and SCP patients (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

The average number of ESOP patients per week and the adjusted average per FTE PCP is presented graphically in Figure 15. Sites are presented in descending order of the adjusted number of average patients seen per week per FTE PCP.

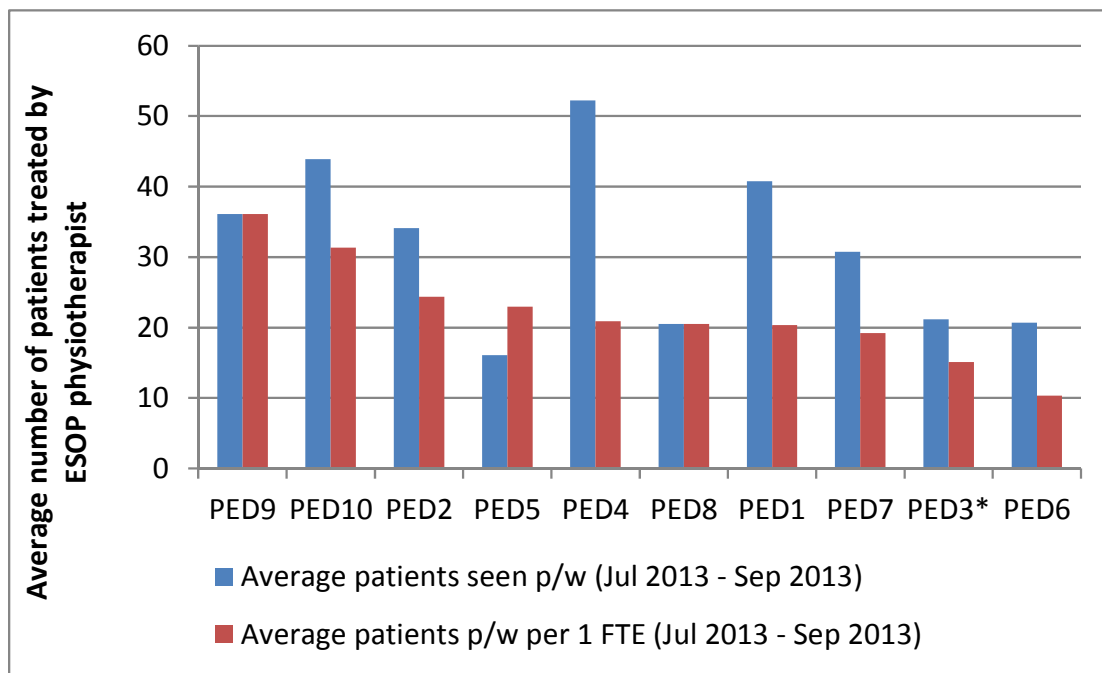


Figure 15 Average number of patients treated by the ESOP physiotherapists per week and average per 1 FTE – last quarter of implementation period^a

^a Last quarter of implementation (Data Submission 2), the period 1 July 2013 – 30 September 2013.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

KPI 1.6 Decreased total treatment time for Triage Category 3, 4 and 5 consumers seen by the ESOP physiotherapist

KPI 1.7 Decreased waiting time for Triage Category 3, 4 and 5 consumers seen by the ESOP physiotherapist

Table 21 presents the average total length of stay in minutes for all triage category 3, 4 and 5 MSK patients during the implementation period. The results are compared between patients treated by PCPs and patients treated by other practitioners. The mean difference in length of stay between these two groups is presented and 95% confidence intervals of this difference are provided. The mean difference for each site was significant, indicating that the total length of stay for patients treated by PCPs was shorter than patients treated by other practitioners.

Table 21 Average total length of stay* (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period^a

Site	PCP		Other		Difference	
	N	Mean (SE)	N	Mean (SE)	Mean (SE)	95% Confidence Interval [^]
PED1	2,040	135.3 (1.9)	19,189	205.6 (1.2)	-70.3 (3.8)	(-74.7, -65.9)
PED2	1,174	141.2 (2.0)	10,811	163 (1.1)	-21.7 (3.4)	(-26.2, -17.2)
PED3	1,158	120.8 (2.2)	10,950	195.1 (1.3)	-74.3 (4.2)	(-79.3, -69.3)
PED4	2,899	162.9 (2.2)	10,440	261.9 (1.9)	-99.0 (3.8)	(-104.6, -93.3)
PED5	711	109.6 (3.2)	14,996	171.8 (1.2)	-62.2 (5.6)	(-68.8, -55.5)
PED6	557	137.2 (3.3)	6,851	169 (1.4)	-31.8 (4.9)	(-38.8, -24.9)
PED7	1,433	150.8 (2.8)	18,075	279.8 (1.6)	-129.0 (5.7)	(-135.3, -122.7)
PED8	697	123.1 (2.3)	11,772	170.6 (1.3)	-47.5 (5.5)	(-52.7, -42.4)
PED9	1,585	93.4 (1.4)	18,188	158 (0.8)	-64.6 (2.7)	(-67.7, -61.5)
PED10	1,662	107.4 (1.9)	10,826	227.7 (1.7)	-120.3 (4.5)	(-125.4, -115.2)
Triage Category						
Triage Category 3	1,185	161.1 (3.9)	39,904	248.1 (1.0)	-87.0 (5.7)	(-94.8, -79.2)
Triage Category 4	9,234	133.7 (0.9)	75,937	191.3 (0.5)	-57.7 (1.6)	(-59.8, -55.5)
Triage Category 5	3,497	117.7 (1.3)	16,257	140.5 (0.8)	-22.9 (1.8)	(-25.8, -19.9)
Total	13,916	132.0 (0.8)	132,098	202.2 (0.5)	-70.2 (1.4)	(-72.0, -68.5)

* Length of stay is defined as 'the time from presentation to episode end' and is calculated by the difference (in minutes) between data items 12 and 13 (date/time patient presents) and data items 18 and 19 (date/time episode ends), data items were specified in the relevant evaluation tool.

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

[^] Unequal variances were assumed and Confidence Intervals were calculated using Welch's t test.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

Triage category 3 patients treated by PCPs had an overall average length of stay of 161 minutes. On average, similar patients treated by other practitioners had a total length of stay almost 1.5 hours longer (248 minutes). However, PCPs treated a small proportion of patients in this triage category (refer to Table 16). The highest proportion of patients treated by PCPs were triage category 5 patients and the PCPs were able to achieve an average length of stay around 23 minutes less than similar patients treated by other practitioners.

Results by site are presented graphically in Figure 16 and show the difference in length of stay for the same MSK patient cohort when treated by the PCP and compared with other members of the health care team. This difference ranged from approximately two hours for PED7 and PED10 down to 22 minutes for PED2.

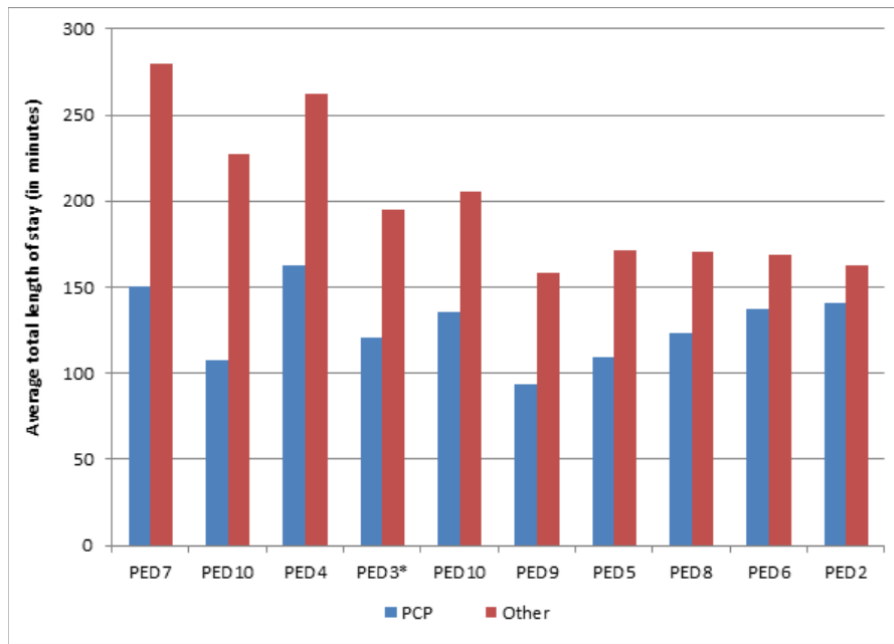


Figure 16 Average total length of stay* (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period^a

* LOS is defined as 'the time from presentation to episode end' and is calculated by the difference (in minutes) between items 12 and 13 (date/time patient presents) and items 18 and 19 (date/time episode ends), data items were specified in the relevant evaluation tool.

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

Table 22 presents the average total waiting time in minutes for all triage category 3, 4 and 5 MSK patients during the implementation period. The mean difference in waiting time between patients treated by PCPs and similar patients treated by other practitioners for each site was significant, indicating that the total waiting time for patients treated by PCPs was shorter than patients treated by other practitioners.

Table 22 Average total waiting time* (in minutes) for triage category 3, 4 and 5 MSK patients by site, triage category and primary practitioner – implementation period^a

Site	PCP		Other		Difference	
	N	Mean (SE)	N	Mean (SE)	Mean (SE)	95% Confidence Interval ^a
PED1	2,040	19.9 (0.4)	19,189	34.8 (0.2)	-14.9 (0.8)	(-15.8, -14.0)
PED2	1,174	19.3 (0.6)	10,811	34.5 (0.4)	-15.2 (1.1)	(-16.6, -13.8)
PED3*	1,153	33.9 (0.9)	10,574	84.1 (0.7)	-50.2 (2.0)	(-52.4, -47.9)
PED4	2,898	16.9 (1.2)	10,439	51.2 (0.6)	-34.4 (1.3)	(-37.0, -31.7)
PED5	711	24.4 (1.2)	14,996	45.2 (0.4)	-20.8 (1.9)	(-23.3, -18.3)
PED6	557	42.6 (1.5)	6,843	56.9 (0.7)	-14.3 (2.6)	(-17.7, -11.0)
PED7	1,433	47 (1.2)	18,075	98.6 (0.7)	-51.6 (2.6)	(-54.4, -48.8)
PED8	697	22.6 (1.0)	11,768	50.3 (0.5)	-27.7 (2.0)	(-29.8, -25.6)
PED9	1,585	19.5 (0.5)	18,184	49.5 (0.4)	-30.0 (1.3)	(-31.3, -28.7)
PED10	1,662	16.4 (0.4)	10,826	37.4 (0.4)	-21.0 (1.0)	(-22.1, -19.8)
Triage Category						
Triage Category 3	1,185	15.8 (2.2)	39,826	44.5 (0.3)	-28.7 (1.7)	(-33.0, -24.4)
Triage Category 4	9,231	24.1 (0.4)	75,695	59.7 (0.2)	-35.6 (0.7)	(-36.5, -34.7)
Triage Category 5	3,494	26.6 (0.5)	16,184	57 (0.5)	-30.5 (1.1)	(-31.9, -29.0)

Site	PCP		Other		Difference	
	N	Mean (SE)	N	Mean (SE)	Mean (SE)	95% Confidence Interval ^a
Total	13,910	24 (0.3)	131,705	54.8 (0.2)	-30.8 (0.5)	(-31.5, -30.0)

* Waiting time is defined as 'the time from presentation to commencement of service' and is calculated by the difference (in days) between items 12 and 13 (date/time patient presents) and items 16 and 17 (date/time of commencement of service).

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

[^] Unequal variances were assumed and Confidence Intervals were calculated using Welch's t test.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

For each triage category, the mean difference in waiting time was around half an hour. Results by site are presented graphically in Figure 17. The largest difference in total waiting time between PCP patients and patients treated by other practitioners was at PED7 and PED3, where this difference was around 50 minutes. The smallest difference was at PED6 (around 14 minutes).

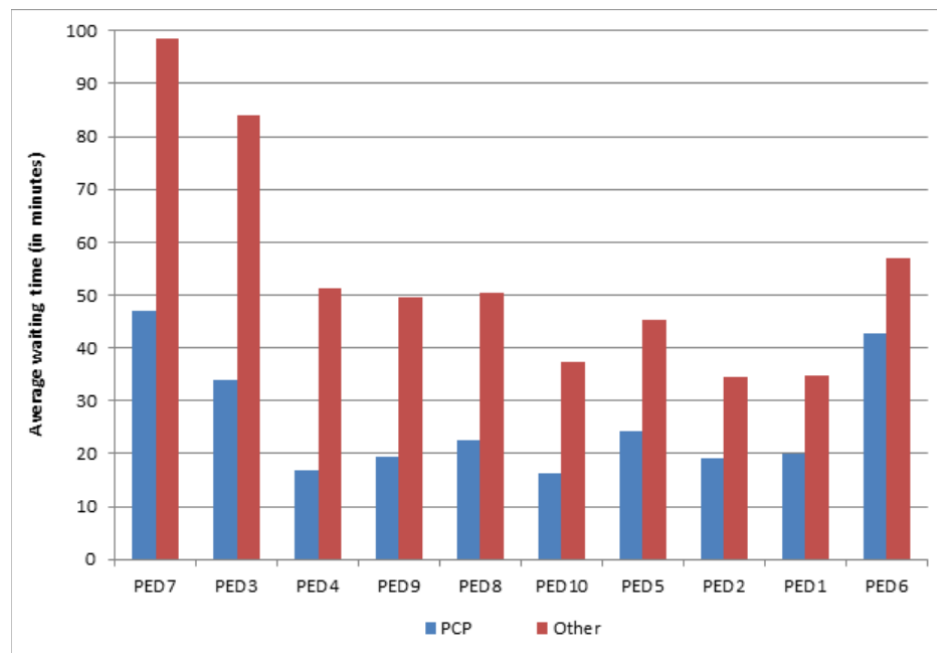


Figure 17 Average total waiting time^{*} (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period^a

* Waiting time is defined as 'the time from presentation to commencement of service' and is calculated by the difference (in days) between items 12 and 13 (date/time patient presents) and items 16 and 17 (date/time of commencement of service).

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

Table 23 presents the average treatment time in minutes for all triage category 3, 4 and 5 MSK patients during the implementation period. On average, PCPs were able to treat their patients quicker than other practitioners were able to treat similar patients, with an overall difference of around 40 minutes across all sites. The mean differences in treatment time varied among sites and ranged from just seven minutes at PED3 to over 1.5 hours at PED10. The PCPs at PED4 and PED7 were able to treat their patients more than 1 hour quicker than other practitioners were able to treat similar patients. MSK patients treated by PCPs at PED1 were treated on average 55 minutes faster than similar patients treated by other practitioners.

Table 23 Average total treatment time^{*} (in minutes) for triage category 3, 4 and 5 MSK patients by site, triage category and primary practitioner – implementation period^a

Site	PCP		Other		Difference	
	N	Mean (SE)	N	Mean (SE)	Mean (SE)	95% Confidence Interval [^]
PED1	2,040	115.4 (1.8)	19,189	170.8 (1.2)	-55.4 (3.8)	(-59.7, -51.1)
PED2	1,174	122 (2.0)	10,811	128.5 (1.1)	-6.5 (3.4)	(-10.9, -2.1)
PED3	1,153	86.9 (2.0)	10,572	114 (1.2)	-27.1 (3.7)	(-31.8, -22.5)
PED4	2,898	146.1 (2.0)	10,439	210.7 (1.8)	-64.6 (3.7)	(-70.0, -59.3)
PED5	711	85.2 (3.0)	14,996	126.5 (1.2)	-41.4 (5.4)	(-47.7, -35.0)
PED6	557	94.6 (2.9)	6,843	112.1 (1.2)	-17.4 (4.2)	(-23.6, -11.2)
PED7	1,433	103.8 (2.4)	18,075	181.2 (1.4)	-77.4 (4.9)	(-82.8, -72.0)
PED8	697	100.4 (2.2)	11,768	120.3 (1.3)	-19.8 (5.3)	(-24.9, -14.8)
PED9	1,585	73.9 (1.3)	18,184	108.5 (0.7)	-34.6 (2.5)	(-37.5, -31.7)
PED10	1,662	91 (1.9)	10,826	190.3 (1.6)	-99.3 (4.3)	(-104.2, -94.4)
Triage Category						
Triage Category 3	1,185	145.3 (3.7)	39,826	203.9 (0.9)	-58.6 (5.5)	(-66.0, -51.1)
Triage Category 4	9,231	109.6 (0.9)	75,693	131.9 (0.5)	-22.2 (1.4)	(-24.2, -20.3)
Triage Category 5	3,494	91.1 (1.2)	16,184	83.8 (0.6)	7.3 (1.5)	(4.7, 9.9)
Total	13,910	108 (0.7)	131,703	147.8 (0.4)	-39.7 (1.3)	(-41.4, -38.1)

^{*} Treatment time is defined as 'the time from commencement of service to episode end' and is calculated by the difference (in days) between items 16 and 17 (date/time of commencement of service) and items 18 and 19 (date/time episode ends).

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

[^] Unequal variances were assumed and CIs were calculated using Welch's t test.

^{*} PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

On average, triage category 5 MSK patients treated by PCPs had a treatment time around seven minutes longer than similar patients treated by other practitioners. PCPs were able to treat triage category 3 and 4 MSK patients quicker than other practitioners. When interpreting these results refer to the volume of MSK patients treated by triage category (Table 16).

Results by site are presented graphically in Figure 18. The largest difference in total treatment time between PCP patients and patients treated by other practitioners was at PED10 and PED7. The smallest difference was at PED3 (around 3 minutes).

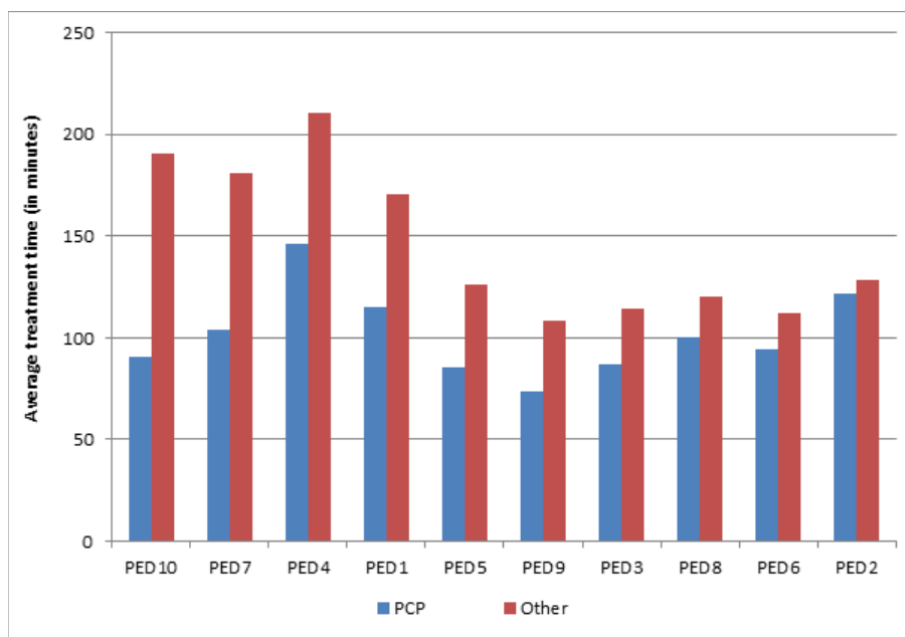


Figure 18 Average total treatment time* (in minutes) for triage category 3, 4 and 5 MSK patients by site and primary practitioner – implementation period^a

* Treatment time is defined as 'the time from commencement of service to episode end' and is calculated by the difference (in days) between items 16 and 17 (date/time of commencement of service) and items 18 and 19 (date/time episode ends).

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

* PED3 was unable to provide their paediatric data and it is estimated that this data represents 45% of their ESOP activity and 30% of their total ED activity.

KPI 2.1 Consistent or improved unit safety outcomes pre and post introduction of the ESOP-PED initiative e.g. number of re-presentations of patients/consumers treated for the same health care problem within 96 hours/readmissions within 28 days; number of adverse events; number of consumer complaints; decreased number of consumers who 'Did not wait'.

Table 24 provides a summary of safety outcomes during the implementation period by primary practitioner. Only PED1, PED3, PED4 and PED9 provided information on re-presentations within 96 hours for all of their MSK patients seen during the implementation period. PED3 and PED10 did not provide this information for almost 80% of patients and all other sites did not provide this information for any patients. PED7 is an exception: although this site provided information on re-presentations, it was not possible to distinguish between planned and unplanned re-presentations and differences in data collection practices meant the information was not consistent with the definitions used by other sites; hence their data has been excluded.

Readmissions within 28 days were only provided by PED1, PED2, PED4, PED9 and PED10. PED6 and PED8 did not provide data on unexpected deaths.

Percentages have only been calculated for those patients where data are available. Where sites reported missing or invalid codes in greater than 5% of their total MSK patients, it has been footnoted in tables to highlight the potential inaccuracy of figures which may affect interpretation of results.

Table 24 Safety and quality outcomes for triage category 3, 4 and 5 MSK patients by primary practitioner – implementation period^a

Primary practitioner	Re-presentations within 96 hours		Readmissions within 28 days		Unexpected deaths		Patients who did not wait	
	#	%	#	%	#	%	#	%
PCP	86	1.1	361	3.3	1	0.0	1	0.0
Other	604	1.0	3,752	4.1	196	0.2	59	0.0
Total	690	1.0	4,113	4.0	197	0.1	60	0.0

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

Across all sites during the implementation period, a total of 690 MSK patients re-presented to the same ED for the same health care condition within 96 hours. The proportion of these treated by PCPs was consistent with the proportion treated by other practitioners (around 1%). Around 3% of MSK patients treated by PCPs re-presented within 28 days compared to 4% of patients treated by other practitioners. For PCP patients, only one unexpected death was reported and one patient did not wait. The proportions were similar for patients treated by other practitioners.

Table 25 shows the total number of all MSK patients who re-presented within 96 hours by site for each period. Across all sites that provided this information, the number of re-presentations almost halved from the baseline to the implementation period and remained lower during post implementation. Given that PCPs saw a relatively small proportion of MSK patients overall, other factors are likely to have contributed to this improvement.

Table 25 Number of all triage category 3, 4 and 5 MSK patients who re-presented within 96 hours for the same health care problem by site – comparison across all periods

Site	Baseline ^a		Implementation ^b		Post-implementation ^c	
	#	%	#	%	#	%
PED1	124	0.8	149	0.7	42	0.9
PED2	119	0.9	122	1.0	26	0.8
PED3 [*]	591	6.1	1	0.0	~	~
PED4	283	2.7	205	1.5	43	1.6
PED5	-	-	-	-	~	~
PED6	-	-	-	-	-	-
PED7	-	-	-	-	-	-
PED8	-	-	-	-	~	~
PED9	150	0.9	167	0.8	~	~
PED10	-	-	46	1.8	45	1.7
Total	1,267	2.0	690	1.0	156	1.2

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012.

^b Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^c Post-Implementation (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

^{*} PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

- Implementation: data was missing/invalid for approximately 80% of MSK patients at PED3 and PED10.

- Post implementation: PED6 and PED7 were unable to provide this information.

~ Post implementation data was not provided.

Table 26 shows the total number of all MSK patients who re-presented within 28 days by site for each period. Across all sites that provided this information, the proportion of re-presentations decreased by around 1% from the baseline to the implementation period and remained lower during post implementation.

Table 26 Number of all triage category 3, 4 and 5 MSK patients who were readmitted within 28 days – comparison across all periods

Site	Baseline ^a		Implementation ^b		Post Implementation ^c	
	#	%	#	%	#	%
PED1	238	1.5	327	1.5	88	1.8
PED2	198	1.5	205	1.7	47	1.4
PED3*	1,017	10.5	1	0.0	~	~
PED4	170	1.6	362	2.7	75	2.8
PED5	-	-	-	-	~	~
PED6	-	-	-	-	-	-
PED7	-	-	-	-	-	-
PED8	-	-	-	-	~	~
PED9	330	2.1	413	2.1	~	~
PED10	230	2.6	400	3.2	88	3.3
Total	2,184	3.0	1,708	2.1	298	2.2

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012.

^b Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^c Post-Implementation (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

- Implementation: PED3 did not provide this data for 79% of MSK patients during the implementation period.

- Post implementation: PED6 and PED7 were unable to provide this information.

~ Post implementation data was not provided.

Table 27 shows the number of unexpected deaths for all MSK patients for each site across all periods. The overall number of unexpected deaths was similar for the baseline and implementation periods and decreased post implementation.

Table 27 Number of all triage category 3, 4 and 5 MSK patients who died following admission from the ED within 28 days – comparison across all periods

Site	Baseline ^a		Implementation ^b		Post Implementation ^c	
	#	%	#	%	#	%
PED1	37	0.2	32	0.2	9	0.2
PED2	3	0.0	6	0.1	0	0.0
PED3	5	0.1	7	0.1	~	~
PED4	0	0.0	0	0.0	0	0.0
PED5	174	1.1	127	0.8	~	~
PED6	-	-	1 ^d	0.0	-	-
PED7	10	0.1	66	0.3	12	0.3
PED8	-	-	-	-	~	~
PED9	5	0.0	3	0.0	~	~
PED10	9	0.1	12	0.1	1	0.0
Total	243	0.2	254	0.2	22	0.1

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012.

^b Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^c Post-Implementation (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

^d Data was not provided for approximately 20% of MSK patients.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

- Data not provided.

~ Post implementation data was not provided.

The number of patients who 'did not wait' has been identified as an important indicator of quality. Table 28 presents the number of all MSK patients who 'did not wait' for each site across all periods. The numbers were low for all sites although PED7 had a large increase from just three patients during implementation to 88 during post implementation.

Table 28 Number of all triage category 3, 4 and 5 MSK patients who 'did not wait' – comparison across all periods

Site	Baseline ^a		Implementation ^b		Post Implementation ^c	
	#	%	#	%	#	%
PED1	0	0.0	0	0.0	0	0.0
PED2	0	0.0	0	0.0	0	0.0
PED3*	21	0.2	15	0.1	~	~
PED4	0	0.0	0	0.0	0	0.0
PED5	0	0.0	0	0.0	~	~
PED6	9	0.1	11	0.1	3	0.2
PED7	1	0.0	3	0.0	88	2.4
PED8	17	0.2	1	0.0	~	~
PED9	0	0.0	24	0.1	~	~
PED10	3	0.0	8	0.1	0	0.0
Total	51	0.0	62	0.0	91	0.5

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012.

^b Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^c Post-Implementation (Data Submission 3b), the period 1 January 2014 – 31 March 2014.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

~ Post implementation data was not provided.

KPI 2.3 Increased number of ESOP physiotherapy procedures undertaken by ESOP-PED in each of the implementation sites e.g. imaging, medication, certification, referrals.

Patients presenting to the ED may require medication for pain relief. Table 29 shows the number of MSK patients treated by PCPs during the implementation period who required medication for pain relief. Information on who prescribed the medication is also shown. PED1 and PED2 did not provide any data on medication. Of the other sites, data was not provided for all patients and percentages exclude missing or invalid data. The number of missing or invalid data has been footnoted and should be considered when interpreting results.

Table 29 Number of triage category 3, 4 and 5 MSK patients treated by PCPs that required medication for pain relief by site – implementation period^a

Site	Required medication		Who prescribed the medication (%) ^c			
	#	% ^b	Medical Officer	Nurse Practitioner	PCP	Other
PED1	-	-	-	-	-	-
PED2	-	-	-	-	-	-
PED3*	270	23.3	59.3	0.0	0.0	40.7
PED4	630	37.0	85.1	1.1	0.0	13.8
PED5	133	28.3	59.4	0.0	0.0	40.6
PED6	231	42.6	100.0	0.0	0.0	0.0
PED7	438	55.3	98.8	0.7	0.0	0.5
PED8	457	73.9	90.8	9.2	0.0	0.0
PED9	296	20.0	0.0	100.0 ^d	0.0	0.0
PED10	826	61.5	0.3	99.7	0.0	0.0
Total	3,281	40.5	64.5	25.9	0.0	9.6

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b This data item was missing/invalid for 42% of all MSK patients treated by PCPs across all sites during the implementation period: PED4 41%; PED5 34%; PED7 47%; PED8 11%; PED9 7%; PED10 19%.

^c This data item was missing/invalid for 20% of all MSK patients treated by PCPs requiring medication across all sites during the implementation period: PED8 33%; PED9 97%; PED10 23%.

^d Interpret with caution: this data item was missing/invalid for 97% of patients who required medication.

- PED1 and PED2 did not provide this information.

* PED3 was unable to provide paediatric data and it is estimated that paediatric cases represent 45% of ESOP activity and 30% of total ED activity at this site.

Across all sites, around 41% of MSK patients treated by PCPs required medication for pain relief. This ranged from 20% at PED9 to 74% at PED8. Of the patients who required medication, 65% had their medication prescribed by a medical officer, 26% by a nurse practitioner and 10% by another practitioner. PCPs were unable to prescribe any medications for their patients.

Patients may also require a post-discharge referral or certification. Table 30 presents the number of all MSK patients treated by PCPs during the implementation period that required a post discharge referral or certification and whether the PCP was able to provide the service. Data on referrals and certifications was not provided for all patients and percentages exclude missing or invalid data. The number of missing or invalid data has been footnoted and should be considered when interpreting results.

PCPs provided post-discharge referrals for 86% of the 9,261 patients who required them. Almost all of the patients at PED8 who required a referral received it from the PCP, whereas PCPs at PED6 could only provide 18% of the necessary referrals.

Across all sites, 1,994 patients required certification and the PCPs were able to provide the certification for 65% of these patients. The percentage of certifications provided by the PCPs differed among sites. The PCPs at PED3 and PED10 were able to provide certification for around 97% of their patients requiring certification. The PCPs at PED8 were only able to provide around 2% of certifications required and the PCPs at PED9 were not able to provide any certifications.

Table 30 **Number of triage category 3, 4 and 5 MSK patients treated by PCPs that required a post discharge referral or certification by site – implementation period^a**

Site	Referral required ^b	Referral provided by the PCP(%) ^c	Certification required ^d	Certification provided by the PCP(%) ^e
PED1	1,255	71.9	394	50.0
PED2	860	85.0	226	22.6
PED3*	1,122	95.2	291	96.9
PED4	840	91.4	311	82.6
PED5	441	95.7	101	87.1
PED6	345	17.7	78	33.3
PED7	1,412	89.4	77	68.8
PED8	600	98.5	135	2.2
PED9	1,484	96.1	11	0.0
PED10	902	82.3	370	97.5
Total	9,261	85.6	1,994	64.8

^a Implementation (Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b This data item was missing/invalid for 14% of all MSK patients treated by PCPs across all sites during the implementation period: PED1 16%; PED3 9%; PED4 41%; PED8 12%; PED10 12%.

^c This data item was missing/invalid for 17% of all MSK patients treated by PCPs requiring referrals across all sites during the implementation period: PED1 16%; PED3 45%; PED7 54%; PED10 10%.

^d This data item was missing/invalid for 22% of all MSK patients treated by PCPs across all sites during the implementation period: PED1 16%; PED2 9%; PED4 41%; PED5 34%; PED7 47%; PED8 12%; PED9 10%; PED10 12%.

^e This data item was missing/invalid for 10% of all MSK patients treated by PCPs requiring certification across all sites during the implementation period: PED1 20%; PED3 22%; PED10 13%.

* PED3 was unable to provide their paediatric data and it is estimated that this data represents 45% of their ESOP activity and 30% of their total ED activity.

4.6 Unintended consequences

In the interviews conducted at the close of the program, stakeholders and PCPs identified a number of unanticipated outcomes of the PED sub-project. One side benefit noted by a number of physiotherapists (not just PCPs) was the way in which the model of care had drawn attention

to the value of physiotherapy and allied health in general and its potential contribution to the ED setting.

"I'm not extended scope [but] there's still been a few times now having spoken to consultants and just given them what I think's going on and just explain why and they've often been quite happy just to hear from a physio's stand point what we think's going on." (Stakeholder – Other physiotherapist)

"I think it's good that there's another role, apart from nurses, that are seen to be doing a little bit more. Nurses tend to be the ones that get all the jobs, as in they're the first thinking they could do extra, so I think it's been good to have some other professions in the limelight around that. And appropriate too, because that is our skill set, musculoskeletal stuff, so why not train appropriate people for appropriate things?" (Stakeholder – Manager)

"I think for us it's been a fantastic opportunity. It's raised our profile internally and when I speak about internally I mean in a wider sense ... within the organisation in [city] and [nationally]. So having that credibility that comes with having the HWA link." (Stakeholder – Manager)

One consequence of relieving pressure on the medical staff was more time for doctors to complete documentation, which otherwise would "fall by the wayside" or be left until the end of the shift. In addition to its perceived benefits for medical and nursing staff work flow, the primary care focus had freed secondary contact physiotherapists to see more cases appropriate to their own scopes of practice (for example, patients referred to by one respondent as "elderly fallers").

Another respondent commented that it was great for a regional facility to be given the opportunity of HWA funding to pilot the ESOP model of care. Another noted that the project had "kick-started" more of a research focus in the ED, which was challenging but built capacity and confidence among ED staff.

Some negative consequences were also noted. Prominent among these was the fear that once word got out – especially in communities with lower socioeconomic status – that free physiotherapy was now available in the ED, there would be a flood of patients with MSK presentations that were not urgent or appropriate for that setting. Although numerous respondents acknowledged that this was a potential problem, few said they had actually seen evidence of this happening.

"My worry is that we are encouraging people to come for a service that perhaps is something extra for the ED. So sometimes – at the start, as you know, if you're dealing with human behaviour we'll actually treat the people that need it in the first six months. When it gets around to say that there's a physio in ED or there's a short cut to actually you paying your \$59 to see a physio privately. What my concerns are, is how do we stop that and how do we regulate that?" (Stakeholder – Nursing)

"I don't think we've been around long enough for that to start yet. No-one comes in asking just to see a physio." (PCP)

"I think there is a little bit of that but I don't think it's large and I think that you can manage it in that what we do is we don't bring people back to the ED from here. They get their initial treatment and then the follow up and everything is arranged externally." (Stakeholder – Medical)

If this did happen, it would have implications not only for the ESOP-PED model and for ED capacity and flow in general, but also for patient safety. One medical stakeholder pointed out that such patients would miss out on the continuity and coordination of care that a GP and regular physiotherapist could provide. However, this is a problem for regular ED attenders in general and not just for those accessing physiotherapy care.

Another doctor described an incident in which the PCP had recognised one name on the screen as a person who had been presenting to the ED regularly with the same problem. This doctor intervened by telephoning the patient's primary care provider and drawing attention to the need to address this particular problem. The fact that this case was detected via "a little bit of luck" concerned this stakeholder and they suggested a need for a system to flag frequent attenders and those who use the PCP service inappropriately.

Several PCPs discussed the tension between developing the assessment skills required in the ED setting and maintaining the treatment skills needed for other settings. One interviewee also highlighted some perceived gaps in the model, particularly the desirability of being able to refer patients with more complex presentations to a soft-tissue clinic for further assessment and specialist treatment. Under the current model, the PCP's only option when concerned that "there's something not right here" was to refer back to medical staff.

"But then they get a junior doctor that has no clue what I'm talking about ... they just want [to set] the broken bit ... they don't understand that there's two bones but a sea of ligaments and soft tissue that are injured that can be quite disabling." (PCP)

The new model had also highlighted deficiencies in the existing models of physiotherapy in the ED, and raised questions about role definitions and whether specialisation is useful or efficient in that setting.

"...one of the complications I suppose is that we now have physios in three different levels working in the emergency department which does create some challenges ... the extra things [the PCPs] could do made it obvious I suppose what we're missing from the in-scope physios ... It's probably, if anything, made it a little bit harder for them I suppose because people got used to what the extended scope guys could do."
(Stakeholder – Medical)

Finally, PCPs reported some unexpected negative consequences for themselves personally including, in one case, experiencing hostility from another ED staff member. This one person appeared to view the PCP as in competition with their own expanded scope of practice and this led to some direct confrontations over patient management which were uncomfortable for the PCP. The interviewee noted that this was an isolated response:

"There were times when I'd say, "You know, look I've got nothing to do. Do you want me to take those two" and [individual] would go, "No, I've clicked on them now. I can treat them. [Individual] was the only person that has never – not once – asked me for advice." (PCP)

5 Economic evaluation

5.1 Introduction

The ESOP-PED sub-project has the potential to reduce waiting time, treatment time and total length of stay in ED and improve the performance of the ED in achieving better NEAT performance (rate of patients leaving the ED within four hours) for patients suitable for primary contact physiotherapy, including patients with potential fractures. Economic assessments focused on using available data to quantify some of these possible benefits against the incremental costs of providing the PCP service.

Currently, the usual practice in many EDs is to access physiotherapy services by calling on a ward physiotherapist to be made available. Access to this secondary contact physiotherapy model is, however, uncertain and may involve delays, by which time some patients will have already been booked and/or undertaken X-rays. If seen earlier by a physiotherapist, these X-rays may not have been needed, saving money, reducing pressure on radiology and reducing the patients' exposure to potentially harmful radiation. Thus, one of the possible benefits of the PCP model is faster assessment and a resulting reduction in unnecessary ordering of X-ray imaging.

The potential for improved effects of making PCPs available to ED shifts needs to be weighed up against the expected incremental costs. While the PCP is an incremental physiotherapy resource for ED they are likely to substitute for ward physiotherapy services and may also reduce cost of unnecessary X-rays and downstream cost if the program turns out to be effective.

This evaluation attempts to address questions of the incremental effects (as well as pointing towards considerations for incremental costs) of PCP care relative to usual care by:

- (i) Comparing implementation shifts with equivalent baseline shifts controlling for measured potential confounders (noting that other practice factors and the size and complexity of patient populations presenting can change)
- (ii) Comparing shifts with and without PCP present during implementation controlling for measured potential confounders (noting that differences in shifts and associated size and complexity of patient populations presenting can differ) and;
- (iii) Triangulating and inferring between pre-post and matched comparison during the implementation phase from (i) and (ii).

The aim is to allow best attribution of differences in effects in PCP shifts, but also at a system level allowing for impacts arising over time and between types of shifts (for example, the presence of PCPs in some ED shifts could act to either increase or limit the availability or need for physiotherapy resources from wards in other shifts).

5.2 Differences in utilisation – the case of X-ray

The first part of the analysis focused on the ordering of X-rays as an indicator for differences in resource consumption. Only PED3 and PED10 provided complete X-ray data for baseline and implementation periods. Therefore this analysis was only conducted for these two sites, comparing their X-ray rates between the baseline period and the implementation period, as well as X-ray rates for PCPs and other practitioners during the implementation period. To minimise potential variability in the case-mix of patients presenting in these comparisons, analysis was restricted to presenting problems of knees and feet / ankles that were suitable for Ottawa knee rules (Bachmann et al., 2004) or Ottawa ankle rules (Bachmann et al., 2003). Diagnoses were chosen according to ICD-9 (Beutel et al., 2012) and ICD-10 (De Boer et al., 2014) and their equivalences (Table 31).

Table 31 **Diagnosis groups and correspondence between ICD-9 and ICD-10³**

ICD-9	ICD-10
822-824	S82
836, 844	S83, S869
825-826	S92
837-838, 845	S93, S969
	T033, T132
916, 917, 9241, 9242, 9243, 9244, 9245, 9248, 9249	S80, S90, T003, T130
9597	S89, S99
<hr/>	
71616	M1256
71617	M1257
717	M23, M224
891-893	S81, S91, T013
9281	S87
9282, 9283	S97
827	T023, T12
9288, 9289	T043

The analysis included adult patients (aged 18 and over) triaged to categories 3, 4 or 5 and not subsequently admitted to the presenting hospital or transferred to another hospital. To adjust for differences in case-mix, propensity score matching was used. That is, potential bias due to confounding factors such as Indigenous status, mode of arrival, triage category, diagnosis group, age and gender was reduced (Rosenbaum, 2010; Sekhon, 2011).

The first set of comparisons was carried out for all relevant patients between baseline and implementation. For PED3, X-ray rates were 59.8% at baseline and 56.1% during implementation, while adjusted X-ray rates after propensity score matching were 3.4 percentage points lower during implementation (SE 1.7, $p=0.05$). For PED10, X-ray rates were 70.6% at baseline and 70.4% during implementation. After matching, X-ray rates were 1.0 percentage point lower during implementation but this was not statistically significant (SE 1.7, $p=0.552$).

Table 32 shows the number of patients for which X-ray was ordered and not ordered.

Table 32 **Comparison of X-ray utilisation**

	Baseline		Implementation					
	Total		Total		PCP		Other Practitioners	
	X-ray ordered	no X-ray ordered	X-ray ordered	no X-ray ordered	X-ray ordered	no X-ray ordered	X-ray ordered	no X-ray ordered
PED3	969	651	1,135	886	299	188	836	698
PED10	962	400	1,402	590	300	144	1,102	446

The second set of comparisons was between PCPs and other practitioners during implementation. For PED3, during implementation X-ray rates were 61.4% for PCPs and 54.5% for other practitioners, while adjusted X-ray rates after propensity score matching were 7.0 percentage points lower for other practitioners (SE 2.7 $p=0.010$). For PED10, during implementation reported X-ray rates were 67.6% for PCPs and 71.2% for other practitioners, while adjusted X-ray rates after propensity score matching were 1.6 percentage points higher in other practitioners (SE 2.6, $p=0.54$).

A third set of comparisons was undertaken for other practitioners between baseline and implementation. For PED3, reported X-ray rates of other practitioners fell from 59.8% at baseline to 54.5% during implementation, while adjusted X-ray rates after propensity score matching were 4.6 percentage points lower in other practitioners after implementation (SE 1.9,

³ Data issues and terminology were discussed in detail in Section 4.

p=0.016). For PED10, reported X-ray rates of other practitioners increased from 70.6% at baseline to 71.2% during implementation, while adjusted X-ray rates after propensity score matching were 0.7 percentage points higher in other practitioners after implementation (SE 1.8 p=0.67).

In summary for PED3, overall there was a small, while not statistically significant (at 5% level) decline in X-ray rates observed comparing implementation with baseline even though there were significantly higher X-ray rates for ESOP in comparison to other practitioners. Overall there is a slightly positive impact in reducing the X-ray rates across the treatment population, but this would be expected to be significantly greater if all shifts had PCPs. In PED10 no difference was found between implementation and baseline or ESOP and other practitioners. However, X-ray rates were much higher at PED10 than at PED3 for all periods and across both PCPs and other practitioners in the implementation period.

5.3 PCP contribution to reduction of length of stay in ED

The second part of this evaluation focused on the contribution of PCPs towards reducing length of stay in the ED for all patients as well as waiting times and treatment times. The information supplied by the sites allowed identification of shifts worked by PCPs. At all sites these shifts covered times between 8am and 8pm. At six sites certain weekdays could be identified that never had an PCP on shift (labelled as *off* in the following tables). For these weekdays a 'similar' weekday either before or after was selected based on closest level of activity. It was also assumed that the type of patients presenting on these weekdays did not differ. In addition, the activity on the same weekdays in the baseline period (one year prior) was extracted. The shifts were labelled correspondingly as off or on to facilitate comparison. However, no PCPs were available in the baseline period.

The situation at PED1 differed slightly. PED1 had an existing PED service during the baseline period who never worked on Wednesdays. During the implementation period all day shifts were covered by a PCP. It was nevertheless decided to include PED1, which will be discussed separately. Table 33 shows the identified time periods and selected weekdays for each site. For four sites no such shift pattern could be identified, therefore only comparison between baseline and implementation period was possible.

Table 33 PCP shifts

	Time period	off	on
PED1	01/10/2011 - 30/09/2012	Wednesday	Thursday
PED2	18/02/2013 - 22/09/2013	Thursday	Friday
PED5 (Period 1)	01/11/2012 - 31/03/2013	Wednesday	Tuesday
PED5 (Period 2)	01/07/2013 - 30/09/2013	Wednesday	Tuesday
PED6	01/11/2012 - 30/09/2013	Tuesday, Wednesday	Thursday, Friday
PED8 ^a	09/11/2012 - 28/08/2013	Saturday-Tuesday	Saturday-Tuesday
PED9	21/01/2013 - 22/09/2013	Friday	Wednesday
PED3	01/10/2012 - 30/09/2013	-	-
PED4	01/10/2012 - 30/09/2013	-	-
PED7	01/10/2012 - 30/09/2013	-	-
PED10	01/10/2012 - 30/09/2013	-	-

^a In PED8, Saturday – Tuesday was covered by a PCP every second week while no PCP was on shift on the other week.

Since PCPs primarily worked during day shifts which are the busiest times in the ED (AIHW, 2013) only patients where treatment began between 8am and 8pm were included.

5.3.1 Sites with identifiable shift patterns

Table 34 shows the number of patients treated in the ED between 8am and 8pm on the selected weekdays, both during the implementation period and in the baseline period. At PED8 a higher NEAT performance was achieved (in relation to both implementation versus baseline

and during implementation with PCPs on versus off shift), with 7-8 percentage points more patients treated during implementation in the same shifts (on and off) both with and without PCPs (on and off).

At PED5 during the implementation phases significantly more patients were treated in shifts with PCPs present (on versus off) in both periods of implementation and had higher NEAT rates. However, the number of patients treated in both cases was less than at baseline and overall NEAT rates were reduced relative to baseline combining these two shifts.

Similarly, at PED2 and PED6 a higher NEAT performance was achieved (ESOP on versus off shift) but the total throughput of patients was slightly lower. However, the absolute number of patients leaving the ED within four hours with PCPs present was still higher than on the days when no PCP was on shift. The NEAT performance was slightly less than at baseline on the PCP days but this can be inferred as attributable to a higher number for patients presenting as the absolute number of patients leaving within four hours was slightly higher.

At PED9, the NEAT performance improved markedly (by 11-12 percentage points) during implementation relative to baseline both for shifts where the PCP was present (on) and not (off). While the shift with PCP present during implementation also had a greater number of patients treated than the shift without the PCP present this did not lead to a higher NEAT rate due to a greater number for patients presenting.

At PED1, in the baseline period there was higher patient throughput and slightly better NEAT performance on the days when a PCP was on shift than on the days with no PCP. Comparison to the implementation period when all shifts were covered by a PCP showed that NEAT rates increased markedly (about 9 percentage points) in both shifts. However, the number of patients treated only increased by 2% in the PCP shift but by 8% in the shift where the PCP was previously off.

Table 34 All patients – shift comparison

	Patients treated (8am – 8pm, per day)				Patients leaving ED within 4 hours %			
	Baseline		Implementation		Baseline		Implementation	
	off	on	off	on	off	on	off	on
PED1	90.4	93.4	98.5	95.6	66.3	66.6	75.0	76.0
PED2	55.0	52.5	54.6	55.1	72.4	70.8	74.2	76.0
PED5 (Period 1)	92.1	97.3	90.5	95.4	72.8	77.8	72.9	77.6
PED5 (Period 2)	94.5	94.6	90.2	96.5	72.4	72.1	68.4	72.4
PED6	68.3	66.3	68.0	66.8	86.6	86.7	83.1	86.0
PED8	99.4	99.6	106.8	108.2	61.8	61.4	72.8	73.1
PED9	94.3	97.2	100.9	103.5	75.0	73.5	86.4	85.9

Table 35 compares equivalent implementation relative to baseline shifts for shifts with PCP present and not focussing on MSK patients⁴. At all sites a higher NEAT performance was achieved in implementation shifts with PCP present compared to the equivalent shift at baseline. In most sites this was associated with a higher number of patients treated, except for PED5 in period 1, where a marginally higher NEAT rate was attributable to a smaller patient population presenting.

In comparisons between implementation shifts where the PCP was present (on) versus not (off), the NEAT rate was increased with the PCP present in all sites except PED8. While the NEAT performance at PED8 was slightly lower, the absolute number of patients leaving the ED within four hours was the same.

⁴ For a detailed definition of this patient group see Section 4.

Generalising across sites both in comparison relative to the baseline period and relative to shifts without PCPs, MSK patient throughput and the NEAT performance increased more on the day a PCP was added to the shift.

Table 35 MSK patients – shift comparison

	MSK patients treated (8am – 8pm, per day)				MSK patients leaving ED within 4 hours %			
	Baseline		Implementation		Baseline		Implementation	
	off	on	off	on	off	on	off	on
PED1	26.3	27.5	29.0	27.9	79.7	79.6	85.1	84.5
PED2	24.5	21.6	23.5	24.0	84.5	81.0	85.0	86.4
PED5 (Period 1)	31.0	34.3	29.2	32.1	77.4	85.8	80.0	86.7
PED5 (Period 2)	29.2	30.7	27.0	30.8	85.2	80.7	77.8	84.5
PED6	15.0	14.1	14.4	14.9	84.3	85.4	82.0	86.7
PED8	23.0	23.3	25.3	26.0	78.7	77.9	88.4	87.2
PED9	30.6	30.2	30.7	31.2	83.3	86.3	89.7	92.4

Table 36 shows the average length of stay in ED. Generally, on shifts with a PCP present the average length of stay in ED was lower than on the shifts without a PCP present. At PED8 and PED9, the average length of stay was slightly higher but when compared to the baseline period a better improvement can be inferred. Reductions in length of stay relative to baseline were particularly high in PED9 and PED2.

Table 36 Length of stay in ED (minutes) – shift comparison (Mean (SE))

	Baseline		Implementation	
	off	on	off	on
PED1	278.9 (3.7)	283.3 (3.7)	255.3 (3.6)	239.8 (3.3)
PED2	200.8 (3.8)	198.1 (3.6)	189.7 (3.3)	182.4 (3.0)
PED5 (Period 1)	203.1 (4.4)	180.1 (4.2)	197.6 (3.9)	182.7 (3.8)
PED5 (Period 2)	208.5 (5.7)	212.2 (6.2)	213.9 (5.6)	200.0 (5.3)
PED6	141.7 (1.2)	141.0 (1.2)	154.5 (1.3)	151.2 (3.4)
PED8	312.7 (4.8)	323.5 (5.0)	255.1 (3.8)	259.1 (3.8)
PED9	188.5 (2.7)	195.3 (2.8)	164.5 (2.0)	165.5 (2.1)

Table 37 compares waiting times between baseline and implementation for equivalent shifts with and without a PCP. On the days when a PCP was on shift waiting times were much lower than on days when no PCP was present in several sites (Table 37). While waiting times were generally lower in PCP shifts during implementation, this may be attributed to lower waiting times at baseline in the equivalent shifts, with several sites (PED6 and PED5) in both period 1 and period 2 having higher waiting times in the shifts with PCP present relative to baseline.

Table 37 Waiting times (minutes) – shift comparison (Mean (SE))

	Baseline		Implementation	
	off	on	off	on
PED1	26.1 (0.5)	25.9 (0.5)	25.4 (0.4)	25.7 (0.4)
PED2	31.6 (0.8)	30.0 (0.8)	27.0 (0.7)	27.1 (0.7)
PED5 (Period 1)	33.0 (0.8)	21.9 (0.6)	34.9 (0.9)	25.4 (0.7)
PED5 (Period 2)	37.3 (1.1)	27.0 (0.9)	40.8 (1.2)	30.1 (1.0)
PED6	42.8 (0.5)	34.4 (0.5)	42.7 (0.6)	37.3 (0.5)
PED8	36.1 (0.5)	36.9 (0.5)	35.2 (0.4)	35.5 (0.5)
PED9	37.7 (0.7)	34.7 (0.7)	37.7 (0.7)	35.8 (0.7)

Table 38 compares treatment times between baseline and implementation for equivalent shifts with and without a PCP. Treatment times on the days when PCPs were on shift were lower than on days when no PCP was present in all sites except PED9 and PED8. Treatment times were

also generally lower in PCP shifts during implementation relative to baseline, with particularly marked reductions in PED8, PED9 and the PED1.

Table 38 Treatment times (minutes) – shift comparison (Mean (SE))

	Baseline		Implementation	
	off	on	off	on
PED1	252.8 (3.7)	257.3 (3.7)	229.9 (3.6)	214.2 (3.3)
PED2	169.2 (3.9)	168.1 (3.7)	162.7 (3.3)	155.3 (3.1)
PED5 (Period 1)	170.1 (4.4)	158.2 (4.2)	162.6 (3.9)	157.2 (3.8)
PED5 (Period 2)	171.2 (5.8)	185.2 (6.2)	173.1 (5.6)	169.9 (5.3)
PED6	99.0 (1.1)	106.6 (1.1)	111.8 (1.2)	114.0 (3.3)
PED8	276.6 (4.8)	286.6 (5.0)	219.9 (3.8)	223.6 (3.8)
PED9	150.7 (2.6)	160.6 (2.7)	126.9 (2.0)	129.7 (2.0)

5.3.2 Sites without shift pattern

For the sites where no shift pattern could be identified, comparison is restricted to average patients treated per day for implementation relative to baseline across patients treated in ED between 8am and 8pm, along with the percentage of patients leaving ED within four hours (Table 39). At all sites patient treatment increased from baseline. Rates of NEAT performance improved markedly at PED3 and PED4, while reducing marginally at PED7 and PED10 due to the number of patients presenting increasing at a faster rate than the treatment rate increased.

Table 39 All patients – comparison to baseline

	Patients treated (8am – 8pm, per day)		Patients leaving ED within four hours %	
	Baseline	Implementation	Baseline	Implementation
PED3	53.0	55.1	64.5	68.9
PED4	67.6	68.9	55.7	59.0
PED7	112.7	115.1	57.8	56.8
PED10	116.1	127.1	52.4	51.7

Table 40 shows the results when focusing on MSK patients. At all sites except PED3 the number of MSK patients increased, while NEAT performance improved in all sites except PED7. The improvement in NEAT at PED3 was attributable to a smaller number of patients presenting more than offsetting the marginal reduction of patients treated. Conversely, at PED7 the reduction in NEAT rates was due to a significant increase in patients presenting being higher than the increase in treatment, with more patients leaving ED within four hours despite the reduced NEAT rate.

Table 40 MSK patients – comparison to baseline

	MSK patients treated (8am – 8pm, per day)		MSK patients leaving ED within four hours %	
	Baseline	Implementation	Baseline	Implementation
PED3	16.6	16.5	79.7	82.2
PED4	19.7	20.2	64.1	68.5
PED7	27.6	29.0	64.9	63.4
PED10	17.7	20.0	70.4	73.0

Table 41 shows the average length of stay in ED at baseline and during implementation at these remaining sites where shift comparison was not possible. During implementation the average length of stay in ED was significantly lower at PED3 and PED4 while significantly higher at PED10 and not statistically different at PED7 (at 5% level).

Table 41 Length of stay in ED (minutes) – comparison to baseline (Mean (SE))

	Baseline	Implementation	p value
PED3	244.4 (1.4)	232.9 (1.4)	< 0.001
PED4	282.7 (1.5)	275.8 (1.5)	< 0.001
PED7	276.8 (1.3)	278.4 (1.3)	0.38
PED10	289.4 (1.3)	299.3 (1.5)	< 0.001

Table 42 shows the average waiting time in ED at baseline and during implementation at these remaining sites where shift comparison was not possible. During implementation the average waiting time in ED was significantly lower at PED4 while higher at PED10 and not statistically different at PED3 and PED7 (at 5% level).

Table 42 Waiting times (minutes) – comparison to baseline (Mean (SE))

	Baseline	Implementation	p value
PED3	60.5 (0.4)	61.0 (0.4)	0.39
PED4	37.3 (0.3)	33.6 (0.3)	< 0.001
PED7	68.7 (0.4)	68.2 (0.4)	0.39
PED10	30.1 (0.2)	33.1 (0.2)	< 0.001

Table 43 shows the average treatment time in ED at baseline and during implementation at these remaining sites where shift comparison was not possible. During implementation the average treatment time in ED was significantly lower at PED3 while higher at PED10 and not statistically different at PED4 and PED7 (at 5% level).

Table 43 Treatment times (minutes) – comparison to baseline (Mean (SE))

	Baseline	Implementation	p value
PED3	183.9 (1.4)	171.9 (1.3)	< 0.001
PED4	245.5 (1.5)	242.2 (1.5)	0.13
PED7	208.1 (1.3)	210.2 (1.2)	0.24
PED10	259.3 (1.3)	266.2 (1.4)	< 0.001

Finally, it was investigated whether a seasonal effect in MSK patients and the proportion of patients seen by PCP could be observed. For this analysis only the sites PED1, PED7, PED3, PED10 and PED4 were considered because the others had missing data for some of the months. Figure 19 shows the total daily number of ED presentations (treatment commenced between 8am and 8pm). MSK patients made up 22 to 25 percent of all ED presentations with higher rates between February and June. The number of MSK patients seen by PCPs constantly increased through the course of the implementation period (October 2012 to September 2013) from 9 to 15 percent at the end of the project. Afterwards, the rate dropped to 9.5%, partly due to discontinuation of some PCP positions. When looking at the number of patients seen by a PCP compared to all ED presentations, then this rate varied between 2 and 3.4 percent.

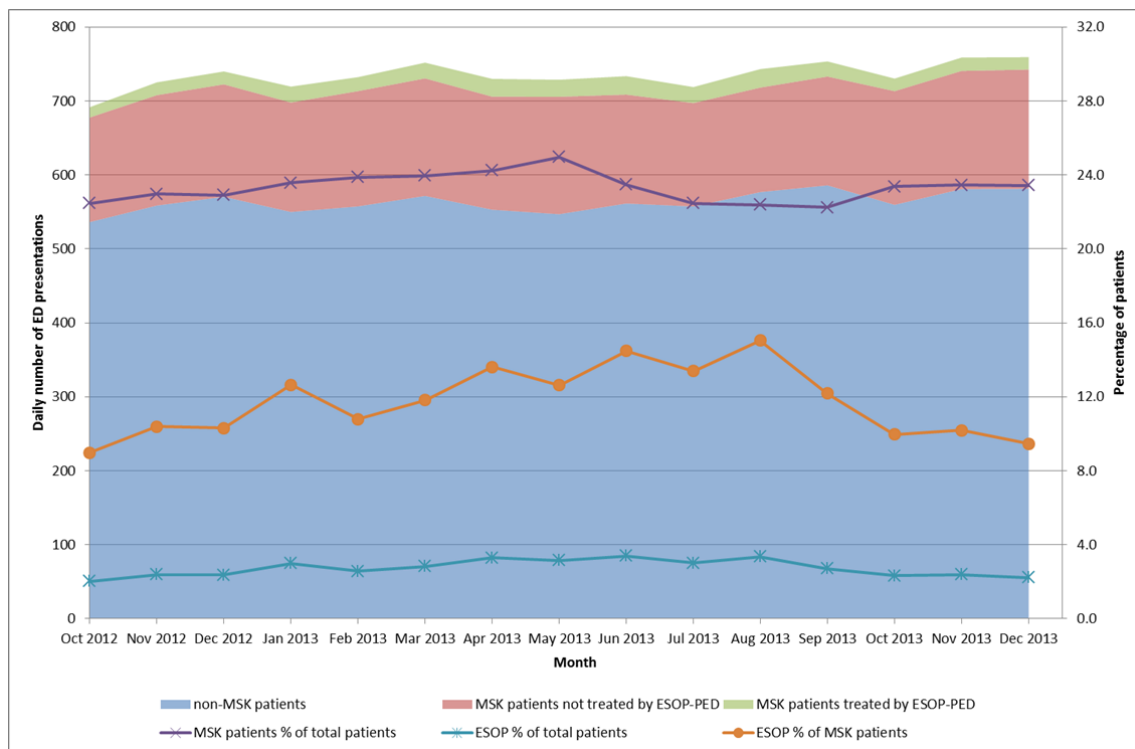


Figure 19 Variation of daily ED presentations by month and MSK patients seen by PCP

5.4 Summary

The analysis described in this chapter consists of two separate considerations. The first part addressed the issue that PCPs potentially have a higher utilisation of resources. While the analysis undertaken only focused on a selected cohort presenting with knee or ankle injuries, conclusions could only be drawn with caution. However, no consistent pattern could be found. At PED3 the X-ray rates of PCPs were significantly higher than for other practitioners while at PED10 the X-ray rate of PCPs was slightly lower (not significant at 5% level) than the rate of other practitioners. However, X-ray rates at PED3 were much lower than at PED10. As this data is from only two of the PED sites there are no definitive findings.

The second part of the analysis addressed the issue of PCP contribution to reducing waiting times, treatment times and length of stay in the ED for all patients treated between 8am and 8pm. Due to the limitations of the data a study design was chosen that compared activity levels on weekdays with PCPs on shift against 'similar' weekdays when no PCP was on shift during the implementation period. In this way potential confounding factors, such as changes in case-mix of patients presenting to the ED and staffing levels in the ED between baseline and implementation period could be reduced. At most sites, it was found that on days with PCPs on shift NEAT performance (the percentage of patients who left the ED within four hours) was higher as was patient throughput. Waiting times, treatment times and total time spent in the ED was also lower on these days at most sites.

Whilst the method of analysis has controlled for some variation it has not been possible to control for all confounding factors and therefore it was not possible to quantify the PCPs' contribution toward these improvements.

6 Sustaining innovation

Two innovative models expanding the scope of practice of physiotherapists in the ED have been implemented in a small group of hospitals in five different States and Territories. The strategies deployed by project teams to manage and embed these changes have been closely examined as part of the national evaluation. This section of the report explores the major influences on sustainability and addresses the question from the ESOP evaluation framework: 'Can you keep it going?' An innovation ideally leads to a lasting improvement in level or service or quantity or quality of output by an organisation (Bartos, 2003). Organisations have successfully sustained the innovation "when new ways of working and improved outcomes become the norm" (Maher et al., 2006).

Some models of sustainability focus on identifying factors or conditions that increase the likelihood of a specific intervention being continued. Other models examine sustainability from a systems perspective, focusing on the interplay of environmental forces, contextual influences and the intervention (Stirman et al., 2012). In reality, it is a combination of both perspectives that produces the greatest insights about sustaining innovation.

Influences on the sustained use of new practices, programs or interventions can be broadly classified into four categories:

- characteristics of the innovation (its fit, adaptability, effectiveness and ability to maintain fidelity)
- organisational context (including external factors like the climate of the health system and legislation and internal factors such as organisational culture and leadership)
- the capacity to sustain the innovation (including external factors like funding and internal factors such as access to champions, workforce availability etc.)
- processes that facilitate sustainability (such as stakeholder engagement, collaboration and partnership development and integration of policies and procedure) (Stirman et al., 2012).

These categories were identified from a review of the literature relating to the sustainability of new programs and innovations in healthcare settings (Stirman et al., 2012). The ESOP program evaluation captured data on factors influencing sustainability from a range of sources including semi-structured interviews and the use of the NHS Sustainability Model (Maher et al., 2006). This categorisation provides a way of organising the major evaluative findings for the PED sub-project. It is illustrated in Figure 20. Only factors that were relevant to the PED sub-project were addressed in the following analysis.

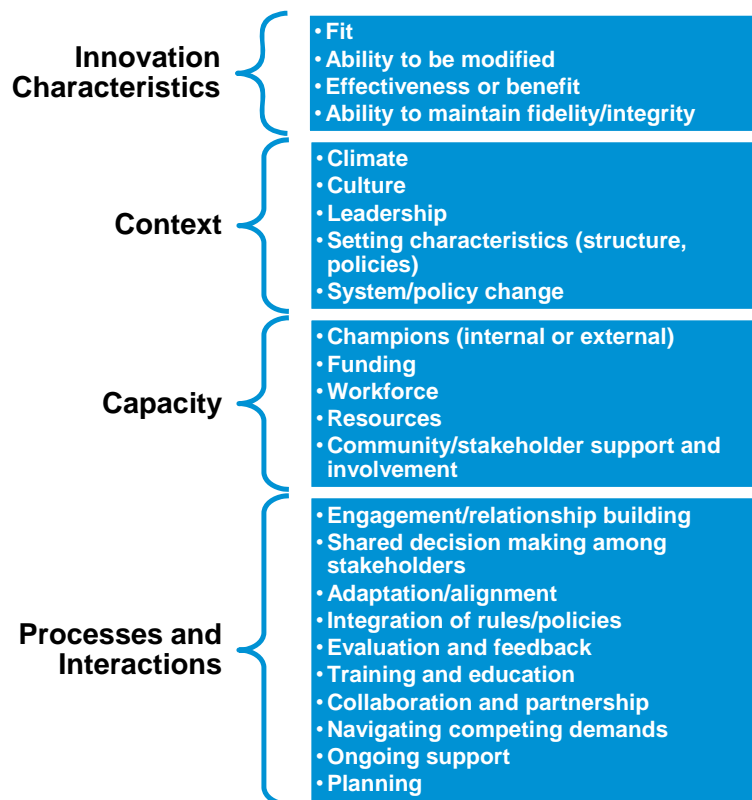


Figure 20 Influences on sustainability (adapted from Stirman et al., 2012)

6.1 Innovation characteristics

Innovation characteristics relevant to the sustainability of the PCP role are the fit of the initiative, the ability of the model of care to be modified, the ability to maintain fidelity of the model during implementation and the perceived effectiveness or benefit generated from the model of care.

6.1.1 Fit of the initiative with the organisation

The PCP initiative appeared to have a good fit with most organisations. Due to increased demand and stringent performance targets (as described in Section 1), the models of care were well-suited to potentially contribute to addressing these areas, which were of high import to most organisations. Physiotherapists were highly regarded for their expertise and skill and ED personnel were enthusiastic supporters of the PCP's role and focus on the MSK patient cohort.

"So, it's a win/win for me. They see about six or seven patients a shift which is equivalent to a HMO 2; it's significantly more than an intern and I believe the level of care they provide is fantastic – actually superior to what I would expect a junior doctor to give. The example I would give is back pain; doctors don't treat back pain well. We've got two things in mind and the first thing is to get them to keep quiet so we pump them full of analgesia and the second thing is to get them out and they don't particularly care about what happens to them afterwards – send them to the GP. I'm talking about emergency doctors; not necessarily all doctors.

Observing the musculoskeletal physiotherapist, it's completely different; they do a holistic approach, they look for the red flags probably better than doctors do, they teach them how to mobilise, injury prevention and all of that in a much shorter period of time than we can do. If I go to an emergency department with back pain, I would be very comfortable to be seen by a musculoskeletal physiotherapist. I actually prefer it." (Stakeholder-Medical)

6.1.2 Ability for modifications

There was an ability to adapt and modify aspects of the PCP models of care, which facilitated acceptance and improved outcomes. The experience of implementation showed that localities had varying demand and supply issues for health services. There was a need to modify the focus of the PCPs to ensure alignment between the model of care and the local setting. For example, in order to use their skills and expertise to full advantage and maximise their contribution to ED productivity, the PCPs at PED4 expanded their patient inclusion criteria. Similarly, PCPs at PED6 expanded their service to include secondary contact to MSK and other patients and also established a Soft Tissue Review Clinic, ensuring the ESOP physiotherapists had an appropriate and sustainable workload. The modular approach linked to competency based assessment appeared to have greater flexibility for training and implementation.

The original PED7 model and training program was modified based on feedback from physiotherapists at the implementation sites. This feedback largely concerned the applicability of the information in the modules to EDs outside the ACT. For example, nitrous oxide is used for pain relief in Queensland but not in the ACT. The development of competencies regarding its use was therefore required for PCPs in this jurisdiction, and use of nitrous oxide was added to the pharmacology module and the clinical skills logbook.

The requirement of the PED7 model for PCPs to complete the University of Canberra's Graduate Diploma of Extended Scope Physiotherapy required a significant investment of resources. The majority of project teams that sent a physiotherapist to this training advised that this was not sustainable given the cost of the course and issues backfilling the PCP and maintaining service delivery. The facility for recognition of prior learning should be included in training pathways.

“So there's a lot of benefit to having a lead site, but I think what's uncomfortable is when someone tells you you're going to implement another hospital's model, because often you've got a model of sorts yourself and that's when people start to get their backs up and say, “Well, hang on a minute. We don't all have to be the same as them.” But what I'm very happy with is implementing principles. These are the principles, that you have sustainability, you have capacity building, you have succession planning....So I think it's about being really clear what the lead site's role is...It's about talking about what principles they have and it's up to the implementation site to adapt those to their local context...We don't have the same infrastructure, the same resources, etcetera. But we'll take your principles and we'll happily apply them.” (Stakeholder-Allied Health Manager)

6.1.3 Implementation fidelity

Each implementation site faced barriers to implementing certain elements of the ESOP role. These were predominantly legislative and differed from State to State. The barriers to prescribing and administering medication prevented the PCP from providing pain relief (this had to be done with the assistance of a nurse or doctor) and injecting. This meant that most PCPs were unable to provide ring blocks as they could not inject local anaesthesia or aspirate joints (the latter occurred infrequently in the ED).

“That has been a barrier to a degree I think certainly for completeness...Logistically it wasn't such an issue but I think professionally it would have been really good to have been able to make that step” (PCP)

“I think those things are the things that would just make... in busy times would just make the flow a little bit better. They're not big things but when it's busy, you know someone's got to play basketball, their finger's out there, you want to put a ring block in to reduce it – instead of having to go and find the consultant or find someone to do it for you, like, you know, you could just do it; you could just do it and

get on with it. It takes less than two minutes whereas sometimes you might have to wait for whoever's going to do it for you to be free. That could be half an hour, three quarters of an hour; the patient could be gone by then. The patient could well and truly be tied up and gone, you know, on their way." (PCP)

"Yes, we've sort of sorted out the X-ray ordering so it's really prescribing now that's the biggest inefficiency. There are some other procedures that, you know, ring blocks is the thing that we're very keen on and they're a low frequency thing that's done anyway. It certainly makes it much easier for the physio to manage someone when they do come with a dislocated finger or those sorts of things but the amount of effort required to teach credential... go through the prescribing... all the hassle for the volume that they actually ended up seeing, I'm not quite sure where the efficiency lies there. I think it's one of those procedures that they can only use in a very selected group of patients whereas junior doctors can use it in a much broader group so by teaching them to do it, we get greater efficiency out of the junior doctors." (Stakeholder-Medical)

Several sites also raised their inability to order pathology as a barrier and in some locations the PCP was not permitted to provide work cover certificates.

"It's just the restriction in the role in itself at the moment that can't work to full capacity, and I think that can be quite frustrating when it's extremely busy, to be sort of interrupted to fill out a prescription for somebody else's patient because then you haven't seen that patient and it's not easy to write a prescription when you haven't examined the patient or you haven't got a medical history yourself. You're kind of trusting this other person who – you don't really know their skills and background. So like I said, it took time to develop a trust in that person and, if somebody had to backfill the role, once again that new person – it just takes time to develop the trust to even consider doing that, or you have to re-examine their patient. So I think that was the biggest negative with that role, is just they're unable to prescribe and write workers' compensation forms." (Stakeholder-Nurse Practitioner)

6.1.4 Effectiveness or benefit

Project teams that consistently communicated achievements were better able to sustain interest in their initiative. Presenting early wins and communicating widely to many different organisational stakeholders helped silence critics and swayed some of the sceptics. This was most effective when the data presented was aligned to organisational KPIs. The teams who used this strategy most effectively listened to the criticisms of their project and communicated information that addressed this.

For example, as performance indicators were related to the NEAT, if the length of time patients spent waiting for treatment from a PCP was less than 'usual practice' this was clearly conveyed. Other evidence of effectiveness, such as benefits to patients (and patient satisfaction), improving the flow of patients through the ED and efficiencies through relieving medical personnel from treating low acuity MSK presentations were conveyed to stakeholders by many project teams.

All project teams developed steering committees or advisory groups with a wide range of key stakeholders. Regular information was provided to committee members about progress and this improved understanding of the benefits of the PCP role amongst the multi-disciplinary team.

6.2 Context

The key 'contextual' factors that impacted sustainability of the PED sub-project included the organisational climate, culture, leadership, characteristics of the localities in which the projects were based and system / policy change.

6.2.1 Organisational climate

Hospitals' finite resources and budgetary considerations mean other innovations and priorities continually competed with the ESOP-PED initiative.

"There is an unfortunate separation of the budget holders, where savings in ED are returned to its budget, not to the budget which pays the ESOP physiotherapy salaries. This situation needs to be resolved not just here, but in other sites where project funding underpins new workforce initiatives, to ensure longevity of sound workforce reform programs such as ESOP physiotherapy, which may well produce significant benefits to patients, costs, healthcare providers and health outcomes."
(Stakeholder-Allied Health Manager)

This climate of limited resources also led to managers having to balance the implementation of the PED sub-project with multiple organisational demands. Project officers / managers frequently held a dual role of lead clinician. Project teams that maintained a high level of investment in project management best positioned their projects for sustainability.

6.2.2 Organisational culture

The culture of the ED is unique and characterised by a team based approach with a high degree of inter-professional collaboration. Project teams, and particularly the PCPs, therefore had to work at engaging their peers and communicating their role. This included engagement of ED nursing and medical staff. Continuous internal stakeholder engagement was just as essential as external stakeholder engagement. The rotating nature of junior medical officer placements and high number of part-time staff working in the ED meant that PCPs had to repeatedly explain their ESOP role.

"I think there's still a bit of a mindset that doctors are the only people that can order and interpret imaging, and we disagree with that. So it's just taking them on a journey to get to that point. And I mean, the United Kingdom is far, far more advanced than we are around their radiographers and what they do, so there's still just a reluctance..." (Stakeholder-Allied Health Manager)

Although the PCP was an established position at several project sites, where the role was new to a site the performance of the PCPs was under significant scrutiny and these pressures, if not well managed, may have impacted upon the retention of the PCP and project sustainability.

6.2.3 Leadership

The clinical lead physiotherapist was critical in providing leadership for the PCP model of care and was often the key individual responsible for service implementation, liaising with stakeholders, overseeing the service and training of new staff. The PCPs also had to demonstrate leadership qualities as they championed the new model of care on a daily basis through their interactions with patients and other staff in the ED.

"Well you've really got to be able to work independently, able to relate at an appropriate level and push something; you've got to take people with you – like if you want something done in a department in a hurry, you've got to be able to influence the decisions of other people and get yourself prioritised and things like that. To a degree, you've got to be able to... yes, demonstrate to medical staff that you can handle those roles and you can educate and you can direct medical staff where appropriate to what should be done." (PCP)

The ESOP-PED sub-project had two lead sites and each lead supported several implementation sites. Leadership and support from the two lead sites was important to ensuring sustainability of the model of care at implementation sites. However the presence of two lead sites had to be managed carefully to avoid any sense that they were in competition. The maturity of project teams at each lead site ensured that this did not become a problem.

“You’ve got to find a happy medium between having enough lead sites, because they can’t introduce it at too many places and then not having too many cooks trying to spoil the broth. So I think we’ve felt that there are some inefficiencies there.”
(Stakeholder-Allied Health Manager)

Both lead sites were also implementation sites and this created pressures as they had to balance the competing demands of both roles. Implementation sites were allocated to lead sites by HWA and most project teams felt a more sustainable option would be to link implementation sites with a lead site in their own jurisdiction. This provided support in addressing implementation barriers that may be unique to that State or Territory.

“...Having someone actually on the ground for a block period of time to really demonstrate the role, to demonstrate the service, as well as obviously do some of the education credentialing and those sorts of things I think would be really useful. Because I think the feedback that I’ve had is that everyone was finding their way, and so there was a bit of disorganisation because everyone was sort of muddling together.” (Stakeholder-Allied Health Manager)

“...if you’re going to have a lead site, by all means, have them in the same State so at least there’s those synergies there and if they develop something we can use it ...Our laws are different to theirs.” (Stakeholder-Allied Health Manager)

6.2.4 Characteristics of the localities

The sustainability of the PED sub-project was dependent on selecting the right implementation locations. Project teams understood the demographics of their local area and current (and increasing) demand on ED services, particularly from lower acuity MSK presentations that potentially could be managed by suitably trained and experienced physiotherapists. Demand for PCP appropriate cases provided an adequate caseload in most localities, ensuring full utilisation of the PCP capability and positively influencing sustainability of the role. In PED6 the role worked more effectively for the ED when the PCP assisted with clearing any remaining secondary contact cases still in the department at the start of their shift.

Demand for PCP appropriate cases often fluctuated and project teams that identified times of peak demand and modified their delivery accordingly were best placed to provide an effective service.

Several project teams had prior experience with PCP services in both the ED and outpatient setting. Services that develop a critical mass of PCPs appear better placed to sustain the role as they have the capacity to cover leave and the resources to train other physiotherapists in the ESOP model of care.

6.2.5 System / policy change

Lead sites worked collaboratively to address professional and legislative barriers as they emerged. Pre-existing relationships with State Department of Health officers were invaluable and assisted lead sites to progress some of these barriers, albeit in incremental steps. The sub-project was challenged by the issues of credentialing and professional recognition of the ESOP role.

The PED sub-project continues to encounter barriers in most jurisdictions to prescribing. The issue of prescribing was bigger than the individual project and projects were unlikely to achieve this without the support of State and Territory health departments. HWA's recent gains with the Health Professional Prescribing Pathway may generate some impetus to overcome these barriers particularly in the ACT and Queensland.⁵

"We've been really lucky in as far as our relationships with the Department of Health here as well and looking at discussions around how do we start to lobby to get those legislative barriers removed. I think that will be a long time coming. I don't think these are quick processes." (Stakeholder-Allied Health Manager)

One lead site expanded on these barriers, reporting:

"Current Medicare and legislative barriers prevented further expansion of the current scope of practice for the ESOP physiotherapists. Removing some of these barriers and allowing an ESOP physiotherapist to have additional responsibilities such as limited prescribing rights, the ability to request imaging other than plain film X-rays, requesting routine blood tests and the authority to issue initial WorkCover certificates, could possibly further improve service outcomes and reduce the frequency of the need to consult with the medical team". (PCP)

6.3 Capacity

Other key influences on sustainability included the existence of 'change champions' (both internally and externally), resources, the characteristics of the workforce or PCPs themselves and funding.

6.3.1 Change champions

Most project teams had a change champion/s; these were more often internal to the organisation than external. Medical champions were a critical strategy and increased acceptance of the PCP model of care amongst ED staff and other members of the healthcare team. The role of a medical champion was also pivotal to sustaining project activities through advocating for the project and providing practical assistance and mentoring to the PCP.

Champions supportive of innovation and change who understood the role of the PCP in the ED were ED Directors or ED consultants. Other change champions included other members of senior management and department heads, State Health Chief Allied Health Officers, directors of physiotherapy, pharmacy, ED data management teams and medical champions from orthopaedics, rheumatology and emergency medicine disciplines.

"It's great to have the mentors and the experts who have got the systems in place and are running it, so we can learn from them. We're not reinventing the wheel. They've been there, done that before us. So in many cases they've got competencies... But if you've got a lead site who already has the competencies, and if there is a state-wide framework, then you can implement them locally... I guess the flipside of that is though that you're still – lead sites are often successful because the clinicians and the medical staff have a good relationship. So as much as you could grab the competencies, you could grasp the concepts, the structure, the process, you can't just pick it up and dump it until you'd established your own local relationships. And I guess one of my biggest learnings with the advanced practice roles is unless you have a good relationship with the medical specialists in that area, then you're not going to get your advanced practice role off the ground, which I find incredibly frustrating, because often there's good evidence it makes common sense,

⁵ <http://www.hwa.gov.au/our-work/boost-productivity/health-professionals-prescribing-pathway-program>, last accessed on 28 July 2014.

but if you've got doctors that don't think that Allied Health can do bits of their job, then it's hard work." (Stakeholder-Allied Health Manager)

At many sites PCPs and project officers themselves acted as change champions. Their enthusiasm for the project and willingness to engage with their ED and physiotherapy colleagues contributed to positive perceptions of the role. Project teams most successful in working with key stakeholders had a strong medical champion who was prepared to actively lobby for ongoing funding.

"We've certainly had primary contact physiotherapists working in ED and working well in ED. But this particular project provided us with a fantastic opportunity to really push the boundaries further and to do so in a very structured way and working with collaborative partners." (PCP)

6.3.2 Workforce characteristics

Staff retention was highly associated with sustainability.

The major barriers to continuing in the role identified by PCPs were:

- Working a shift pattern that adversely impacted on family life
- Managing the fatigue that came with the role from the long days and pressure associated with decision-making and the corresponding scrutiny of the role
- Balancing the role with other professional interests (this was seen as a limitation of full-time roles)
- Receiving recognition of the skills and training so that these are transferable to other organisations
- Maintaining other core physiotherapy skills that may not be a focus of the ESOP role.

For many PCPs the impacts of the unsociable hours that come with shift work were challenging, particularly in combination with a heavy study program. The PED project team at PED10 tried to support their PCPs by ensuring other experienced clinicians were available to provide some release time for study or to assist with weekend cover.

"...five out of eight shifts a fortnight have been from 11:00am till 10:00pm, so it's been quite an impact on my lifestyle." (PCP)

"I think emotionally at the start there are days where you leave very drained because you start at 9:30 and you finish at 6:00 and the reality is in that environment you don't always get out on time." (PCP)

"The unfortunate nature of it is that the busiest time for ED is on a weekend and I don't necessarily know how you overcome that other than for people who don't mind working weekends... the two things that will help with retention to me are obviously job satisfaction – if they can do things there that they can't do anywhere else then that will help and recognition." (PCP)

A range of strategies were deployed to sustain PCPs in their new role. The need for these strategies very much depended on the individual but generally less experienced staff needed more support. The ED was a stressful and unrelenting environment, particularly when staff were new to the ED, trying to be accepted as part of the team and apply new ESOP skills. The PED lead sites at the PED1 and PED7 used mentoring arrangements to support less experienced staff that were working toward a PCP role but had not completed their training. Several PCPs felt that the ESOP role was suited to a part-time employment arrangement possibly in combination with a PCP role in outpatients or in private practice.

“...it’s so mentally exhausting; I guess this is the other thing that I’ve noticed is a big shift is that you’re there in the acute environment telling patients that they have a significant injury, they’re going to need surgery or that they’re going to have a certain period of disability where, in the outpatient setting and you’re working as a secondary contact, you don’t have that responsibility to pass that knowledge on. That in itself is quite emotionally fatiguing. Yes, so I think having that balance between doing ED shifts and doing outpatients is really important and I think it’s probably important as well to keep your skill set up in those rehabilitation roles because that’s part of what we have to offer is educating patients about what the pathway’s going to be beyond the acute setting.” (PCP)

“The way I see this really being sustainable is if we can get several physios trained and the funding then for those physios to be able to work part-time in this role.” (PCP)

“I think that it could work as a part-time role...and I agree that a real risk of just working in this role is you become an expert at diagnosis and acute management but you lose your manual skills of treating...” (PCP)

The majority of project teams reported increased professional recognition and in some cases respect for the skills and competencies of the PCP. For some personnel this acceptance was an unexpected acknowledgement of their development in the role. PCPs who completed the competency-based training pathway were concerned that this experience would be recognised by other organisations.

“I’ve done a lot of work and it would be nice to have just something that said that I’d done this program that was recognised by another organisation...” (PCP)

“If I went to a hospital that wasn’t involved in this project I don’t know if I’d have to go through all the same processes again...that’s something that I would somehow like it to be recognised or have it maybe formally examined by an external independent provider...but then I don’t want it to be a massive Master’s program either.” (PCP)

“Obviously recognition is part of it, like I think over time, when it is possibly a recognised thing that physios do and there is some sort of appreciation for that I guess, like it carries a bit of street cred then that would help with retention.” (PCP)

Despite these barriers, the intention of the majority of PCPs was to continue in the role where possible. For example, results from analysis of the ‘ESOP personnel survey’ (Thompson et al., 2012b) showed that 75% agreed or strongly agreed that they planned to “stay on in the role for the foreseeable future”, and only about 8% disagreed or strongly disagreed (one respondent commented that they were unable to stay in the role as funding had ceased). These results point towards the sustainability of the PCP role. Furthermore, analysis of the ‘Staff establishment profile’ (Thompson et al., 2012b) provided another positive indication of sustainability of the role, demonstrating limited turnover of PCPs during the program, with one PCP leaving to pursue medical studies and another two finishing with their project at the end of the implementation period.

“I think prior to starting this role I wasn’t really sure what I was going to do as a physiotherapist. I’d worked privately but found that’s not what I wanted, I tried a number of things. I was probably at the point of “Am I going to continue in this profession or am I going to go and do something else?” Having the opportunity to be able to do this role ... I’ve really found my feet I think, on a personal level, as to what I want to do as a career so that’s been fantastic for me because I think, you know, I’m in this job for the long term now, well, for a longer term than what I perceived previously. That’s been really fantastic for me personally.” (PCP)

“...I think this has been a role that I’ve found significantly more enjoyable than probably anything I’ve done so far in physio over a period of time. I enjoy coming to work and I think being part of the project and wanting to get good results from it; I do tend to do that extra bit on a consistent basis.” (PCP)

The PED project teams pursued a strategy of recruiting highly experienced PCPs, a number with previous experience in a similar role (in Australia or abroad). Many PCPs recruited had previously worked in the organisation prior to commencing the ESOP role, which appeared to assist with transition into the role, as well as increasing acceptance of the role among other ED staff. This strategy rewarded highly experienced personnel and improved the credibility of the role in most participating organisations as it was associated with some of the most competent staff. Several PCPs commented on the different clinical emphasis of the ED role.

“I enjoy problem-solving and so having that ability to work through a hypothesis process and coming up with an answer and often having access to investigations.” (PCP)

“I enjoyed the diagnostics side of ED and you don’t have so much of the ongoing treatment stuff but you’re sort of a detective, like someone comes in, there’s something wrong and you’ve got to work out what’s wrong and I quite enjoy that side of physio and probably not so much the ongoing treatment side of physio.” (PCP)

“All these skills are very transferable across advanced practice roles – you know, to work in the joint arthroplasty clinic or the neurosurgery clinic which I’ve just started to do some work in the neurosurgery clinic. So yes, all of this makes you I think more flexible.” (PCP)

The intentions of PCPs to continue in the role should it be maintained was a significant factor in the sustainability of the projects. The vast majority of PCPs hoped to be able to continue to practice in the role.

“I think I get a lot more satisfaction out of my job. I think the stuff that we’re doing makes so much sense and it makes so much sense to the staff that we work with within the emergency department like that feeling of being so well-supported to say “Oh yes, we think you should be doing that already. Go for it”. Seeing productivity gains and seeing the recognition that we’re getting and the impact that we’re making, I think that has a big impact on your satisfaction. If you’re just kind of plugging away doing the same old thing without really pushing anything additional or learning new things or getting new skills then I think your role could become a little bit unsatisfying.” (PCP)

6.3.3 Funding

Business cases were developed by project teams to align with the strategic agenda of the CEO. Most project teams worked to link the contribution of the PCP role to key organisational performance metrics. For the PED sub-project the ability to reduce ED waiting times and thus contribute to meeting the NEAT was an important project impact. This proved a successful strategy for most sites. The business cases submitted by PED1, PED3, PED4, PED7, PED9 and PED10 project teams were approved with ongoing funding secured. In addition, PED5 and PED6 successfully planned for sustainability, at least partially transitioning the project into normal business post HWA funding and maintaining some level of service.

Despite submitting a business case demonstrating success in meeting KPIs such as the NEAT, PED2 was unable to secure funding. This decision was influenced by the recent development of an Urgent Care Centre adjacent to the PED2 ED.

For most project teams, the availability of additional funding was the single most important determinant of sustainability.

Projects with a 'united front' best argued the case for sustainability. Impact appeared greatest when several professional groups joined together to present the case for sustaining the PCP role. For example, the PED9 project team was able to use the combined influence of the ED Director, Nursing Unit Manager of ED and Chief Operations Officer of the Health District to convince the CEO to fund the PCP position on a recurrent basis.

6.3.4 Resources

The availability of two different training models has provided important infrastructure that could be adapted and meet future training needs. The lead sites have worked with HWA to investigate opportunities for cross-fertilisation between the two training pathways.

6.4 Processes and interactions

Several processes and interactions have influenced sustainability, most significantly: stakeholder engagement, collaboration and partnership development and integration of the operations of the PCP with existing organisational policies and procedures.

6.4.1 Stakeholder engagement

Processes to facilitate stakeholder engagement began at the initial workshop where HWA brought together all PED project teams and used the concept of the Johari Window as a lens to identify key stakeholders of high influence (Galpin et al., 1995). Project teams identified internal and external stakeholders, planned engagement, and then built, managed and sustained relationships, with varying degrees of success.

Stakeholders identified as having high influence and high involvement were mostly effectively engaged, particularly through inclusion on project steering committees. Steering committee members represented a wide range of specialities including nursing, emergency medicine, orthopaedics, pharmacy, medical imaging, specialist outpatients, general practitioners and allied health.

Numerous other strategies were used to engage internal stakeholders. For instance, at PED3, education sessions were provided to help triage nurses identify suitable patients for PCP-led management, and negotiations with diagnostic imaging representatives regarding minimum acceptable training standards resulted in the PCPs being able to request imaging. The PED5 project team incorporated briefings for internal stakeholders throughout the project.

Continued promotion of the PCP role to new ED staff was advocated by the PED1 and PED10, particularly to rotating medical and nursing staff. Additionally, they saw the inclusion of information about the role in orientation manuals and programs as important to sustaining the role. For example, presentations by PCPs at orientation programs for new rotating and / or junior staff enhanced the understanding of the role. It was stated that if the role and its benefits were embedded into everyday operation of the ED, it was more likely to become a role that was essential to the service provision of the ED.

High level executive support proved valuable to a number of PED project sites. Clinical and executive directors participated in PED7's project steering committee, the chief operational officer at PED9 requested data on project activities at regular intervals, and the PED10 project was signed off by the CEO of the Health Network who was kept informed regularly of project progress by the hospital's Director of Allied Health.

The PED Professional Advisory Group was the mechanism used to engage professional organisations and bodies. This group, which can be seen to have high influence and low involvement, was effectively utilised. The PED lead sites consistently worked with professional

bodies, particularly the Australian Physiotherapy Association, to ensure appropriate recognition of the ESOP physiotherapy training pathways. Project teams engaged with academic institutions to try and establish academic credit or recognition of training programs implemented throughout the ESOP program.

Those groups with low influence and high involvement, including patients and the community more broadly, were engaged, but at a lower level. Several project teams such as PED5 worked effectively with consumer representatives to demonstrate that the ESOP model of care was better able to meet consumer needs. A member of the Consumer Health Forum was appointed as a representative on the PED Project Advisory Group. PED5, PED7 and PED9 steering committees included consumer representatives.

“I think we have got changing practice environment, changing technology, changing scopes of practice within professions. We haven’t necessarily grappled with how best to communicate that, not only within our own organisation and between professions, but to our communities and our patients. Our patients may not know – I am speaking of broad care here now – do they know that an expanded scope physiotherapist is able to assist them with their sprained ankle, that they are the right person to see that they could order an X-ray, if necessary plaster it if needed... prescribe the medication or treat a swollen knee that needed to be aspirated? I don’t think our community necessarily knows. They think a doctor should do that not a physio. It is ...coming back to your question around changing practice environments, how does the Australian community come to understand within health that things are no longer the same?” (Stakeholder-Allied Health Manager)

Ongoing engagement of stakeholders over the life of the project supported implementation and sustainability. However, maintaining key stakeholders’ involvement so they advocated for project sustainability was a challenge, with engagement appearing to diminish during the course of the project. Project teams who maintained their steering committees had a forum where they were able to present information on their project over time.

6.4.2 Collaboration and partnership development

PCPs who demonstrated a very strong commitment to collaboration and interdisciplinary practice were quickly accepted. The willingness of these staff to ‘muck in’ and help where they could and to participate as a member of the team was essential to forging supportive relationships. Project teams provided extensive examples of how inter-professional collaboration had been enhanced through basing the PCP role in the ED.

“Basically my take on it was that it’s an excellent learning experience...I think it gives the physio profession almost a training sort of experience similar to how doctors get it in terms of that, you know, how they do their sort of intern to resident... you get better at that just general medical care side of things...” (PCP)

PED6 felt that to help sustain the PCP role it was important to maintain the professional networks established during the course of the project. This could assist with future professional development opportunities, facilitate ongoing learning and competency and assist in solving some of the challenges faced with working with different population groups. Similarly, the PED1 noted that the support of allied health professionals, physiotherapy managers, ED directors and consultants was essential to the sustainability of the PCP role.

Lead and implementation site relationships were critical, and working in collaboration and partnership assisted implementation and influenced sustainability.

“I think that the workshops where we’ve had the opportunity to get together with the other lead organisation and the other implementation sites was really useful to sort of compare notes.” (PCP)

Partnering with jurisdictions in the development of the ESOP role was an important sustainability strategy and this was employed effectively in Victoria, ACT and Queensland. Project teams that were able to engage with colleagues in their respective State or Territory Department of Health felt more positive about their prospects for sustaining the ESOP role.

An example of this was highlighted by PED1. They advocated with their State Department of Health and argued effectively that the ESOP model of care was not limited to the ED and had been successfully implemented in outpatient services. Advice was received that the ESOP role would be implemented into 12 healthcare organisations as part of a State-wide roll out of ESOP physiotherapy services in orthopaedic and neurosurgical outpatients, funded by the Department. The training pathway and supporting operational framework developed as part of the HWA funded ESOP initiative will be used as resources for this project. Queensland Health has also expressed interest in using these resources in a State-wide roll out of ESOP-PED services.

6.4.3 Integration of policies and procedures

Whilst the lead sites developed specific protocols or clinical practice guidelines, all PED project sites programs were able to integrate their operations within their organisation's existing clinical governance framework allowing for ongoing quality assurance and patient safety. As safety was identified as a primary concern this was an important sustainability strategy.

The development of toolkits and training frameworks for implementation sites was a key objective of the PED sub-project, and the high quality resources developed by each lead site will be available for organisations wishing to implement the models of care.

6.5 Sustainability outcomes

The extent to which new programs are sustained is influenced by many different factors as well as their combination and interaction (Stirman et al., 2012). Sustainability is a dynamic phenomenon and in the case of the PED sub-project, organisational views on the initiative shifted over the implementation period.

The various definitions of sustainability coalesce around two main ideas – sustainability of the direct improvements made as part of a Program, and the sustainability of the techniques and approaches learnt as part of the Program. Evaluation of sustainability is closely aligned with the issue of capacity building (e.g. increased capability and skills, increased resources) and any changes in structures and systems that 'anchor' or embed changes and facilitate sustainability (Thompson et al., 2012a). Realistically sustainability needs to be assessed after implementation is completed and usually this would occur two or more years after implementation and over several years (Stirman et al., 2012). Consequently this assessment of sustainability focuses on influences rather than outcomes.

6.5.1 Sustainability of direct improvements

Use of a sustainability tool (Thompson et al., 2012b) to measure 10 factors that have been shown to influence sustainability indicated an increased likelihood of project activities being maintained, when results at the end of the project were compared with the results at the beginning of the project (Maher et al., 2006). For nine of the factors the average Time 2 score was higher than the average Time 1 score and closer to the possible maximum, indicating a move towards greater sustainability by the end of the project.

Analysis of the tool also elucidated the factors that some PED project sites had most difficulty improving; which can be viewed as the greatest risks to sustainability. The most significant problem was the behaviours and attitudes of staff towards sustaining the model, in particular a lack of belief that the improvement would be sustained. Senior leadership engagement was another factor that was seen to jeopardise sustainability, with organisational leaders perceived to be taking limited responsibility for efforts to sustain the change process, despite staff

generally sharing information and seeking advice from these leaders. The infrastructure for sustainability was another factor that presented a threat; despite significant improvements in this area during the course of the project (with appropriate staff, facilities and equipment in place), it was recognised some elements categorised as infrastructure such as policies, procedures and communication systems were still lacking towards the conclusion of the project.

The data from use of the sustainability tool indicated some optimism about continuation for the majority of sites, although experience with previous evaluations suggests that sustainability is challenging for a project-driven model of change. Many projects relied on dedicated funding for training and implementation which begs the question as to how this would be maintained beyond the life of each project.

Data from evaluation risk monitoring (from the early to later stages of the sub-project) was less positive however. Despite an overall increase in the aggregate mean score for the two items most highly related to sustainability, this increase was very minor and the mean remained relatively low at Time 2. This indicates perceived risk for the sustainability prospects of a number of sites. Only three projects (PED1, PED3 and PED5) indicated significant increases to achieve a high score for these two items. The two items were 'Changes to systems created by the project will remain after the project ends' and 'Changes to practices undertaken by the project will remain after the project ends'.

All project teams, with the encouragement of HWA, worked to sustain the PCP role. Lobbying and negotiation was undertaken by all project sites, and local evaluation data was used to present a case for sustainability following the conclusion of the implementation period. At the time of this report seven project sites had been able to either secure further funding for the PCP initiative or had transitioned the project into normal business post HWA funding and maintained some level of the service. Three projects teams were still awaiting the outcome of their funding submission / business case to their respective organisation (although services were continuing to some extent nonetheless). Service delivery remained unchanged at PED11. Refer to Table 44 for details.

Table 44 Sustainability prospects – PED sub-project

PED project site	Current status	Innovation sustained
PED1	<p>HWA and Victorian DOH funding for The PED1 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. However, PED1 has committed to ongoing funding to continue the service.</p> <p>When the PED2 service ceased in February 2014 (see below) some of the experienced ESOP physiotherapists returned to PED1 in March. This coincided with the trainees completing their competency assessments so it is anticipated the project outcomes, particularly in relation to patient throughput, should increase. The re-appointment of a Clinical Lead to PED1 should also improve the profile, coordination and promotion of the service.</p> <p>The ESOP physiotherapists will continue to contribute to the orientation of new medical and nursing staff through the ED which is important for maintaining the profile of the ESOP physiotherapy roles more widely across PED1 and surrounding hospitals. Opportunities to increase scope of practice, ongoing competency assessment and continual service development will continue to be explored. Feedback regarding the project outcomes will be circulated to ED staff and stakeholders.</p>	Yes
PED2	<p>HWA and Victorian DOH funding for PED2 ESOP Physiotherapy Service in the ED concluded on 31 December 2013, however additional funding was received for a small extension allowing the initiative to continue to February 2014.</p> <p>The project was unable to obtain ongoing funding beyond February 2014, largely because of a significant restructure and change in the model of care to be provided at the PED2 ED with the opening of a new Urgent Care Centre in June 2014. The impact of this new service on the ED caseload was unknown; however it was expected to negatively</p>	No

PED project site	Current status	Innovation sustained
	<p>impact on the PED2 ESOP-PED service continuing in the same format. Thus, no additional funding had been promised at the time of this report.</p> <p>The performance of the Urgent Care Centre and the PED2 ED will be monitored by the Allied Health Director and Acute Physiotherapy Services Manager and any opportunities for funding in the future will be readily explored.</p>	
PED3	<p>HWA and Victorian DOH funding for the PED3 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. However, a business case to continue the PED3 ESOP Physiotherapy Service seven days per week was approved. In addition to ensuring sustainability through continuation of the funding for service, ongoing funding of 0.6 FTE for a Grade 4 clinical lead position has been secured which will help cover leave and also provide clinical supervision, training and competency assessment for any new and existing PCPs across PED3 and related hospitals. Funding was also secured to provide a service on public holidays.</p> <p>PED3's broader organisation is also developing staff capability in preparation for future vacancies, with one Grade 3 physiotherapist, who also works in two other Advanced Musculoskeletal Physiotherapy clinics, currently completing the training pathway and interest in undertaking the pathway expressed by other suitable physiotherapists.</p> <p>Progress towards developing a team of Advanced Musculoskeletal Physiotherapists willing and able to work across sites and multiple clinics is also being made.</p>	Yes
PED4	<p>Although HWA and Victorian DOH funding for the PED4 ESOP Physiotherapy Service in the ED concluded on 31 December 2013, the expanded hours and scope of the service has been maintained.</p>	Yes
PED5	<p>HWA and Victorian DOH funding for the PED5 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. Although PED5 was unable to sustain the same level of PCP services post project completion, many of the changes established during the project have been maintained.</p> <p>The separation of primary and secondary contact physiotherapy services in the ED has been maintained and the PCP shifts remain longer due to the greater efficiency of longer shifts on days of high demand rather than 5 shorter shifts per week. The service has maintained an increase in hours from 15 to 20.5 per week.</p>	Yes
PED6	<p>HWA funding for the PED6 ESOP Physiotherapy Service in the ED concluded on 31 December 2013 however funding from the Northern Territory Government was secured to 30 June 2014 to enable a business case to be developed, submitted and considered by the governing body for ongoing funding from the 2014/ 15 financial year. Securing ongoing funding for the additional staffing and training resources is crucial for the sustainability of the ESOP service model at PED6.</p> <p>The PED6 physiotherapy department is optimistic about sustaining the project outcomes but recognise potential challenges. For instance, the resignation of two of the four ESOP physiotherapists has necessitated service modifications including changing the hours of service to weekdays only and increasing the number of ED shifts for one of the two remaining ESOP physiotherapists.</p> <p>Strategies in place to improve sustainability include succession planning, stimulating interest in the ESOP role among other members of the physiotherapy department, building the education and training modules into the department's professional development program, maintaining the professional networks developed during the project and maintaining a regular presence and profile of the ESOP physiotherapist in the ED.</p>	Pending
PED7	<p>HWA funding for the PED7 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. There was uncertainty whether both PCPs employed in the ESOP role would continue to be supported, as the initiative had been underwritten by project and grant funding (HWA support and National Access Program funding). At the time of this report there was no opportunity for ongoing funding for ESOP roles.</p> <p>Nonetheless, the project had been transitioned into normal business post HWA funding</p>	Yes

PED project site	Current status	Innovation sustained
	and ESOP activity had been sustained.	
PED8	<p>HWA funding for the PED8 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. As the project adapted an existing ED physiotherapy position to the PCP role sustainability was more dependent on successful delivery of a high quality, safe service that was acceptable to ED staff, rather than fiscal considerations.</p> <p>Temporary funds were allocated from within the health service to continue the additional In-Scope Physiotherapist role for a further six months. The professional development pathway resources can be utilised for further candidates in the In-Scope Physiotherapist role.</p> <p>With local support and engagement, the establishment of procedures and documentation and demonstration of positive outcomes, PED8 is optimistic that PCP services will continue to be developed, despite the resignation of their full-time ESOP physiotherapist.</p>	Pending
PED9	<p>HWA funding for the PED9 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. However, the project team was successful in receiving recurrent funding for one clinician at PED9. The same PCP remains in the role and the service has been maintained.</p> <p>The possibility of further expanding the initiative in the local health service, to cover both PED9 and a second hospital, is being explored.</p>	Yes
PED10	<p>HWA funding for the PED10 ESOP Physiotherapy Service in the ED concluded on 31 December 2013. However, the project team was successful in receiving recurrent funding for one clinician at PED10. The service is identical to that of the project period, 7 days per week, a daily 7.5 hour shift, translating to 1.4 FTE.</p>	Yes

6.6 Dissemination

The evaluation framework for the HWA-ESOP program also seeks to understand how project teams disseminated information relating to the PED sub-project – to answer the question, ‘Who did you tell?’ Disseminating information about the ESOP initiative was an essential component of managing the change both within and outside organisations and for raising awareness of the initiative and building support for sustainability of both the projects and the model of care within communities and across the broader physiotherapy profession.

The following results, from analysis of dissemination logs (Thompson et al., 2012b) submitted by all projects, provide an indication of the dissemination strategies employed, the activities undertaken, and the breadth of these activities.

Most dissemination activities were undertaken during the set-up and establishment phases of the PED sub-project, indicating a concerted effort from sites to disseminate information early on. Ongoing dissemination efforts from project teams were evident throughout the implementation and evaluation phases, although at a reduced volume. Sustaining the change effort required ongoing communication and the decrease in dissemination activity in the latter stages of the project suggested that project teams needed to invest more energy in regular dissemination activities throughout the life of the project and particularly towards the conclusion of the project, when project achievements can be disseminated. For the PED sub-project, this decreased activity may have been a result of competing priorities such as evaluation data collection, final report development and business case preparation.

A presentation to staff within the organisation was the most common method of dissemination employed. Project managers undertook the vast majority of dissemination activities, with project team members also actively contributing to dissemination and a small number of activities undertaken by others such as members of project steering committees and HWA.

The purpose of approximately three quarters of total dissemination activities was capacity building and sustainability (which included information shared with project stakeholders, such as steering committee members, management and staff of participating services, and groups or individuals in the local community to support the capacity building and sustainability aspects of the project). The purpose of the remaining quarter was classified as generalisability (e.g. information shared with the wider health care community, including clinicians, academics, managers, planners and policy makers to support the generalisability of the project).

A range of audiences were reached by the dissemination activities. The primary audience for most activities were the staff of the respective organisation (including staff and directors of emergency and physiotherapy departments) to improve organisational engagement and assist change management. A number of activities had a broader audience including the local community and state and national audiences. For example, several conference presentations were made throughout the implementation phase including at the Emergency Management Conference, the Australian Physiotherapy Association National Conference, 10th National Allied Health Conference and Health Workforce Australia Conference. The profile of one project was further enhanced with the receipt of the People's Choice Poster Award at their corporate organisation's national quality award. Project teams also had plans to submit more abstracts to relevant conferences and manuscripts for publication in peer reviewed journals in the future.

The vast majority of activities resulted in someone who heard about the project following up to seek more information, suggesting that interest was generated among some audience members, and providing some indication of successful dissemination.

6.7 Summary

Based on the findings from the HWA-PED sub-project a number of predictors or pre-conditions of sustainability of the innovation emerged:

- The good fit of the ESOP initiative within most organisations strongly promoted sustainability, with the models of care addressing identified demand or service gaps (e.g. increased demand and stringent performance targets in the ED).
- The ability to adapt and modify aspects of the ESOP-PED models of care facilitated acceptance, improved outcomes and ensured alignment with the local health services and their varying demand and supply issues.
- The modular approach linked to competency based assessment appeared to have greater flexibility for training and implementation and modifications to training programs ensured applicability of information to different jurisdictions.
- A significant investment of resources was required to complete the University of Canberra's Graduate Diploma of Extended Scope Physiotherapy (compulsory in the PED7 model's training pathway) and this may not be sustainable considering course costs and issues backfilling and maintaining service delivery.
- There is a need for strong leadership for new models of care to achieve sustainability, from the project team including PCPs themselves as well as clinical lead physiotherapists. Medical champions were pivotal to sustaining project activities through advocating for the project and providing practical assistance and mentoring to the PCP. Change champions who supported innovation and change were identified from a variety of disciplines and included Heads of Emergency Services and directors of ED and physiotherapy.
- The leadership and support of the two lead sites was also important to ensuring sustainability of the model of care at implementation sites. Implementation sites were allocated to lead sites by HWA; a more sustainable option may be linking implementation sites with a lead site in their own jurisdiction so that support in addressing implementation barriers that may be unique to that State or Territory could be effectively provided.
- Different barriers and challenges (professional and legislative) were faced in implementing certain elements of the ESOP role, including barriers to prescribing and administering medication, injecting, ordering pathology, providing work cover certificates and issues of

credentialing and professional recognition of the ESOP role. These barriers posed a risk not only to implementation but also sustainability.

- Lead sites worked collaboratively to address barriers as they emerged and pre-existing relationships with State Department of Health officers were invaluable in assisting lead sites to progress some of these barriers.
- Project teams that consistently communicated achievements were better able to sustain interest in their initiative. Presenting data aligned to organisational KPIs (including effectiveness, efficiencies through relieving medical personnel from treating low acuity MSK presentations, patient safety and satisfaction, improved ED performance in relation to the national four-hour target etc.) garnered support and demonstrated the viability of the model. If benefits of the model are evident to key staff the PCP is more highly valued. Nonetheless, demonstrating early wins is difficult and usually requires sustained implementation.
- Hospitals' finite resources and budgetary considerations threatened sustainability of the PED initiative, as other innovations and priorities continually competed with the initiative. This climate of limited resources also led to managers having to balance the implementation of the initiative with multiple organisational demands. Project teams that maintained a high level of investment in project management best positioned their projects for sustainability.
- Sustainability was dependent on selecting the right implementation locations. Project teams understood their local area's demographics and demand for ED services. Demand for PCP appropriate cases (lower acuity MSK presentations) provided an adequate caseload in most localities, ensuring full utilisation of the PCP capability and positively influencing sustainability of the role.
- A receptive environment for the new model of care was essential to successful implementation and sustainability. A receptive context for change within organisations includes factors such as a need for change, a supportive culture conducive to innovation, managerial support, leadership, appropriate infrastructure and resources, and engagement of key stakeholders.
- Several project teams had prior experience with PCP services in both the ED and outpatient setting. Services that develop a critical mass of PCPs appear better placed to sustain the role as they have the capacity to cover leave and the resources to train other physiotherapists in the ESOP model of care.
- Project teams pursued a strategy of recruiting highly experienced PCPs. Several had previous experience in a similar role and many had previously worked in the organisation prior to commencing the ESOP role, which appeared to assist with transitioning into the role and increasing acceptance and credibility among other ED staff. PCPs were highly regarded for their expertise and skill and ED personnel were enthusiastic supporters of the role and focus on the MSK patient cohort.
- Staff retention was highly associated with sustainability and is influenced by factors such as job satisfaction, professional recognition, career pathways, maintaining treatment skills and impact of shift patterns on the individual. A range of strategies are needed to sustain PCPs in their new role. The intentions of most PCPs to continue in the role should it be maintained was a significant factor in the sustainability of the projects.
- Disseminating information about the PED initiative was an essential component of managing the change both within and outside organisations and for raising awareness of the initiative and building support for sustainability of the models of care within communities and the organisation.

In conclusion, the availability of additional funding was the single most important determinant of sustainability for most project teams. Ongoing funding was secured by PED1, PED3, PED4, PED7, PED9 and PED10 and the PED initiative has been successfully sustained. In addition, PED5 and PED6 planned for sustainability and were able to at least partially transition the project into normal business following the cessation of HWA funding, maintaining elements of the service. The initiative was not sustained at PED2 as funding was not secured, due in part to the recent development of an Urgent Care Centre adjacent to the PED2 ED.

7 Prospects for wider implementation

The starting point for decision-making around wider implementation of any innovation is the extent and quality of the available evidence of effectiveness. The evidence to date on the ESOP-PED model is sparse. It is summarised in four reviews of the literature, supplemented by a few more recent studies.

Physiotherapists working in expanded scopes of practice in ED settings can provide care equivalent to routine care with similar cost-effectiveness (McClellan et al., 2010). This conclusion was, however, based on an extremely limited evidence base on the effectiveness of an ED based physiotherapy model for managing minor injuries in the ED. Only four papers met the inclusion criteria for the review: one literature review and three primary studies.⁶ All three studies were conducted in the United Kingdom and only two evaluated models of care that are directly comparable with the ESOP-PED model currently being implemented in Australia.

A more recent systematic review of advanced practice physiotherapy in patients with MSK disorders included 16 studies, of which only four took place in EDs, including the three studies included in the review by McClellan and colleagues. The one additional study was conducted in Australia (Taylor et al., 2011). The authors concluded that:

“Despite the lack of methodological rigor of the studies reviewed, findings provide consistent, albeit low grade, evidence that for patients with musculoskeletal disorders, [expanded scope of practice physiotherapy] care may be as beneficial (or more so) than usual care by physicians in terms of diagnostic accuracy, treatment effectiveness, use of healthcare resources, economic costs and patient satisfaction.”
(Desmeules et al., 2012, p. 19)

A third literature review examined the effectiveness of all physiotherapy services in ED, not restricted to advanced or expanded roles. It did not add materially to the findings of the two more relevant reviews described above. It was unable to identify any ‘high-level evidence’ that physiotherapy services in the ED could have a beneficial impact on waiting times, hospital admissions and referrals to health professionals (Kilner, 2011). Likewise, a review of the literature on ‘new roles’ in EDs identified no additional evidence, including only two studies involving PCPs, both included in the above reviews (Hoskins, 2011).

Three recent Australian studies focusing on the management of ED patients with MSK conditions are summarised in Table 45. Findings which showed equivalent care between the two groups in each study are not included in the table. The three studies consistently showed that care by PCPs could reduce ED waiting times and length of stay. There was, however, a notable absence of findings to demonstrate improvements in clinical outcomes.

Table 45 Australian studies involving PCPs in EDs

	Location	Type of study	Findings
Taylor et al. (2011)	Three EDs in Melbourne	Prospective non-randomised controlled trial, comparing primary and secondary contact physiotherapy.	Primary contact physiotherapy resulted in reduced length of stay in ED, reduced waiting time and reduced treatment time.
Guengerich et al. (2013)	St. Vincent's Hospital, Melbourne	Prospective observational design comparing PCPs to doctors in their treatment of patients.	Shorter waiting time and shorter length of stay for patients managed by PCPs.
Gill and Stella (2013)	Geelong Hospital	Retrospective analysis of waiting time and length of stay data for patients seen by PCPs and medical staff	Shorter waiting time and shorter length of stay for patients managed by PCPs.

⁶ The review by McClellan et al. used the term ‘extended scope physiotherapists’ rather than primary contact physiotherapists.

Two of the studies indicated patient satisfaction with being seen by a PCP (Guengerich et al., 2013; Taylor et al., 2011).

In summary, there is little published evidence supporting the introduction of PCP roles in EDs. Although some studies have shown equivalent or improved efficiency with an expanded scope of practice physiotherapy model, safety and quality outcomes have not been demonstrated to date. Further, the existing evidence is characterised by methodological limitations.

7.1 *Suitability of the model*

Evidence from the literature indicates that certain attributes of an innovation can influence the adoption of that innovation:

- Relative advantage – the degree to which the innovation is better than what is in place already i.e. the innovation is clearly effective or cost-effective.
- Compatibility – the innovation is compatible with the values and perceived needs of the adopting organisation.
- Complexity – the innovation is relatively simple. If the innovation is relatively complex, it helps if it can be broken down and implemented in stages.
- Trialability – the innovation can be ‘tried out’ before full adoption.
- Observability – the benefits of the innovation (to either consumers or staff) are visible.
- Adaptability – the innovation can be adapted for local use.
- Risk – the innovation is perceived as low risk (Greenhalgh et al., 2004; Rogers, 2003).

The extent to which the PCP models have these advantageous attributes is summarised in Table 46.

Table 46 Attributes of the PCP model

Attribute	Characteristics of PCP models that may contribute to sustainability
Relative advantage	The results of the evaluation demonstrate that the PCP model results in timely, safe and high quality care for patients with MSK presentations within the scope of practice. Cost-efficiency evaluation was limited by the lack of available data. There are preliminary indications that the model may help reduce resource use in the area of X-ray ordering by facilitating more prompt and expert assessment of patients with suspected fractures. On weekdays when PCPs were rostered on in the ED, NEAT performance improved and patient throughput was higher. Waiting times, treatment times and total time spent in the ED was also lower on these days at most sites.
Compatibility	The model is compatible with current physiotherapy practice and the results of the evaluation indicate that the model is compatible with contemporary ED practice. There is a need to ensure that the model aligns with the industrial classifications of the available workforce. The model and associated clinical guidelines need to be clearly documented (so that the model is readily understood by professional colleagues). The model requires physiotherapists to change their thinking from one of accepting referrals to one of seeking out referrals. The PCP model can be introduced as a separate model, or combined with an existing secondary contact physiotherapy service.
Complexity	The practice of the PCPs is largely restricted to a well-defined group of patients with MSK conditions. The training is relatively complex, but can be broken down into smaller parts. This can include an early focus on key competencies to facilitate commencement of PCP practice and reduced need for supervision.
Trialability	The model could be ‘tried out’ by building the MSK skills and expertise of existing staff in a staged process allowing them to take on increasing responsibility for the patient cohort as their competencies develop.
Observability	The benefits of the model are ‘visible’ to PCPs and those they treat. There was strong agreement among PCPs that their role improved quality of care for specific patient groups and all sites achieved very high levels of consumer satisfaction with the PCP model. Stakeholders were satisfied that the model was safe and felt it contributed very positively to quality and efficiency for the target group of patients.
Adaptability	The arrangements for supporting the PCP model can be adapted for local use. The available training pathways are appropriate, but there is the potential for the pathways to be more flexible so as not to limit the number of physiotherapists who are suitable for the role.

Attribute	Characteristics of PCP models that may contribute to sustainability
	Medical staff can be replaced as assessors of clinical competence by an experienced and suitably qualified PCP.
Risk	The results of the evaluation indicate that the model is low risk, with small likelihood of adverse outcomes, including misinterpretation of medical imaging. PCPs and stakeholders identified a set of organisational factors designed to manage risk and optimise safety and quality. PCPs were all very experienced clinicians and completed a standardised training pathway and a period of supervised practice including competency assessments. Stakeholders were confident that the model was safe and that PCPs were working within their scopes of practice. Some senior doctors emphasised the importance of medical oversight and PCPs themselves demonstrated willingness to consult and seek advice and refer as needed.

The bulk of the clinical staff working in EDs (nurses and doctors) are 'generalists' in emergency care – that is, they are capable of assessing and managing all types of patients who present. Introducing a specialist, such as a PCP, who only sees and treats a specific cohort of patients, introduces a complexity to ED care that was not present before. One of the key components of the PCP model is ensuring sufficient throughput to maintain the efficiency of the PCP role:

"For the model to work best there must be a high number of musculoskeletal presentations to the ED." (PED1 implementation site final report)

Downturns in activity can occur due to changes outside the ED which reduce demand (e.g. establishment of nearby GP clinics, 'quiet' periods that occur for no apparent reason) or changes within the ED which reduce demand for PCPs (e.g. increased number of nurse practitioners who 'compete' with PCPs to see patients allocated to fast track). There is the potential to increase the productivity of the model if the ability of the PCPs to manage a complete episode of care is enhanced e.g. by allowing PCPs to prescribe, order imaging other than plain X-rays, order pathology and write WorkCover certificates.

7.2 Requirements for success

As indicated by Table 45, Victoria had a lead role in implementing PCP services, commencing in 2004. A review of those services identified four main factors which influenced successful implementation:

1. 'The culture of the ED, including attitudes towards service innovation, level of commitment and experience in providing multidisciplinary care;
2. The capability of the PCP to demonstrate clinical competence, establish credibility and build relationships within the ED team;
3. The availability of the PCP to meet demand for services and maintain relationships with ED staff; and
4. Early and ongoing support from senior nursing and medical staff across the health service together with hospital management' (Aspex Consulting, 2010).

Based on the final reports from each project and the results of the national evaluation, the three main requirements for success in implementing the PCP model are:

- a receptive context for change
- the PCP model itself (see Section 7.1 for attributes of the model likely to influence wider adoption)
- the availability of staff with the necessary skills.

These findings are consistent with the earlier Victorian review, albeit expressed in a slightly different way.

A receptive context for change has been described in various ways in the literature, but typically includes factors such as a need for change, a supportive culture which is conducive to innovation, managerial support, leadership, appropriate infrastructure and resources, and

engagement of key stakeholders (Dopson et al., 2002; Greenhalgh et al., 2004; Pettigrew et al., 1992). A receptive context was variously expressed in the final reports of each project as 'having the right environment to implement the service' (PED6) and 'an executive culture actively supportive of innovation' (PED7). In terms of stakeholder engagement (an important aspect of a receptive context), the key group for facilitating a receptive environment for the PCP model is medical staff in the ED, not only to provide general support for the model, but also to provide very practical assistance in terms of mentoring, supervision and assessment of clinical competencies. This is well expressed in two of the project final reports:

"If a single factor had to be identified in facilitating the achievement of the outstanding results this project has seen, it would be the engagement and advocacy provided by the mentor consultant." (PED10)

"The two main requirements for success of this project were the willingness and acceptance of this PCP role in the ED by management and the clinical staff in the ED. Particularly the ED consultants who were encouraging and willing to assist and support the PCP staff throughout the implementation period." (PED5)

In some instances, medical staff working outside the ED can also be key stakeholders, depending on local policies and practices e.g. orthopaedic surgeons, radiologists. For further information on the role of stakeholder engagement in sustainability, see Section 6.

For the PCP model, appropriate infrastructure and resources included the funding from HWA; allocation of sufficient resources to project management; the toolkits and other resources from the lead sites to facilitate implementation. In some sites, lack of physical space within the ED was seen as a hindrance to implementation (e.g. PED2, PED6).

As discussed in Section 2, differences between the model of the two lead sites (PED1 and PED7) primarily centred on organisational arrangements, rather than the role of individual physiotherapists. The greater level of resources (i.e. greater number of physiotherapists) in the PED1 model allows for greater flexibility in terms of staff allocation and greater capacity to maintain service delivery (e.g. during periods of leave), but has the additional demands that come with managing a larger group of staff.

Success of the model in a local context and its wider implementation both depend on attracting and retaining suitably qualified physiotherapists. Access to experienced PCPs facilitates the training, mentoring and supervision of physiotherapists new to the role. There was an inherent trade-off between the knowledge and skills physiotherapists brought to the role and the time and effort (including supervision) required to attain the PCP competencies. The greater the starting level of knowledge and skills, the less time required to achieve the necessary competencies. For example, in describing the recruitment of a physiotherapist with less experience in either EDs or the public health system more generally, one project final report stated that a physiotherapist 'required more hours for clinical shadowing, and skill and knowledge development, prior to taking on a significant caseload' (PED3). An important issue with staff retention was the demands of shift work, with peak demand for PCP services typically extending into the evening and including weekends. If there are only a small number of PCPs, it can become difficult to sustain a roster which includes significant amounts of time outside normal business hours:

"An element of The PED1 model of care that has contributed to the success of the project is the team approach to service delivery ... There was an expectation that all physiotherapists who are part of this team work weekends and support each other to achieve a positive work-life balance. This was an essential requirement for success, particularly of any ED service that covers weekends." (PED1 final report)

The necessary qualifications, experience and personal characteristics of PCP recruits have been described above (Section 2), as has the extent and quality of the training

required to prepare them for this new role (Section 3). The model appears highly acceptable to consumers and other stakeholders, including ED nursing, medical and allied health staff. This acceptability is based on acknowledgement of the high levels of expertise the PCPs bring to the ED, both from their pre-existing experience and qualifications and from the standardised training they undertake to prepare them for the role. Senior ED staff mentor and supervise PCPs and conduct competency assessments. Strict clinical governance arrangements are in place. These structures and processes are vital to the success and wider implementation of the model. Not only do they support the PCPs but they also help other staff feel confident PCPs can be relied upon to provide safe care within their scopes of practice. Certain personal qualities, including a willingness to learn and to share learning with others, and ability to integrate seamlessly into a team, are also desirable in a physiotherapist wanting to take on an expanded practice ED role.

7.3 National scalability

There are various ways of conceptualising the wider implementation of innovations. One way of framing a strategic approach to wider implementation involves three main mechanisms of adoption:

- 'Let it happen': allow innovations to be adopted in a 'natural' way, with individual organisations making their own decisions about whether or not to adopt an innovation. This approach is unpredictable and self-organising, as individuals and organisations learn from each other and adapt what has been shown to work elsewhere to their own environment.
- 'Help it happen': the process of innovation adoption is facilitated, influenced and enabled e.g. with additional resources, changes in legislation, changes to funding.
- 'Make it happen': the adoption of innovations is managed in a formal way, typically by some central agency (Greenhalgh et al., 2004).

The PCP model has been implemented in a wide variety of settings, including major metropolitan hospitals (PED1, PED4, PED7, PED10), smaller metropolitan hospitals (PED2, PED3), regional hospitals (PED5, PED8) and rural / remote locations (PED6). There are no major structural impediments to the model being widely adopted. Given the importance of local requirements for success (e.g. receptive context for change, particularly the support of local managers and medical staff) we believe a 'make it happen' approach would be inappropriate and self-defeating. A 'let it happen' approach could be taken and may well achieve some success, given the momentum that has been building in recent years, particularly in Victoria, with the implementation of PCPs in many EDs. However, a 'help it happen' approach is the preferred course of action, with the 'help' coming in the form of seed funding to support implementation, funding to support 'lead' sites in the provision of support and guidance to implementation sites (for any implementation sites which would like such support), dissemination and ongoing updating of training resources and changes to funding and legislation to support PCP practice.

Much of the 'help it happen' should occur at a State/Territory level, rather than a Federal government level. However, there may be some economies of scale in taking a national approach to the training of PCPs. The very significant training resources developed by both lead sites should be made widely available. Consideration should be given to the most cost effective way of providing training. For example, there are merits in having a university qualification for PCPs, particularly the portability of the qualification, but there may be scope to include a greater proportion of the education in online or distance learning modalities, with less reliance on a residential component. Care must be taken in designing education to ensure that content is relevant and comprehensive across all the jurisdictions represented by the trainees.

Several of the implementation sites recommended changes to the Medical Benefit Schedule and Pharmaceutical Benefits Scheme to facilitate expanded scope of practice in EDs. As with nurse practitioners in EDs, PCPs in EDs can order pathology and imaging in accordance with local policies and legislation.

8 Key achievements

The HWA-ESOP program was part of a work plan implementing the National Health Workforce Innovation and Reform Strategic Framework for Action 2011-2015 (HWA, 2011). The framework was designed to guide future health workforce policy and planning in Australia by establishing priorities for innovation and reform. Five key domains of action were identified, each with a set of objectives:

1. Health workforce reform for more effective, efficient and accessible service delivery:
Reform health workforce roles to improve productivity and support more effective, efficient and accessible service delivery models that better address population health needs
2. Health workforce capacity and skills development:
Develop an adaptable health workforce equipped with the requisite competencies and support that provides team-based and collaborative models of care
3. Leadership for the sustainability of the health system:
Develop leadership capacity to support and lead health workforce innovation and reform.
4. Health workforce planning:
Enhance workforce planning capacity, both nationally and jurisdictionally, taking account of emerging health workforce configuration, technology and competencies.
5. Health workforce policy, funding and regulation:
Develop policy, regulation, funding and employment arrangements that are supportive of health workforce reform.

In this section, information from the training, implementation and economic evaluations is summarised and integrated with core data on program impacts and sustainability. Discussion is structured around the five HWA Domains for action and innovation in health workforce reform, and focuses on a number of key evaluation questions listed in the *Evaluation Framework* (Thompson et al., 2012a).

Project teams in the PED sub-project had the opportunity, when writing their final reports, to highlight what they felt were their key achievements. These were used as a starting point, and were supplemented and reinforced with information from the wide variety of data sources and analyses undertaken as part of the national evaluation. Where relevant, limitations are also noted.

8.1 Effectiveness, efficiency and access (HWA Domain 1)

Objective:

Reform health workforce roles to improve productivity and support more effective, efficient and accessible service delivery models that better address population health needs.

Key points:

- A total of 14,512 patients presenting with MSK problems suitable for ESOP care were seen by the PCPs during the implementation period. Primary contact cases made up around 85% of their total work load. PCPs also saw more than 2,400 patients in a secondary contact capacity. In total, PCPs saw 2.8% of all ED presentations at participating hospitals across all PED project sites between 1 October 2012 and 31 December 2013.
- Averaged across all sites, 92.7% of eligible patients treated by ESOP physiotherapists were discharged within four hours. This compared to 74.5% for similar patients seen by other health care professionals during the implementation period.
- The overall percentage of MSK patients discharged within 4 hours rose from 72.6% at baseline to 76.4% during implementation and 77.6% post implementation. PCP activity was shown to contribute to the net improvement of around two percentage points in NEAT performance.

- Patients seen by PCPs waited on average 30 minutes less than comparable patients seen by other health practitioners (24.0 versus 54.8 minutes), had a shorter treatment time (108.0 versus 147.8 minutes) and their overall length of stay was reduced by 70 minutes (132.0 versus 202.2 minutes). The 95% confidence intervals indicated these differences were significant.
- Improvements in waiting times were seen across the three triage categories targeted by PCPs but were highest in category 3, saving these patients almost one and a half hours on average. The largest volume of work for PCPs was in triage category 4 and they discharged these patients almost an hour sooner, on average, than similar patients seen by other practitioners. Triage category 5 made up the largest proportion of cases seen by PCPs (7% of all ED presentations in this category) with an average reduction of 23 minutes for these patients when seen by a PCP.
- The program has operated with high levels of safety and quality. Averaged across the four sites that collected data for this indicator, the proportion of triage category 3, 4 and 5 MSK patients returning to the ED with the same problem within 96 hours remained small and steady (around 2%) from baseline to implementation, falling slightly in the post-implementation period. There was no evidence of excess adverse events due to the PCP model and six sites reported no adverse events at all for the PCPs during the implementation period.
- Although waiting times for ESOP patients were reduced, the overall rate of MSK patients who “did not wait” was not affected, remaining very low at less than 1% of presentations.
- At PED1, a local evaluation compared medical and ESOP physiotherapy treatment for two common presentations (low back pain, knee and ankle soft-tissue injuries) and found no difference in outcomes for patients. At PED4, PCPs demonstrated their skills in differential diagnosis by reliably detecting non-MSK causes of pain and referring appropriately to medical staff.
- The presence of PCPs in the ED freed medical staff for more complex tasks. PED7 and PED2 sites noted that over time, medical staff members were increasingly willing to relinquish MSK patients to the ESOP physiotherapists.
- According to the PED7 lead site, further training in simple wound management might result in further efficiency gains. As the role evolves, large joint reduction and spinal fracture management could be added to the training of PCPs.
- Cost-efficiency evaluation was limited by sparse and incomplete data provided by sites. There are preliminary indications that the model may help reduce resource use in the area of X-ray ordering by facilitating more prompt and expert assessment of patients with suspected fractures. This was only demonstrated at one of the two sites for which information on X-ray ordering was available.
- A second approach to assessing the economic costs and benefits of the model involved carefully comparing NEAT and other productivity indicators for times when a PCP was present in the ED versus times there was no PCP present. On weekdays when PCPs were rostered on in the ED, NEAT performance improved and patient throughput was higher. Waiting times, treatment times and total time spent in the ED was also lower on these days at most sites.
- ESOP physiotherapists see their role as highly beneficial to patient care. All 25 of the 29 PCPs who responded to a survey strongly agreed or agreed that the model had improved care for specific patient groups. Most also agreed that the model improved access to care and enhanced the effectiveness of the ED where they worked. They reported that patients appeared comfortable with the new model.
- This perception is supported by survey data from a large sample of patients. Patient reports of their experiences with the ESOP model were overwhelmingly positive. They were particularly pleased with the physiotherapists’ manner: they felt they had been listened to, their problems were understood, and the physiotherapists were comfortable and competent in dealing with their problems.

- Of the 477 patients or carers who returned valid survey responses, 433 (90.8%) were satisfied or very satisfied and none were dissatisfied with their physiotherapy care. There were also high levels of satisfaction with the time taken to be seen by the ESOP physiotherapist: 408 (93.7%) respondents were satisfied or very satisfied and only four (less than 1%) were dissatisfied. Three quarters of respondents (355, 75.6%) rated their overall experience of the ED as 9 or 10 out of a possible 10. Overall satisfaction was predicted by satisfaction with the waiting time and care received, and by a number of aspects of patient experience, especially caring, listening and reassurance.
- Findings from PED6, which used a modified survey, echoed those of the main sample. Telephone interviews with patients revealed aspects of the service that were particularly valued by patients, such as the physiotherapists' professional and courteous manner, the thoroughness of examination and treatment, the information and education provided, and the timeliness of the service.
- The two models of care trialled in the PED sub-program received similar ratings for patient experiences and satisfaction. Ratings did not differ significantly according to whether the respondent was treated at a lead or implementation site, but there were differences among sites for some items.
- Strong clinical governance mechanisms were established at all sites to monitor and ensure safety and quality. Steering committees played a key role in this process, as did existing organisational structures such as clinical care review committees, patient safety and quality officers and incident reporting systems. Safety and quality data were regularly reviewed by project teams and steering committee members. Protocols and clinical guidelines were developed to ensure ESOP clinicians operated within their scope of practice. Peer review of cases was also used as a quality improvement mechanism.
- In general, stakeholders were satisfied that the ESOP-PED model had systems in place to monitor safety and quality. The PCPs meticulously documented their cases and their work was subject to constant scrutiny. Risk management procedures were seen as robust. PCPs were seen as expert practitioners on whom doctors could rely to manage a discrete set of presentations within the boundaries of their scope of practice, seeking advice when needed. Unlike junior doctors, the PCPs were a continuous presence in the ED and individuals would gain experience and greater autonomy with time. The presence of senior medical staff was seen as an essential back-up due to perceived limitations in assessment skills (there was, however, no evidence that PCPs had failed to recognise and refer on more complex cases).
- The ESOP physiotherapy model has the potential to bring physiotherapists into conflict with junior medical officers and nurse practitioner candidates who need to gain experience in dealing with MSK cases. However, in their interviews many stakeholders stated that this was balanced by the specialist education these physiotherapists could provide, both formally and informally through consultation on particular cases. The education and consultation role was seen as adding value to the ED and to the effectiveness of the PCPs, although it was acknowledged that this – and other – benefits of the model were difficult to demonstrate and quantify.
- The interviews also highlighted a tension between the need to adapt to the ED team environment and 'muck in' when required and the need to ensure PCPs – who were a relatively expensive resource – were available for the target group of patients. PCPs who adhered very closely to a narrow scope of practice tended to be less accepted by other staff members and managers. Pressures to see as many primary contact patients as possible and perform against NEAT were seen as barriers to collegial practice.

8.2 Workforce capacity and skills development (HWA Domain 2)

Objective:

Develop an adaptable health workforce equipped with the requisite competencies and support that provides team-based and collaborative models of care.

Key points:

- All sites successfully recruited suitably qualified and experienced physiotherapists into the PCP roles, selecting from a wide field of applicants. PCPs required a tertiary degree in physiotherapy and Australian Health Practitioner Regulation Agency registration, extensive and relevant clinical experience and a Master's degree or equivalent experience complying with the Australian Physiotherapy Association experiential pathway.
- Of the 29 ESOP physiotherapists, 25 worked at sites using the PED1 model of care and four worked at sites using the PED7 model of care. The vast majority (24) were recruited from within the same organisation. Three had overseas training and 24 had post-graduate qualifications. Recruits had between six and 34 years' prior experience in physiotherapy.
- Two training pathways were developed. ESOP physiotherapists on both pathways worked under the supervision of an ED physician until they completed the training and were deemed to be competent. The support of medical staff within the ED through mentoring and supervision greatly assisted implementation.
- The PED1 pathway was delivered in-house and was competency based, with standards developed through collaboration among clinical leaders in Victoria and supervision by senior ED medical staff. This framework was supported by external learning modules. Depending on prior experience and learning needs assessment, the pathway was expected to take six to 12 months to complete.
- The PED1 Advanced Musculoskeletal Physiotherapy Clinical Education Framework was a finalist in the Victorian Public Healthcare awards.
- Time taken to prepare the PED1 clinical education framework led to delays in starting the training and consequently trainees had less time to undertake competency assessment within the given timeframe. Nevertheless, all PCPs at these sites met competency requirements in plain film imaging, plastering, fracture management, small joint reductions, wound management, applied use of pharmacology and pathology and management of diabetic patients with MSK issues in ED.
- By December 2013, five trainees had completed the PED1 clinical education framework and 13 others were on track to complete it. Twenty of the 25 participants enrolled part time and one trainee suspended their learning due to maternity leave. The delay in finalising the modules, limited access to work study time and coordination of competency assessments, were the major impediments to completion.
- Trainees who undertook the PED1 pathway found the case-based learning and competency assessment particularly useful, along with specific subjects on radiology and pharmacology (delivered by the University of Melbourne) and pathology. The course content was described as comprehensive, challenging and relevant, helping to develop clinical reasoning and a deeper understanding of medical issues that may present in the ED setting. Collaborative relationships were built with peers, local trainers and mentors. One respondent stated that a respectful, stimulating and open learning environment was established by the PED1 program staff, with "a sense of achieving a shared goal as opposed to a hierarchical teaching model".
- These trainees would have preferred to have all modules available at the start of the program, and all information sources consolidated. Distance presented challenges for some respondents, and time was limited, as trainees and staff had other responsibilities and supervisory roles. Some trainees would have preferred a more formalised structure to supervision / mentoring / learning sessions with dedicated time to the process.

- A formal evaluation of the PED1 training pathway concluded that it was clearly articulated, with relevant content and standardised education and assessment methods. It was well supported by robust documentation, including ten self-directed learning modules and supporting competency assessment tasks. The program is flexible and can be tailored to meet the needs of individuals and organisations. Greater clarity around the learning needs assessment, and the inclusion of content to address the needs of specific populations (e.g. culturally safe practice) would strengthen the program.
- The PED7 pathway focused on formal study (the Graduate Diploma of Extended Scope Physiotherapy, delivered by the University of Canberra) and a period of supervised practice leading to credentialing. The PED7 lead site worked with University of Canberra to implement changes to the curriculum to meet the needs of this cohort, including face-to-face teaching on image interpretation, radiation safety training and use of nitrous oxide in emergency. Face-to-face teaching was delivered in four one-week intensive sessions. Twenty hours of simulation were included in the program to assist students develop confidence. The total duration of the training program was nine months.
- At PED7 and its implementation sites, the skills acquired by ESOP physiotherapists included plastering of non-displaced fractures, assisted closed manipulation of simple displaced fractures, closed reduction of shoulder and digit dislocations, ordering and interpreting plain film X-ray, sick certification and autonomous decision making on discharge.
- All four full-time trainees completed training and coursework to attain a Graduate Diploma of Extended Scope Physiotherapy. The part-time physiotherapists at PED10 did not have the opportunity to do the Graduate Diploma but worked through the same logbook via self-directed learning and local training to achieve competency.
- Trainees who undertook the PED7 pathway appreciated the practical components and some formal learning modules, particularly pharmacology (delivered by the University of Canberra). They developed a strong rapport with each other, and valued the adult learning approach. Completing the log books and in-house competency assessments were seen as strengths of the training program.
- Some trainees on the PED7 pathway expressed disappointment that they were unable to transfer new knowledge and skills (e.g. injecting, administering nitrous oxide) into practice due to legislative practice restrictions. The formal learning component was not always specific to the ESOP model and consequently was not always relevant and comprehensive. Trainees would have preferred more focus on best-practice management of common ED presentations, less self-directed learning and more support (particularly more face-to-face opportunity to ask questions, and more timely responses to emailed queries). Improvements to the radiology and injecting components of the coursework were also suggested.
- Evaluation of the PED7 pathway concluded that trainees had access to a wide range of high quality learning resources, including simulation injecting kits and injecting consumables, and access to real time ultrasound imaging equipment. The University of Canberra was well placed to deliver the program, and there is the potential (pending decisions by regulatory authorities) to obtain a recognised and transferable qualification. One of the challenges that needs to be addressed with this pathway is ensuring content is pertinent for trainees from different jurisdictions with different policies and legislative environments.
- Both training models are reliant on the availability of experienced clinical leads and medical staff for mentoring and competency assessment of the trainees. The PED1 model requires considerable in-kind support including study leave, while the PED7 model requires organisations to meet University fees (currently around \$18,000) and release trainees for four weeks to attend the face-to-face teaching component, with additional funds to back-fill positions. For these reasons, smaller EDs and physiotherapy departments may have difficulty sustaining the training pathways.
- Sites using the PED1 model implemented a team-based model of care. According to the PED1 site, advantages of the team approach included the capacity to deliver services with minimal interruptions (e.g. due to lack of leave cover). Further, integrating the ESOP model with an SCP team enhanced opportunities for shared learning, making training more cost-

effective and efficient. It also exposed the other physiotherapists to the ESOP model, facilitating succession planning.

- Workplace practices have changed at each site. Examples of these changes can be found in the sites' final reports. PED4 provided a dedicated space for PCPs to see patients, and changed rosters to cover the busiest periods. Additional responsibilities included wound assessment, ordering of pathology and interpretation of plain-film imaging. At PED6, there were more referrals from ED to the Soft Tissue Review Clinic as staff increasingly recognised the value of the physiotherapy role. At PED8, the model gave ED physiotherapists greater autonomy in the management of patients through the whole ED visit and discharge process, particularly those with dislocations and fractures. At PED10, the full-time ESOP physiotherapist was given responsibility to manage the whole episode of care for eligible patients.
- On average across all sites, two out of five patients seen by PCPs required medication for pain relief. Due to restrictions on the scope of practice, medication was generally prescribed by medical officers (65%), nurse practitioners (26.0%) and other health care providers.
- A large number of ESOP patients required post-discharge referrals and/or certification (e.g. to cover absence from work). PCPs were able to provide 86% of the 9,261 referrals needed, and 65% of the 1,994 certificates.
- All 25 PCPs who responded to a survey said they were comfortable approaching other ED staff for advice on patient management, and were confident they had the skills and knowledge to provide appropriate care, patient education and information. More than 95% of respondents said they were confident dealing with patients in their expanded roles.
- Around 85% of PCPs agreed or strongly agreed that they were satisfied with the expanded role and felt it had enhanced their careers, and 75% agreed or strongly agreed that they planned to stay on in the role for the foreseeable future. Only 8% disagreed or strongly disagreed with this statement, and one explained that they were unable to stay on as the funding had ceased.
- The PED6 site retained all ESOP physiotherapists for the duration of the program, a remarkable achievement given the normally high turnover of staff at remote hospitals. According to the site's final report, this is evidence that the PCP role "can improve career pathways, job retention and satisfaction for experienced physiotherapists".

8.3 Leadership and sustainability (HWA Domain 3)

Objective:

Develop leadership capacity to support and lead health workforce innovation and reform.

Key points:

- Both lead sites had well-developed models of care that had been trialled over four to five years before the program began. The structure of the program, with PED1 and PED7 each leading a number of implementation sites, had a number of advantages. It reduced duplication of effort, as training pathways, modules and resources were already established. Lead sites provided support to implementation sites as needed, including: initial on-site visits; regular contact; assistance with stakeholder engagement strategies; help with developing project plans and writing progress reports; and advice and assistance with securing ethics approval and evaluation data collection and analysis.
- Implementation sites acknowledged the benefits of having lead sites. They particularly appreciated knowing that the models of care and associated materials had been tested and they could draw on this experience and thus avoid some potential pitfalls in the setting-up phase of the program.
- Grouping the implementation sites with lead sites in jurisdictions with similar legislative and policy structures was advantageous. The PED7 lead site was able to assist implementation

sites to overcome some of these barriers to full implementation of the ESOP physiotherapy model.

- One challenge to the lead / implementation structure was the fact that implementation sites had no contractual obligations to the lead sites. The ability of lead sites to influence project expenditure and implementation was therefore limited. Further, implementation sites did not necessarily have the same model of care as the lead sites. Articulating and explaining the lead site model of care at the outset may have helped implementation sites set clearer objectives. Establishment of a contract or Memorandum of Understanding is advisable for any future projects intending to use the lead/implementation structure.
- Additional funding from the Victorian Department of Health was an advantage for the Victorian sites, both in practical terms and also as a signal of high-level interest in the PCP role and its sustainability.
- Overall, organisations involved in the ESOP program provided considerable “in kind” support for implementation and were strongly invested in the model and its potential impacts on ED efficiency and effectiveness. Senior managers helped overcome barriers to implementation, and staff in IT and quality improvement helped collect and extract evaluation data to demonstrate the impacts of the program.
- In general, the project teams were highly skilled, well organised and motivated. They had effective decision-making structures in place and demonstrated good capacity to identify and address project risks.
- All sites identified the support of the CEO and senior managers as crucial enabling factors during the set-up phase of the sub-project. Providing regular updates to the highest levels of the organisation was one strategy that worked well to sustain interest and support. Medical champions – particularly specialists in orthopaedics and radiology – played a pivotal role at some sites.
- Key internal stakeholders, including health care professionals from a wide variety of specialities were engaged in the project mainly via inclusion on steering committees and input into project materials such as “model of care” documents. Senior managers provided guidance and a management perspective on the models of care and staffing issues. At some sites there was a consumer representative on the steering committee.
- Sites also involved external stakeholders in their projects to provide consultation, training and project development advice.
- The physiotherapists’ skills and knowledge in providing patient care and education, ordering imaging and referring for further treatment were extremely highly regarded by other staff members. Of the 386 staff members who responded to a survey, an overwhelming majority agreed that the model improved the quality of ED care and made the ED team more effective. Nine out of ten respondents said they were comfortable providing advice to the PCP on patient management. There were no differences between the two models of care in terms of respondents’ understanding, support and attitudes.
- Educational requirements for the PCPs were not well understood. This gap in understanding could be addressed through stakeholder engagement and communication strategies in any future implementation of the model. Medical staff and those in non-clinical roles would benefit most from such strategies as these groups reported the lowest levels of understanding of the PCPs’ roles and functions.
- There was strong interest in the ESOP physiotherapy model, as indicated by the large number of survey respondents who chose to make additional comments. Other staff members highly valued the PCPs’ expertise and contribution to high-quality care. They were viewed as having the most appropriate skills for managing a specific set of patients, and also having much to teach other members of the ED team.
- Some senior medical staff expressed a strong preference for a secondary contact model in which patients with MSK presentations are assessed, diagnosed and discharged by doctors and referred to physiotherapists for treatment as required. Their concerns about the efficiency and safety of the ESOP model appeared to be based on perceptions that medical staff had spent a great deal of time supervising the PCPs and performing assessments on

patients referred back to doctors. Nevertheless, these respondents clearly valued the physiotherapists' presence and respected their skills in providing therapy. Further consultation with this powerful group of stakeholders is clearly required prior to any proposed wider implementation of the ESOP physiotherapy models.

- The findings from the staff survey concur with those from the survey of PCPs. Although the PCPs were, almost without exception, very positive about their role and its impacts, a few respondents expressed disagreement with items relating to the understanding and attitudes of other staff. One respondent strongly disagreed and three disagreed with the statement that other staff had a good understanding of the educational preparation required to undertake the role, and a few also disagreed that other staff fully understood how their skills and expertise differed from other physiotherapists in the ED. Their comments indicated that medical staff from specialist units, and junior doctors on rotation in the ED, could benefit from clearer communication regarding the role of PCPs and their contributions to the care of patients with MSK problems.
- One site, PED8, suggested that “culture-change requirements” should be addressed as part of the ESOP physiotherapy training, to reduce difficulties in adjusting to the new roles. This site also highlighted the need to address issues relating to backfill (e.g. during leave or training) and fatigue and dissatisfaction from working shifts and alternate weekends to ensure long-term sustainability of the model.
- This tool identified that, ironically, one of the most serious threats to sustainability was a belief among other staff that the model would not be sustained. There was a perception that senior organisational leaders took limited responsibility for efforts to sustain the change process, despite staff generally sharing information with and seeking advice from these leaders. Finally, despite significant improvements in infrastructure during the course of the project, it was recognised that some key elements such as policies, procedures and communication systems were still lacking.
- Interviews confirmed that PCPs had to work at engaging their peers. Continuous internal stakeholder engagement was just as essential as external stakeholder engagement. The rotating nature of junior medical officer placements and high number of part-time staff working in the ED meant that PCPs had to repeatedly explain their ESOP role and champion it to other staff and patients. The clinical lead physiotherapist played an essential role in providing leadership and was often the key individual responsible for service implementation, liaising with stakeholders, overseeing the service and training of new staff.
- For many PCPs the impacts of the unsociable hours that come with shift work were challenging, particularly in combination with a heavy study program. This was combined with the challenge of being a new staff member in a stressful, time-pressured environment and trying to be accepted as a part of the team. At times the role was physically exhausting and emotionally draining due to the level of responsibility involved. A range of strategies were deployed to sustain PCPs in their new role, including mentoring arrangements. Generally less experienced staff needed more support. Several PCPs felt that the ESOP role was suited to a part-time employment arrangement possibly in combination with a PCP role in outpatients or in private practice.
- Despite these barriers, the intention of the majority of PCPs was to continue in the role where possible. In their survey responses, 75% agreed or strongly agreed that they planned to “stay on in the role for the foreseeable future”, and only about 8% disagreed or strongly disagreed (one respondent commented that they were unable to stay in the role as funding had ceased). This finding was reinforced by information from the staff establishment profile and points to the sustainability of the PCP role.
- The climate of limited resources in hospital EDs meant managers had to balance the implementation of the PED sub-project with multiple organisational demands. Project officers or project managers frequently held a dual role of lead clinician. Project teams that maintained a high level of investment in project management best positioned their projects for sustainability.
- At the time of writing this report, six sites had secured ongoing funding for the ESOP-PED service. They are: PED1, PED3, PED4, PED5, PED7 and PED9. At two sites, PED6 and

PED8, negotiations were continuing and project teams remained confident, despite the resignation of some PCPs from these services. PED2 and PED10 were not able to continue operating the service following the cessation of HWA funding.

- PED9 has put forward a business case for expanding the program to include a University Hospital and provide a seven-day service at both facilities. The ESOP physiotherapist at PED9 has been asked to advise the State Ministerial Taskforce on Expanded Scopes of Practice and has presented at a national allied health conference.

8.4 Workforce planning (HWA Domain 4)

Objective:

Enhance workforce planning capacity, both nationally and jurisdictionally, taking account of emerging health workforce configuration, technology and competencies.

Key points:

- There is potential for conflict between different innovations implemented concurrently, and it may be impossible to distinguish their impacts on efficiency and effectiveness. For example, at the PED1 site the nurse practitioner service in the fast track area of ED was increased by 50% during the ESOP program, so that at some times of the day there were three nurse practitioners rostered on. During quiet periods, nurse practitioners and PCPs were effectively competing for patients, which meant less throughput for both groups.
- Even under circumstances where the ESOP program is the only current innovation in the ED, the PCP may not be able to work to full capacity due to competition from nurse practitioners and doctors requiring clinical experience with this cohort of patients. The final report at the PED8 site noted that this situation could strain relations between ED staff and create confusion for patients and referring health professionals. Other sites have also identified the problem of medical staff taking responsibility for patients in the ED that clearly had MSK conditions. Ongoing explanation is needed to help ED staff be clear about the role of the PCP and the difference between the primary and secondary contact physiotherapy roles.
- Issues of credentialing and professional recognition of the PCP role presented a challenge for the sub-project.
- The PED1 model of care is underpinned by the Australian Physiotherapy Association (2009) definition of advanced scope of practice. Although this includes roles and responsibilities traditionally undertaken by the medical profession, and thus requires additional training and credentialing, it does not extend beyond the current legislation and hence is not “extended” scope of practice.
- When all competency requirements for the PED1 training pathway have been met, an ESOP Certificate is awarded locally and the successful candidate's name is added to an internal list of qualified staff. Practices around the awarding of the certificate vary according to local governance. Opportunities should be explored with the Australian Physiotherapy Association to record and manage certification. Broader professional recognition would enhance the sustainability of this training pathway.
- The PED7 model of care goes beyond advanced practice and requires formal tertiary studies leading to the qualification of Graduate Diploma in Extended Scope Physiotherapy, plus additional training and credentialing for tasks such as autonomously ordering and interpreting imaging (ultrasound, CT scan and MRI), managing fractures and performing joint and fracture reductions and joint aspirations.
- On completion of the formal course requirements, the University of Canberra notifies the Australian Health Practitioner Regulation Agency of successful graduates eligible to be recognised as an Extended Scope Physiotherapist. Due to the professional implications and the need for a nationally agreed standard for education at this level, consultation is needed with the Australian Physiotherapy Association and others (as appropriate) to establish appropriate processes for notification to occur.

8.5 Workforce policy, funding and regulation (HWA Domain 5)

Objective:

Develop policy, regulation, funding and employment arrangements that are supportive of health workforce reform.

Key points:

- Ordering diagnostic imaging was not fully implemented as planned at many of the sites due to legislative and local policy restrictions. For example, a local review at PED1 resulted in new guidelines that restricted physiotherapists (and nurse practitioners) to requesting plain film imaging only. Medicare funding mechanisms presented a barrier to negotiation with the hospital's radiology department for changes to this guideline. Similarly, at PED3 the PCP was restricted in their ability to order ultrasound, CT scan and MRI, probably due to billing issues as the hospital receives reimbursement from the Commonwealth if a consultant orders these tests in an outpatient clinic.
- The Queensland Radiation Safety Act currently prohibits physiotherapists requesting X-rays. Queensland Health has processes to allow physiotherapists to undertake this task, but medical officers are required to countersign requests. The sites are working with the Australian Physiotherapy Association to lobby Queensland Health for legislative change.
- PED8 was able to get access to independent X-ray ordering rights with assistance from PED7 lead site. This entailed a careful examination of the Queensland Radiation Safety Act, an extra training component in the University of Canberra program, benchmarking and help with stakeholder engagement. Requests initially had to be co-signed by a medical officer, but in September 2013 a policy was ratified allowing independent referral for plain film imaging by ESOP physiotherapists at that site.
- The PED7 lead site also helped implementation sites deal with some of the barriers to prescribing and administering medication. It reviewed the legislation and was able to identify avenues by which physiotherapists in Queensland could be granted limited prescribing rights, along with the legal potential for administration of Schedule 2 medications. A proposal was drafted to be submitted to the Queensland Chief Medical Officer requesting limited prescribing rights under research conditions. Standard Operating Procedures for initiation and administration of simple analgesia (paracetamol and ibuprofen) were developed at PED8 and PED9 and are awaiting local approval. At PED9, approval was granted at a State level to administer Schedule 4 medications (nitrous oxide and lignocaine), and local approval was pending at the time of this report.
- PED7 also assisted PED10 by reviewing the South Australian legislation governing prescribing of medications, identifying stakeholders and helping facilitate dialogue between the project team and the South Australian Medicines and Technology Policy and Programs and Controlled Substances Licensing. However, at the time of this report, there was no possibility for PCPs at PED10 to administer medications despite completing the relevant module of the Graduate Diploma.
- In order to realise the full scope of the PED7 training model, a coordinated national approach may be required to remove legislative barriers to PCPs prescribing medication. This is not something individual organisations can achieve without support from State and Territory health departments. HWA's recent gains with the Health Professional Prescribing Pathway may generate some impetus to overcome these barriers particularly in the ACT and Queensland.
- Examination of the provisions in the Workplace Safety / Worker's Compensation Acts indicates that only South Australian clinicians are legally able to complete Worker's Compensation forms. This restricted the autonomy of the PCPs as they were unable to provide a complete service to work-injured patients.

8.6 Conclusion

The PCP model is compatible with current physiotherapy and ED practice. The model and associated clinical guidelines need to be clearly documented (so that the model is readily understood by professional colleagues). The model requires physiotherapists to change their thinking from one of accepting referrals to one of seeking out referrals. The PCP model can be introduced as a separate model, or combined with an existing secondary contact physiotherapy service. The model could be slowly introduced by increasing the skills and expertise of existing staff to take on increasing responsibility for MSK patients. Training of PCPs is relatively complex, but can be broken down into smaller parts. This can include an early focus on key competencies to facilitate commencement of PCP practice and reduced need for supervision.

The availability of additional funding was the single most important determinant of sustainability for most project teams. Funding to maintain the model has been secured at six organisations and two organisations were able to at least partially transition the project into normal business following the cessation of HWA funding, maintaining elements of the service. The model was not sustained at one site, due in part to the recent opening of an Urgent Care Centre adjacent to the ED.

The PCP model has been implemented in a wide variety of settings, including major metropolitan hospitals, smaller metropolitan hospitals, regional hospitals and rural / remote locations. There are no major structural impediments to the model being widely adopted. Key requirements for successfully implementing the model rely heavily on a receptive context for change, particularly the support of local managers and medical staff, and the availability of staff with the necessary skills. Wider implementation would benefit from a 'help it happen' approach, with the 'help' coming in the form of seed funding to support implementation, funding to support 'lead' sites in the provision of support and guidance to implementation sites (for any implementation sites which would like such support), dissemination and ongoing updating of training resources and changes to funding and legislation to support PCP practice. Much of the 'help it happen' should occur at a State/Territory level, rather than a Federal level. However, there may be some economies of scale in taking a national approach to the training of ECPs. The very significant training resources developed by both lead sites should be made widely available.

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Appendix 1 Funding allocation by project

Recipient	Victorian Department of Health funding allocation	Execution date	Completion date	Total HWA funding (GST incl.)
PED1 and PED2	Yes	23/05/2012	31/12/2013	\$329,464
PED3	Yes	21/06/2012	31/12/2013	\$356,725
PED4 & PED5	Yes	26/06/2012	31/12/2013	\$345,000
PED6	N/A	26/06/2012	31/12/2013	\$352,854
PED7	N/A	26/06/2012	31/12/2013	\$397,957
PED8	N/A	26/06/2012	31/12/2013	\$313,042
PED9	N/A	21/06/2012	31/12/2013	\$316,553
PED10	N/A	21/06/2012	31/12/2013	\$356,473
Total				\$2,768,068

Appendix 2 Methods of the national evaluation, HWA-PED

This appendix provides essential background information on the methods of the national evaluation for the HWA-PED sub-project. It begins by describing the generic Evaluation Framework on which the national evaluation methods were based, and then links the levels of this framework to the HWA Domains of Inquiry and to specific KPIs and Evaluation Tools. Finally, details of national evaluation team activities such as site visits, data submissions and stakeholder interviews are provided as a guide to the timing and extent of data collection for the HWA-PED sub-project.

Evaluation Framework

The ESOP Program evaluation was based on a broad evaluation framework developed by the Centre for Health Service Development (University of Wollongong) and used in several previous national program evaluations⁷. This framework recognises that programs such as the ESOP program aim to make an impact at multiple levels, each of which needs to be considered in the evaluation:

- Level 1: Impact on, and outcomes for, consumers (consumers, families, carers, friends, communities)
- Level 2: Impact on, and outcomes for, providers (professionals, volunteers, organisations)
- Level 3: Impact on, and outcomes for, the system (structures and processes, networks, relationships)

Six 'plain language' evaluation questions are posed to assist in considering all the relevant evaluation issues (Figure 21). These questions provide a starting point to define the scope of the evaluation and assist with data collection. This framework aligns well with the HWA Impact Assessment Framework and can be integrated with the key domains of inquiry relevant to HWA. It is also compatible with the Victorian Innovation and Reform Impact Assessment Framework.

The six key elements in the evaluation framework are described below.

⁷ Available at:
https://www.hwa.gov.au/sites/uploads/HWA%20Extended%20Scopes%20of%20Practice%20Program_Evaluation%20Framework_Version%203.pdf accessed 11 June 2014.

EVALUATION HIERARCHY	What did you do?	How did it go?	Can you keep going?	What has been learnt?	Are your lessons useful for someone else?	Who did you tell?
	PROGRAM / PROJECT DELIVERY	PROGRAM / PROJECT IMPACT	PROGRAM / PROJECT SUSTAINABILITY	PROGRAM / PROJECT CAPACITY BUILDING	PROGRAM / PROJECT GENERALISABILITY	DISSEMINATION
Level 1	Impact on, and outcomes for, patients (consumers, families, carers, friends, communities)					
Outcomes, indicators and measures to be developed for each cell as relevant	Describe what was implemented and, if necessary, contrast to what was planned	Impact on consumers and carers	Sustainability assessment	Capacity building assessment	Generalisability assessment	Dissemination log
Level 2	Impact on, and outcomes for, providers (professionals, volunteers, organisations)					
Outcomes, indicators and measures to be developed for each cell as relevant	Describe what was implemented and, if necessary, contrast to what was planned	Impact on professionals, volunteers, organisations	Sustainability assessment	Capacity building assessment	Generalisability assessment	Dissemination log
Level 3	Impact on, and outcomes for, the system (structures, processes, networks, relationships)					
Outcomes, indicators and measures to be developed for each cell as relevant	Describe what was implemented and, if necessary, contrast to what was planned	System level impacts, including external relationships	Sustainability assessment	Capacity building assessment	Generalisability assessment	Dissemination log

Figure 21 Evaluation framework

Program/Project delivery

Program/project delivery (implementation) explores ‘what did you do?’ It includes what was done and how it was done. This includes comparison of what was planned with what was actually delivered. This is a fundamental step in the evaluation process and contributes to evaluability assessment (Hawe et al., 1990).

Program/Project impact

This element of the framework asks ‘how did it go?’ Projects are usually able to describe what they did, but often have a much less clear understanding of whether their activities were successful. This usually includes exploring several dimensions of both project and Program effectiveness with a focus on the project’s objectives. In the context of the ESOP initiative this included effectiveness, efficiency and workforce productivity impacts.

Sustainability

This element of the framework asks ‘can you keep going?’ The various definitions of sustainability coalesce around two main ideas - sustainability of the direct improvements made as part of a Program, and the sustainability of the techniques and approaches learnt as part of the Program. Evaluation of sustainability is closely aligned with the issue of capacity building (e.g. increase capability and skills, increased resources) and any changes in structures and systems that ‘anchor’ or embed changes and facilitate sustainability.

Capacity building

Capacity building is a key component of the evaluation framework and answers the question, ‘what has been learnt?’ Capacity building is concerned with changes to workforce capacity; for example, improving the knowledge and skills of professionals and the system.

Generalisability

The concept of generalisability refers to whether lessons learnt from a project or the Program may be useful to others. In the context of the evaluation of the ESOP Program it also includes the issue of scalability. Can the workforce models be replicated more broadly and/or on a national level?

When considering generalisability it will also be critical to clarify what was unique to each project implementation site and what factors or characteristics were both beneficial and applicable to other sites. This will assist in identifying the key elements that drive the expanded scope of practice models.

Dissemination

This final element focuses on disseminating lessons learnt from both within and beyond the Program. It challenges the projects and the Program to share the knowledge gained throughout the life of the ESOP Program by answering the question 'who did you tell?' Dissemination activities can often be distinguished by two purposes, as follows:

- Information shared with project stakeholders, such as Project Advisory/Reference Group members, management and staff of participating services, and groups or individuals in the local community. This type of dissemination supports the capacity building and sustainability aspects of the project.
- Information shared with the wider community, including clinicians, academics, managers, planners and policy makers. This type of dissemination supports the generalisability of the project.

The evaluation framework is structured to generate both formative and summative findings. In formative evaluation, the results of the evaluation inform the ongoing development and improvement of the program. This 'action research' approach fits well with the aim of the HWA-ESOP to build capacity within the health system for longer term sustainable change. We call this evaluation for learning: 'How can we learn and get better as we go?'

Summative evaluation seeks to ascertain the extent to which the Program was implemented as intended and the desired/anticipated results achieved. The purpose is to ensure accountability and value for money. Results of the evaluation are used to inform planning decisions, policy and resource allocation. We call this evaluation for judgment: 'How did we do?'

Both components of the evaluation seek to achieve the same goal: to assist clinicians, managers and policy makers to make better informed decisions about how to improve the implementation of expanded scope of practice interventions.

Evaluation tools and KPIs

HWA's Strategic Plan and Work Plan focuses on the delivery of three key objectives:

1. Build capacity
2. Boost productivity
3. Improve distribution

Boosting productivity is one of three HWA strategic objectives to address the increasing demand for health services. To contribute to this objective HWA funded the ESOP program. This involved undertaking a number of targeted innovative health workforce reform initiatives with a specific focus on role redesign and expanding the scope of existing health workers in acute and primary care settings. The program aims to improve productivity, retention, accessibility, efficiency and effectiveness of healthcare services⁸. The work of HWA is guided by

⁸ Available at: <https://www.hwa.gov.au/our-work/hwa-strategic-plan-and-work-plan> accessed 11 June 2014.

five domains of action which are described in the *National Health Workforce Innovation and Reform Strategic Framework for Action 2011-2015*. The domains are:

1. Health workforce reform for more effective, efficient and accessible service delivery
2. Health workforce capacity and skills development
3. Leadership for the sustainability of the health system
4. Health workforce planning
5. Health workforce policy, funding and regulation (HWA, 2011).

The domains or key priority areas were aligned with the evaluation framework.

A set of KPIs was developed by the national evaluation team. Each site's response to the Request for Proposal and/or Project Plan was reviewed and the proposed KPIs noted, providing a starting point. These were refined through consultation at the initial sub-project workshop, during site visits and through discussions with the Project Advisory Group. The aim was to develop a suite of KPIs broadly applicable across all four sub-projects.

The national evaluation team designed methods for collecting each of the KPIs, developing or adapting standardised tools where necessary and establishing a schedule of data collection over a twelve-month period. The tools can be found in the *Compendium of Data Requirements and Evaluation Tools* (Thompson et al., 2012b), along with the proposed timing and frequency of data collection.

Table 47 shows the KPIs, mapped to the HWA Domains of Inquiry and the Evaluation Framework Levels. Methods and, where appropriate, specific evaluation tools are listed for each KPI.

Table 47 HWA Domains and corresponding KPIs, evaluation methods and tools used in the PED sub-project evaluation

CHSD Evaluation Framework Level	HWA Domain of Inquiry	KPI	Method	Evaluation Tool
Level 1	Domain 1: Effectiveness and efficiency	1.8 High level of consumer satisfaction/experience with ESOP-PED	Consumer survey Patient journey analysis pre and post implementation	ET9b ET13*
Level 1, 2 & 3	Domain 1: Effectiveness and efficiency	2.1 Consistent or improved unit safety outcomes pre and post introduction of the ESOP-PED initiative e.g. number of re-presentations of patients/consumers treated for the same health care problem within 96 hours/readmissions within 28 days; number of adverse events; number of consumer complaints; decreased number of consumers who 'Did not wait'.	Administrative &/or unit routine data sets	ET3
Level 3	Domain 1: Effectiveness and efficiency	1.3 Increased number of Triage Category 3, 4 and 5 musculoskeletal consumers seen by ESOP physiotherapist discharged within 4 hours 1.4 Number of Triage Category 3, 4 and 5 patients seen by the ESOP physiotherapist that required medical imaging	Administrative data sets ESOP Physiotherapy database	ET3

CHSD Evaluation Framework Level	HWA Domain of Inquiry	KPI	Method	Evaluation Tool
Level 3	Domain 1: Effectiveness and efficiency	1.5 Average number of patients/consumers seen per day by the ESOP physiotherapist 1.6 Decreased total treatment time for Triage Category 3, 4 and 5 consumers seen by the ESOP physiotherapist 1.7 Decreased waiting time for Category 3, 4 and 5 consumers seen by the ESOP physiotherapist	Administrative data sets	ET3
Level 2 & 3	Domain 1: Effectiveness and efficiency	2.2 Increased capacity of medical staff for the management of more complex ED consumers in a more timely fashion	Administrative &/or unit routine data sets	ET3
Level 2	Domain 2: Workforce capacity and skills development	1.1 Increased number of ESOP physiotherapists who have completed the agreed training pathway through the ESOP-PED projects 1.2 Turnover rate of recruited ESOP physiotherapists during the funded period of the expanded scope of practice project.	Record of completion (including evidence of attainment of competency) of the agreed ESOP physiotherapist training pathway. Record of staff employment for the duration of the project.	ET1 ET1
Levels 2 & 3	Domain 2: Workforce capacity and skills development	2.3 Increased number of expanded scope of practice physiotherapy procedures undertaken by ESOP-PED in each of the implementation sites e.g. imaging, medication, certification, referrals	Administrative &/or department routine data sets ESOP Physiotherapy database	ET3
Level 2	Domain 3: Leadership and sustainability	1.9 High level of staff satisfaction and acceptance of the ESOP physiotherapy role; staff experience of the impact of the expanded scope of practice role 2.0 Perceptions of the impact of the expanded scope of practice role on key stakeholders	Staff survey (other members of the health care team) ESOP personnel survey ESOP personnel interviews Key stakeholder interviews	ET8b ET10 ET11 ET12
Levels 2 & 3	Domain 3: Leadership and sustainability	2.4 Conditions for sustained implementation in place	Semi-structured interviews with senior managers to ascertain their perceptions of project sustainability	ET12

Note. *Using this tool was optional.

Monitoring these KPIs was intended to help sites gather information to evaluate their achievements at the end of the implementation period (summative evaluation), as well as providing early indication of risks, allowing corrective action to be taken (formative evaluation). All project teams secured ethics approval for their project evaluation.

It should be noted that data collection by the national evaluation team went well beyond the KPIs. Other methods of data collection were used to support the interpretation of the information arising from the KPIs. These included tools assessing the quality and impact of training, a tool to assess the relationship between lead and implementation sites, a measure of partnership building, logs to document issues, lessons learned and dissemination activities, and a sustainability questionnaire.

The design of the HWA-ESOP program emphasised three of the five HWA Domains of Inquiry. Consequently, the remaining two domains are not covered by specific KPIs or evaluation tools: Domain 4 (Workforce planning) and Domain 5 (Workforce policy, funding and regulation). Nevertheless, the additional data collections captured relevant information to enable the national evaluation team to address these domains in the final sub-project reports.

Data submissions

Table 48 and Table 49 show the data submitted by each HWA-PED site. Brief information about each tool, including dates of submission, changes and omissions is outlined below.

Table 48 National evaluation tools completed by PED sub-project⁹

Site	ET1 Staff profile	ET3 Data spec	ET6 Log book (PCP data items)	ET8b Staff survey	ET9b Patient survey	ET18 Sustainability tool	ET19 Issues/ Lessons Log	ET20 Dissemination Log
PED1	✓	✓	✓	✓	✓	✓	✓	✓
PED2	✓	✓	✗	✓	✓	✓	✓	✓
PED3	✓	✓	✗	✓	✓	✓	✓	✓
PED4	✓	✓	✗	✓	✓	✓	✓	✓
PED5	✓	✓	✓	✓	✓	✓	✓	✓
PED6	✓	✓	✗	✓	✓	✓	✓	✓
PED7	✓	✓	✓	✓	✓	✓	✓	✓
PED8	✓	✓	✗	✓	✓	✓	✓	✓
PED9	✓	✓	✗	✓	✓	✓	✓	✓
PED10	✓	✓	✗	✓	✓	✓	✓	✓

Note. ET refers to the Evaluation Tool in the Compendium of Data Requirements and Evaluation Tools (Thompson et al., 2012b).

ET1 was used to record information about the staff in ESOP roles, including dates commenced, qualifications and experience, salary and hours worked in the role. This provided essential background information for the evaluation and was collected throughout the program.

During the initial site visit the proposed data specification (**ET3**) was reviewed with project teams to ensure that the data items were appropriate and available from existing information systems. PED1 provided a database to implementation sites to help capture ET3 data including use of diagnostic imaging, certification, medication and referral to other healthcare providers.

⁹ Optional evaluation tools included ET7 Patient Interview and ET13 Patient Journey Mapping (ET2, 4, 5 and 16 were not relevant to the PED sub-project).

PED5 implementation site used this database in conjunction with the hospital's own ED data collection system and merged information from the two sources for final reporting. At PED3, most information was available through routine data collection systems. Minor adjustments were made to the filters in the administrative data collection to ensure all the data were collected, which required some retrospective data entry but also resulted in minimal duplication of data entry requirements.

Lead site PED7 set up an online survey tool to collect demographic and quantitative performance data for ET3 not covered by its routine data collection systems. Data were entered into the tool by the ESOP clinician or an administrative support officer. A similar system was established at the PED10 implementation site as its routine data collection also did not capture all data items specified by ET3. Because ET3 was not finalised until late October 2012, early data collection using the online tool did not cover all the items. The online tool complements reports generated from the hospital's administrative data collection systems. PED8 encountered difficulties in obtaining some items of demographic and quantitative data (ET3) due to local security requirements. These issues were overcome with additional ethics approval to allow the sending of coded patient URNs and local assistance with encryption and secure transfer.

There were three data extracts for ET3. Data submission 1 was due 31 March 2013 and provided baseline data for the 12 months prior to implementation of the ESOP initiative (1 October 2011 to 30 September 2012). This data submission provided an opportunity to sort out any problems with data extracts and interpretation of data items prior to the more critical data submissions. Data submission 2 was due 31 October 2013 and encompassed what was originally envisaged to be the peak period of project implementation (1 October 2012 to 30 September 2013).

HWA had envisaged that all projects would commence by 1 October 2012 and a full 12 months of implementation data was a contract requirement. PED projects ended on 31 December 2013 and so the period for Data submission 3 was reduced to 1 October 2013 to 31 December 2013, due 31 January 2014 (Data submission 3A). PED projects were given the option of providing Data submission 3B which encompassed the remaining period from 1 January 2014 to 31 March 2014, due 30 April 2014. The following sites submitted 3B: PED1, PED2, PED6, PED3, PED4, PED7 and PED10. However, Data submission 3B from PED3 was received late (on 28 May 2014), after data processing had been completed, and therefore could not be included in analyses. (Note that all previous submissions from PED3 were included, however).

The national evaluation team statistician worked closely with project teams to assist with data extraction queries and data transfer. A large number of different databases and information systems were used across the sites. In order to ensure that all essential items could be collected consistently across sites, additional databases were designed to supplement the existing information systems. Data extraction was a complex process, further complicated by the lack of expertise and resources at many sites. As a result, data submissions were often late, incomplete and arrived in instalments which had to be matched and compiled. The national evaluation team provided considerable support to assist sites with this process to maximise data quality and completeness.

Only three sites implemented separate clinical logs (**ET6**). Others recorded ESOP Physiotherapy specific data items in a specialty database as part of the routine data collection used to support ET3.

All sites received ethics approval for their evaluations involving staff and patients. Support for the surveys was provided by the national evaluation team, including calculation of target sample sizes to maximise statistical power, draft participant information sheets, guidelines for administering the questionnaires, the online version of the surveys, and spreadsheets for data entry by those who preferred to use a paper version. Details of tool development are available on request.

Most sites used the online survey platform Survey Monkey for **ET8b** and **ET9b**. ET8b was a 20-item survey designed to assess understanding, opinions and attitudes regarding the model of care and its impacts from other staff members and stakeholders working with ESOP practitioners. It was based closely on a published questionnaire (Considine and Martin, 2005). ET9b was a 24-item survey designed to measure patient experiences and satisfaction with their treatment by the ESOP practitioner. It was adapted from the Patient Satisfaction Sub-scales (Cherkin et al., 1991) with additional questions from other sources (Kapulski and Bogomolova, 2011; National Health Service, 2012). Data collection took place in late 2013 for ET8b and (with one exception) for ET9b. PED8 surveyed patients in May, August and October 2013.

ET9b was altered slightly for local use at the PED1 and was used as a paper-and-pencil survey rather than online and collected by ED clerks or self-completed by patients and deposited in a box in the ED. Ethics approval was granted in December 2012 to PED3 implementation site for its evaluation activities. However, one of the conditions of approval was opt-out consent for the parents of all paediatric patients seen under the initiative. This proved onerous, due to the large numbers of paediatric patients at PED3, and an amendment was approved to allow submission of monthly 'counts' of key paediatric data to the national evaluation team. PED6 amended ET9b extensively to be more suitable for Aboriginal and Torres Strait Islander participants.

ET9b was administered on paper at PED8. The ESOP physiotherapist informed patients of the study and gave them information sheets and consent forms at the end of their treatment. Patients were asked to complete the survey while the ESOP physiotherapist completed their discharge paperwork. It could be returned via a locked box in the ED waiting room or, if patients chose to take the form home to complete, via a pre-paid envelope.

Four sites conducted patient interviews in addition to the patient surveys. PED6 used a specially designed interview schedule with the goal of ensuring that Aboriginal consumers had an opportunity to contribute to the evaluation. PED1 interviewed nine patients using a tool designed for the purpose. PED8 planned to interview 10 patients selected from among those who returned questionnaires, to explore novel, contrasting and interesting responses in greater depth. However, due to logistical issues, only three patients were interviewed. PED7 had an evaluation already under way when the HWA-ESOP project was funded which included patient interviews.

The sustainability survey (**ET18**) was completed twice: projects were asked to submit this tool in early 2013, however most surveys were not returned until August 2013. The second data submission occurred in late 2013 for some projects, and early 2014 for others. The issues log (**ET19**) and dissemination log (**ET20**) were compiled throughout the project period by project staff. The final submissions for both these tools were received by the national evaluation team from August to December 2013.

Table 49 Additional evaluation tools (PED sub-project)¹⁰

Site	ET10 ESOP Practitioner survey	ET11 ESOP Practitioner Interviews	ET12 Key Stakeholder Interviews	ET14 Lead/ Implementation Site Survey	ET15 Training program review	ET17 Trainee experience survey
PED1	✓	✓	✓	✓	✓	✓
PED2	✓	✓	✓	✓	✓	✓
PED3	✓	✓	✓	✓	✓	✓
PED4	✓	✓	✓	✓	✓	✓
PED5	✓	✓	✓	✓	✓	✓
PED6	✓	✓	✓	✓	✓	✓

¹⁰ ET11 and 12 were completed at the final site visits which were scheduled in November/December 2013.

Site	ET10	ET11	ET12	ET14	ET15	ET17
	ESOP Practitioner survey	ESOP Practitioner Interviews	Key Stakeholder Interviews	Lead/ Implementation Site Survey	Training program review	Trainee experience survey
PED7	✓	✓	✓	✓	✓	✓
PED8	✓	✓	✓	✓	✓	✓
PED9	✓	✓	✓	✓	✓	✓
PED10	✓	✓	✓	✓	✓	✓

Note. ET refers to the Evaluation Tool in the Compendium of Data Requirements and Evaluation Tools (Thompson et al., 2012b).

ET10 was a 20-item survey used to elicit the experiences of personnel who are working in ESOP roles, including role satisfaction, relationships with other staff, consumer acceptability and their opinions on whether the new ways of working are sustainable. This tool complemented the collection of qualitative data via semi-structured interviews (**ET11**). The same tools were used across all sub-projects to facilitate comparison and ensure key issues were covered. Surveys were distributed to ESOP physiotherapists from October 2013 and collection was closed for the final site on 2 January 2014. There was a response rate of 86% (25 out of 29 ESOP practitioners across all PED sites). **ET12** was an interview schedule for use by the national evaluation team in conducting the final key stakeholder interviews. The numbers and dates of the ESOP practitioner and key stakeholder interviews are provided below.

PED1, PED4 and PED9 used the optional Patient Journey Analysis Tool (**ET13**). PED1 provided a patient journey in September 2012 based on data collected in January 2011, and submitted further information in June 2013. PED9 completed this tool in September 2012 based on data collected at that time. After revisions, the final version was submitted in late October 2012. PED4 also submitted a patient journey in June 2013 based on data collected around January 2011 (essentially documenting the patient journey before the new model of care was implemented).

Initially the lead / implementation site relationship was to be assessed through qualitative methods during the final site visit. This was supplemented through the use of **ET14** to gather more specific survey data. Two versions of the tool were developed; one for lead sites and one for implementation sites. Only one response was required per site. Distribution of surveys commenced in January 2014 and collection was closed at the end of the month.

ET15 and **ET17** were used to inform the training evaluation – see details below.

Some sites conducted local evaluation activities. PED1 and PED4 collaborated on a larger evaluation project comparing outcomes for MSK patients seen by primary contact physiotherapists with patients seen by other practitioners in the ED. This project focused on two types of presentations: acute low back pain and knee and ankle soft tissue injuries. Outcome measures included function, pain, use of medication and imaging, and patient satisfaction.

PED9 carried out a local project to evaluate the utility of the Örebro Musculoskeletal Screening Questionnaire (ÖMSQ) for identifying chronic pain cases at ED presentation and predicting development of chronic pain following ED treatment. Patients completed the ÖMSQ and a quality of life questionnaire at the time of initial treatment and again three months later. This project was separate to the national evaluation and findings were not included in the site's final report.

Data analysis

Before data from ET3 could be analysed, a considerable amount of work was required in compiling and checking the information received from sites. As indicated above, there were three data collection periods: baseline, implementation and sustainability (divided into two

submissions, 3A and 3B). At each submission, sites typically provided at least two data sets, one containing the ESOP cases alone and another with usual activity data, which sometimes included the ESOP cases. Often, sites provided many more than two data sets in various formats including Excel, Access and Adobe (.pdf) files or records of individual case cards. These needed to be linked into one data file, using all available information to ensure that each ESOP case appeared in the data set only once. The linking process could not be automated because of the variations across data sets, and was therefore extremely time-consuming and labour-intensive.

Once data had been compiled into one database containing both ESOP and usual cases, the codes used for items had to be standardised across sites and jurisdictions where possible. For example, codes for the end of an episode of care varied between different hospitals. Data items which were not supplied according to the data specification in ET3 were recoded to ensure consistency across the data set and enable reliable analysis and accurate interpretation of the information. This required extensive liaison with sites to check the meaning of codes and ensure they were mapped correctly to the data dictionary. Activity levels for each site could then be calculated, checked against final reports from the sites, and integrated across the sub-project.

Data analysis was carried out using Excel and SAS 9.2. First, descriptive data tables were produced to provide a context for the KPIs. For example, patients seen at different sites within a sub-project may vary according to diagnosis, severity, demographic factors and so on, and these contextual factors may affect performance at the site. Site-specific factors such as the size of the service and the typical numbers of consumers seen are also important contextual factors. After adjusting for context, data for each KPI were analysed and presented, and relevant comparisons (e.g. across time, site, sub-group) were made.

Recordings of the ESOP practitioner (ET11) and key stakeholder (ET12) interviews were professionally transcribed and confidentiality was assured. A random sample of the transcripts was checked for quality against the detailed notes taken by the interviewers.

Qualitative data from the interviews were coded using NVivo through an inductive process, starting with a sample of the interviews and comparing emerging categories with the overall evaluation framework. Through this process, a coding framework was created. Due to the large number of interviews, there was a considerable quantity of qualitative data. Consequently, the data were interrogated for specific data issues pertaining to relevant evaluation questions.

Framework Analysis was the method chosen for data analysis because it is rigorous, systematic and appropriate for large and complex data sets (Ward et al., 2013). The analysis process involves five steps. After familiarising themselves with the data, researchers identify a thematic framework and begin indexing the data according to that framework. The final steps are charting and interpreting the data (Srivastava and Thomson, 2009). Framework Analysis is particularly suitable for organising qualitative data around key themes of interest to policy makers and relevant to the people affected by policies (Srivastava and Thomson, 2009).

A number of the evaluation tools were surveys (ET8b, ET9b, ET10, ET14, ET17, ET18). Responses were generally sent to the national evaluation team from individual sites as Excel files. All data for each survey were compiled into one worksheet and checked by members of the national evaluation team before analysis in Excel and/or SPSS 19.0. Where open questions were included in the surveys, thematic analysis was conducted on the qualitative data.

ET1, ET6, ET19 and ET20 were essentially running records kept throughout the project period and required a mix of quantitative and qualitative methods to extract the relevant information.

Site progress and final reports

The national evaluation team and HWA collaboratively developed a template for progress and final reports from sites, in an effort to standardise the information provided by project teams and

reduce repetition and simplify the process. All reports were reviewed both by the national evaluation team and HWA. The PED sites submitted four progress reports: September 2012, December 2012, March 2013 and June 2013. Interim reports were submitted in September/October 2013. Some projects completed their final reports by the end of December 2013; others were delayed until February 2014. These reports have provided a useful source of qualitative and quantitative data for the national evaluation.

Each progress report included a questionnaire comprising a series of statements relating to different aspects of the project. Project teams were asked to rate these statements using a seven-point Likert scale to reflect the situation with their project during the current reporting period. These responses were used as part of the formative evaluation, providing an early warning system for each sub-project and flagging areas where project teams may be encountering obstacles to progress.

Site visits

Site visits by the national evaluation team provided a valuable source of qualitative data for the national evaluation. National evaluation team members conducted initial visits in late 2012 and early 2013. A second and final round of visits took place in October and November 2013. Each visit required approximately four hours, with more time needed for remote sites. Discussions were guided by a standard agenda.

Site visits provided a vital opportunity to meet ESOP staff face-to-face in their usual working environments, and to learn about the contexts in which the HWA-ESOP workforce innovations were being implemented. National evaluation team members gained a valuable appreciation of the real-world barriers and enablers that influence program outcomes. These meetings also helped to build positive, supportive relationships with program participants.

National evaluation team members were able to obtain detailed information on how the models of care were being implemented, and to gain a greater understanding of the impact of context and the local setting. Evaluation issues were also discussed, including: local evaluation plans and tools; the use of the Compendium; routine data collection systems and the potential for extracting a standard set of items to use as quality and safety indicators. ESOP staff members were encouraged to consider several issues including: change management approaches, consumer engagement and to plan for sustainability. Potential risks were highlighted and risk management strategies reviewed.

National evaluation team members took detailed notes during the site visits, which were later written up under the key themes of the visit and kept as a record and resource for follow-up and reporting.

In between site visits, the national evaluation team maintained contact with sites through the regular workshops organised by HWA, email and telephone contact. Teleconferences occurred regularly, particularly to provide support during the evaluation phase of the projects and to support interim and final report development. Records were kept of key interactions to track progress and facilitate early identification of risks.

ESOP practitioner and key stakeholder interviews

Stakeholder interviews were a critical source of qualitative data for both the formative and summative components of the evaluation. Interview schedules (ET11 and ET12) were designed for one-off data collection for a snapshot period with a purposive sample of key stakeholders.

Stakeholder interviews were predominantly conducted during the final site visits to all project teams. Two experienced evaluators from the national evaluation team conducted the interviews at each site. All participants signed consent forms and gave permission for the interviews to be recorded.

Semi-structured interviews were conducted with 23 of the PED practitioners and with 73 key stakeholders. Dates and numbers of interviews by site are shown in Table 50.

Table 50 Interviews with ESOP practitioners and key stakeholders, HWA-PED

Site	ESOP practitioner	Key stakeholder	Total	Dates
PED1 and PED2	5	8	13	08/11/2013; 21 & 22/11/2013
PED3	3	7	10	19, 20 & 21/10/2013
PED4	4	8	12	28 & 29/10/2013, 13/12/2013
PED5	3	5	8	28 & 29/11/2013; 04 & 09/12/2013
PED6	2	10	12	11 & 12/12/2013
PED7	2	6	8	25/10/2014; 14, 15 & 18/11/2013
PED8	1	10	11	25 & 26/11/2013
PED9	1	12	13	26/06/2013; 16, 17 & 19/12/2013
PED10	2	7	9	04 & 05/11/2013
TOTALS	23	73	96	

Key stakeholders included ED nurses, medical staff, managers and other allied health professionals associated with the sites. Table 51 provides a breakdown of key stakeholder professional roles by site. Project sites were asked to nominate appropriate individuals for interview on the basis of guidelines provided by the national evaluation team. The guidelines specified inclusion of medical mentors, members of the project advisory or management committee, management representatives and other medical and health care providers affected by the ESOP role.

We used non-probability sampling to select a small sample of key individuals to participate in stakeholder interviews recognising that the results may not represent other characteristics of the population.

Table 51 Professional roles of key stakeholders by site, HWA-PED

Site	Manager	Doctor	Nurse	Other	Total key stakeholders
PED1 and PED2	3	3	2	0	8
PED3	2	3	1	1	7
PED4	3	3	1	1	8
PED5	2	1	1	1	5
PED6	1	4	5	0	10
PED7	2	2	1	1	6
PED8	3	1	1	5	10
PED9	2	5	3	2	12
PED10	1	3	2	1	7
TOTALS	19	25	17	12	73

Training evaluation

Three evaluation tools were developed specifically for the Training Evaluation. ET15, ET16 and ET17 were structured around quality education factors. These factors are broadly reflected in the headings for each section which were designed to capture important aspects of program design that impact on overall quality. The structure of these evaluation tools reflects the educational standards endorsed by the Australian Tertiary Education Quality and Standards Agency.

ET15 was completed by both lead sites. Each of the implementation sites provided additional comments regarding the training program in an appendix to the tool. ET17 was collected from 22 of the 27 ESOP physiotherapists (81%) from 11 November 2013 to 2 January 2014. ET16 was not used for this sub-project.

Additional qualitative data for the training evaluation came from the semi-structured interviews with ESOP practitioners (ET11) and key stakeholders (ET12) and quantitative data were available from the ESOP questionnaire (ET10). Insights were also drawn from:

- Information provided by project teams in their progress and final reports and;
- Data and observations collected during the conduct of two sites visits to each project team (the first during the set-up and establishment phase of the project and the second during the final stages of implementation and evaluation).

The data from all sources was synthesised and written up using a training evaluation data analysis template. This process generated the summative conclusions that have been used in the training section of the sub-project reports.

Economic evaluation

The economic analysis of the PED sub-project had to be restricted due to data limitations. The only data source was the activity data used for the analysis of the KPIs and only two questions could be addressed. That is whether PCPs have different resource utilisation using the example of X-ray ordering for patients presenting with knee, foot or ankle problems and whether PCPs contribute to reducing time spent in the ED for all patients. The aim was to allow best attribution of differences in effects in PCP shifts, but also at a system level allowing for impacts arising over time and between types of shifts.

For the first part of the analysis patients presenting with specific diagnoses had to be identified using ICD-9 and ICD-10 codes. Using propensity score matching possible impact of confounding factors were reduced and matching samples were created. These samples were compared using the appropriate tests.

For the second part of the analysis shift pattern of the PCPs were analysed. Where possible, days of the week with PCPs on shift were identified and 'similar' weekdays when no PCP was on shift during the implementation period. In this way potential confounding factors, such as changes in case-mix of patients presenting to the ED and staffing levels in the ED between baseline and implementation period could be reduced and differences in time spent in the ED for all patients between these patients were calculated.

Appendix 3 Mapping PED10 Diagnosis Codes

The following table provides a list of the ICD9 diagnosis codes provided by PED10 for patients who were seen by an ESOP PCP during the implementation period (1 October 2012 – 31 December 2013) and the corresponding mapped ICD10 code (and the frequency of each code). This list excludes 14 patients from triage categories 1 and 2 as these patients were not considered suitable for treatment by a PCP. The focus of the analysis is on triage categories 3, 4 and 5 patients presenting with MSK conditions. There were 61 patients where diagnosis was not recorded, leaving a total of 1,717 patients with 223 unique diagnosis codes. A total of 219 (98%) of codes were successfully mapped, representing 99.6% of the patients seen during this period (1,710 out of 1,717). Consequently seven patients were excluded reflecting the four codes that could not be mapped.

Table 52 PED10 diagnosis code mapping from ICD9 to ICD10 – PCP presentations during implementation^a

ICD9 Diagnosis Code	ICD10 Map	N	ICD9 Diagnosis Code	ICD10 Map	N	ICD9 Diagnosis Code	ICD10 Map	N
818	S427	2	9233	S600	10	81306	S5212	1
2740	M10	1	9241	S801	26	81308	S5210	3
2749	M1090	1	9242	S903	31	81317	S5210	1
3469	G439	1	9243	S901	15	81321	S5230	2
3540	G560	1	9550	S443	1	81322	S5220	2
3542	G562	1	9553	S442	1	81340	S529	10
3551	G571	1	9557	S448	1	81341	S5250	1
3553	G573	1	9594	S699	9	81342	S5250	100
3556	G576	1	9595	S699	3	81343	S528	5
4809	J129	1	9964	T840	1	81344	S526	13
5246	K076	1	30781	G442	1	81381	S5210	1
5269	K109	1	36131	H333	1	81400	S6210	2
6824	L0310	1	71531	M1981	1	81401	S620	34
7129	M1199	1	71534	M1989	3	81403	S6212	3
7176	M2340	1	71536	M179	20	81408	S6217	1
7177	M224	1	71537	M1987	4	81500	S6230	11
7179	M222	2	71611	M1251	3	81501	S6221	15
7210	M432	5	71613	M1253	3	81502	S6220	10
7213	M4786	1	71614	M1254	8	81503	S6222	7
7231	M542	7	71615	M1255	2	81504	S6223	25
7234	M501	3	71616	M1256	5	81509	S6224	1
7235	M436	10	71617	M1257	10	81512	S6220	1
7241	M546	2	71667	M1317	1	81514	S6220	1
7242	M544	31	71831	M2441	3	81600	S628	42
7243	M543	5	71906	M2546	4	81601	S6251	4
7260	M750	2	71907	M2547	6	82020	S7210	1
7262	M755	2	71912	M2502	2	82120	S7240	1
7264	M701	9	71917	M2507	1	82300	S821	4
7265	M706	2	71941	M2551	1	82301	S8218	2
7286	M720	1	71942	M2552	1	82320	S822	3
7295	M7960	2	71943	M2553	1	82321	S8242	3
7296	M7950	1	71944	M2554	1	82380	S8218	3
7310	M889	1	71945	M2555	4	82381	S8240	1
7361	M2184	2	71946	M2556	8	82520	S929	29
7384	M958	1	71947	M2557	6	82521	S921	4
7802	R55	4	72210	M518	1	82523	S9222	1
7842	R900	1	72273	M510	1	82524	S9223	1
7870	S832	1	72402	M4806	2	82525	S923	23
8088	S3283	1	72479	M533	1	82529	S9220	1
8220	S820	11	72610	S460	5	82530	S929	2
8240	S825	10	72611	M753	1	83100	S4300	3

ICD9 Diagnosis Code	ICD10 Map	N	ICD9 Diagnosis Code	ICD10 Map	N	ICD9 Diagnosis Code	ICD10 Map	N
8241	S825	1	72632	M771	1	83101	S4301	1
8242	S826	26	72633	M702	2	83104	S431	1
8244	S8281	2	72660	M768	3	83401	S6311	2
8248	S8238	16	72662	M764	1	83402	S6312	2
8249	S825	2	72664	M765	3	83650	M244	2
8250	S920	6	72665	M704	1	83801	S9331	1
8260	S929	21	72670	M775	5	84210	S637	46
8261	S927	1	72671	M766	1	84213	S6362	10
8290	T1420	4	72703	M653	1	84509	S860	11
8360	S832	1	72704	M654	7	84841	S436	2
8363	S830	23	72705	M6583	1	92400	S701	2
8400	S435	18	72706	M6587	7	92401	S700	4
8404	S460	17	72751	M660	4	92801	S770	1
8409	S469	12	72760	M665	1	V537	Z467	1
8419	S5340	11	72761	M6632	1	V548	Z478	82
8420	S6350	68	72762	M6631	2	V571	Z501	7
8439	S7310	17	72765	M6629	1	V583	Z480	1
8441	S8340	9	72767	M6629	2	V659	Z719	1
8442	S8350	3	72781	M670	1	V675	Z098	9
8448	S836	2	73329	M8560	1	V679	Z089	10
8449	T135	101	80700	S2240	1	V700	Z000	1
8450	S934	146	81000	S4200	25	3030	Not in cohort ^b	1
8451	S935	41	81103	S4214	1	6487	Not in cohort ^b	1
8470	S134	17	81109	S4211	1	8810	Not in cohort ^b	2
8471	S233	8	81200	S4220	9	8830	Not in cohort ^b	1
8472	S3350	26	81201	S4222	3	8860	Not in cohort ^b	1
8474	S337	3	81202	S4223	1	9988	Not in cohort ^b	1
8479	T092	1	81203	S4224	2	30390	Not in cohort ^b	1
8483	S234	3	81209	S4221	2	E8809	No map found	1
8500	S0600	2	81220	S4220	1	E885	No map found	4
9221	S202	2	81221	S423	2	E888	No map found	1
9230	S400	5	81241	S4241	12	V572	No map found	1
9231	S501	18	81303	S522	1	Missing		61
9232	S602	22	81305	S5211	22	Total		1,778

^a Implementation(Data Submission 2 and 3a), the period 1 October 2012 – 31 December 2013.

^b Maps were not relevant as code description indicates non-musculoskeletal. Descriptions are as follows:

3030 Acute alcoholic intoxication
6487 Complications mainly related to pregnancy - Bone and joint disorders of back, pelvis, and lower limbs
8810 Open wound of elbow, forearm, and wrist - Without mention of complication
8830 Open wound of finger(s) - Without mention of complication
8860 Traumatic amputation of other finger(s) (complete) (partial) - Without mention of complication
9988 Other complications of procedures, NEC - Other specified complications of procedures, NEC
30390 Alcohol dependence syndrome - Other and unspecified alcohol dependence

The following table shows the diagnosis codes that were considered to be MSK and hence suitable for treatment by an ESOP PCP. The list is in alphabetical order.

Table 53 Diagnosis codes included in the MSK patient cohort

ICD10 Diagnosis Code	Description	ICD10 Diagnosis Code	Description
D480	Neoplasm unc / unk beh bone articular cart	S4300	Dislocation of shoulder unspecified
G439	Migraine unspecified	S4301	Anterior dislocation of humerus
G442	Tension-type headache	S431	Dislocation of acromioclavicular joint
G571	Meralgia paraesthetica	S433	Dislocation of other unspecified parts shoulder girdle
G573	Lesion of lateral popliteal nerve	S434	Sprain and strain of shoulder joint
G576	Lesion of plantar nerve	S435	Sprain & strain acromioclavicular joint
I802	Phleb & thrombophleb of other deep vessels legs	S436	Sprain & strain sternoclavicular joint

ICD10 Diagnosis Code	Description	ICD10 Diagnosis Code	Description
I803	Phlebitis & thrombophlebitis legs unsp	S437	Sprain strain oth & unsp shoulder girdle
M069	Rheumatoid arthritis unspecified	S442	Injury radial nerve at upper arm level
M0699	Rheumatoid arthritis unsp unsp site	S443	Injury of axillary nerve
M074	Arthropathy in Crohn's disease (K50.-+)	S448	Inj oth nerves at shoulder upper arm lvl
M10	Gout	S449	Inj unsp nerve at shoulder upper arm lvl
M109	Gout unspecified	S460	Inj muscle & tendon rotator cuff shold
M1090	Gout unspecified multiple sites	S461	Injury muscle & tendon long head biceps
M1099	Gout unspecified site unspecified	S462	Injury muscle & tendon oth parts biceps
M1199	Crystal arthropathy unsp site unsp	S463	Injury of muscle and tendon of triceps
M1251	Traumatic arthropathy shoulder region	S468	Inj oth musc tend shoulder upp arm lvl
M1253	Traumatic arthropathy forearm	S469	Inj musc unsp tend shoulder upp arm lvl
M1254	Traumatic arthropathy hand	S47	Crushing injury of shoulder & upper arm
M1255	Traumatic arthropathy pelv rgn & thgh	S497	Multiple injuries shoulder & upper arm
M1256	Traumatic arthropathy lower leg	S498	Oth spec injuries shoulder & upper arm
M1257	Traumatic arthropathy ankle and foot	S499	Unsp injury shoulder and upper arm
M130	Polyarthritis unspecified	S500	Contusion of elbow
M1317	Monoarthritis NEC ankle & foot	S501	Contusion of oth & unsp parts forearm
M139	Arthritis unspecified	S508	Other superficial injuries of forearm
M1396	Arthritis unspecified lower leg	S5088	Other superficial injuries of forearm
M1399	Arthritis unspecified site unspecified	S509	Superficial injury of forearm unsp
M179	Gonarthrosis unspecified	S510	Open wound of elbow
M1981	Other specified arthrosis shoulder	S520	Fracture of upper end of ulna
M1987	Other specified arthrosis ankle foot	S5200	Fracture of upper end of ulna part unsp
M1989	Other specified arthrosis site unsp	S521	Fracture of upper end of radius
M1999	Arthrosis unspecified site unspecified	S5210	Fx of upper end of radius part unsp
M200	Deformity of finger(s)	S5211	Fracture of head of radius
M201	Hallux valgus (acquired)	S5212	Fracture of neck of radius
M2184	Oth spec acquired deformity limbs hand	S522	Fracture of shaft of ulna
M220	Recurrent dislocation of patella	S5220	Fracture of shaft of ulna part unsp
M222	Patellofemoral disorders	S523	Fracture of shaft of radius
M224	Chondromalacia patellae	S5230	Fracture shaft of radius part unsp
M229	Disorder of patella unspecified	S524	Fracture of shafts of both ulna & radius
M233	Other meniscus derangements	S525	Fracture of lower end of radius
M2339	Other derangements unsp meniscus	S5250	Fracture of lower end of radius unsp
M234	Loose body in knee	S526	Fracture lower end both ulna & radius
M2340	Loose body in knee multiple sites	S528	Fracture of other parts of forearm
M2349	Loose bd unsp ligament or unsp meniscus	S529	Fracture of forearm part unspecified
M238	Other internal derangements of knee	S531	Dislocation of oth & unsp parts of elbow
M2399	Unsp int derang unsp ligmt / unsp menis	S5310	Dislocation of elbow unspecified
M242	Disorder of ligament	S534	Sprain and strain of elbow
M244	Rec dislocation & subluxation of joint	S5340	Sprain & strain of elbow part unsp
M2441	Rec disloc & sublux joint shoulder	S543	Inj cutan sensory nerve at forearm lvl
M2485	Oth spec joint derangement NEC pelv thgh	S549	Injury of unsp nerve at forearm level
M2502	Haemarthrosis upper arm	S568	Inj oth unsp muscles tendons forearm lvl
M2507	Haemarthrosis ankle and foot	S570	Crushing injury of elbow
M2509	Haemarthrosis site unspecified	S579	Crushing injury of forearm part unsp
M254	Effusion of joint	S598	Other specified injuries of forearm
M2543	Effusion of joint forearm	S599	Unspecified injury of forearm
M2544	Effusion of joint hand	S600	Contusion of finger(s) wo damage to nail
M2546	Effusion of joint lower leg	S602	Contusion of oth parts of wrist and hand
M2547	Effusion of joint ankle and foot	S609	Superficial injury of wrist & hand unsp
M2549	Effusion of joint site unspecified	S610	Open wound finger(s) wo damage to nail
M255	Pain in joint	S611	Open wound of finger(s) w damage to nail
M2551	Pain in a joint shoulder region	S619	Open wound of wrist & hand part unsp
M2552	Pain in a joint upper arm	S620	Fracture navicular [scaphoid] bone hand

ICD10 Diagnosis Code	Description	ICD10 Diagnosis Code	Description
M2553	Pain in a joint forearm	S621	Fracture of other carpal bone(s)
M2554	Pain in a joint hand	S6210	Fracture of carpal bone unspecified
M2555	Pain in a joint pelvic region and thigh	S6212	Fracture of triquetral bone of wrist
M2556	Pain in a joint lower leg	S6217	Fracture of hamate bone
M2557	Pain in a joint ankle and foot	S622	Fracture of first metacarpal bone
M2559	Pain in a joint site unspecified	S6220	Fracture first metacarpal bone part unsp
M2569	Stiffness of joint NEC site unspecified	S6221	Fracture of base first metacarpal bone
M2585	Oth spec joint disorders pelv rgn & thigh	S6222	Fracture of shaft first metacarpal bone
M259	Unspecified joint disorder	S6223	Fracture of neck first metacarpal bone
M2599	Unsp joint disorder site unspecified	S6224	Fracture of head first metacarpal bone
M432	Other fusion of spine	S623	Fracture of other metacarpal bone
M436	Torticollis	S6230	Fx oth metacarpal bone(s) part unsp
M450	Ankylosing spondylitis	S624	Multiple fractures of metacarpal bones
M4782	Other spondylosis cervical region	S625	Fracture of thumb
M4786	Other spondylosis lumbar region	S6250	Fracture of thumb part unspecified
M4806	Spinal stenosis lumbar region	S6251	Fracture of proximal phalanx of thumb
M501	Cervical disc disorder w radiculopathy	S626	Fracture of other finger
M509	Cervical disc disorder unspecified	S627	Multiple fractures of fingers
M510	Lumbar & oth I/V disc disrd w myelopathy	S628	Fracture oth & unsp parts wrist & hand
M511	Lumbar & oth I/V disc disrd w radiculopathy	S630	Dislocation of wrist
M512	Oth spec intervertebral disc displacemnt	S6300	Dislocation of wrist part unspecified
M513	Oth spec intervertebral disc degen	S631	Dislocation of finger
M518	Oth spec intervertebral disc disorders	S6310	Dislocation of finger part unspecified
M533	Sacrococcygeal disorders NEC	S6311	Dislocation metacarpophalangeal (joint)
M5380	Oth spec dorsopathies mult sites spine	S6312	Disloc interphalangeal (joint) hand
M541	Radiculopathy	S633	Traumatic rupture ligmt wrist & carpus
M5412	Radiculopathy cervical region	S634	Traumatic rupture ligament at MCP & IPJ
M542	Cervicalgia	S635	Sprain and strain of wrist
M543	Sciatica	S6350	Sprain & strain wrist part unspecified
M544	Lumbago with sciatica	S636	Sprain and strain of finger(s)
M545	Low back pain	S6360	Sprain and strain of finger(s) part unsp
M546	Pain in thoracic spine	S6361	Sprain strain metacarpophalangeal jt
M5499	Unspecified dorsalgia site unspecified	S6362	Sprain strain interphalangeal jt hand
M626	Muscle strain	S6368	Sprain and strain of oth parts of finger
M653	Trigger finger	S637	Sprain & strain of oth & unsp parts hand
M654	Radial styloid tenosynovitis	S643	Injury of digital nerve of thumb
M6583	Other synovitis & tenosynovitis forearm	S649	Injury of unsp nerve wrist & hand lvl
M6587	Oth synovitis & tenosynovitis ankle ft	S661	Inj flex musc tend oth fngr wrist & hand
M659	Unspecified synovitis and tenosynovitis	S662	Inj extens musc tend thumb wrist & hand
M6599	Unsp synovitis & tenosynovitis site unsp	S663	Inj extens musc tend oth fngr wrst & hnd
M660	Rupture of popliteal cyst	S664	Inj intrinsic musc tend thumb wrst & hnd
M662	Spontaneous rupture of extensor tendons	S665	Inj intrns musc tend oth fngr wrst & hnd
M6629	Spont rupture extensor tendons site unsp	S669	Inj unsp muscle tend at wrist & hand lvl
M6631	Spont rupture flexor tendons shoulder	S670	Crushing injury of thumb & oth finger(s)
M6632	Spont rupture flexor tendons upper arm	S678	Crush injury oth & unsp parts wrist hand
M665	Spont rupture unspecified tendon	S697	Multiple injuries of wrist and hand
M6659	Spont rupture unsp tendon site unsp	S698	Oth specified injuries of wrist and hand
M670	Short Achilles tendon (acquired)	S699	Unspecified injury of wrist and hand
M673	Transient synovitis	S700	Contusion of hip
M674	Ganglion	S701	Contusion of thigh
M6749	Ganglion site unspecified	S709	Superficial injury of hip and thigh unsp
M701	Bursitis of hand	S711	Open wound of thigh
M702	Olecranon bursitis	S7208	Fracture of other parts of neck of femur
M704	Prepatellar bursitis	S7210	Fracture trochanteric section femur unsp
M705	Other bursitis of knee	S724	Fracture of lower end of femur
M706	Trochanteric bursitis	S7240	Fracture of lower end femur part unsp
M712	Synovial cyst of popliteal space [Baker]	S729	Fracture of femur part unspecified
M7199	Unspecified bursopathy site unspecified	S7300	Dislocation of hip unspecified

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M720	Palmar fascial fibromatosis [Dupuytren]	S731	Sprain and strain of hip
M722	Plantar fascial fibromatosis	S7310	Sprain and strain of hip part unsp
M750	Adhesive capsulitis of shoulder	S749	Injury of unsp nerve at hip & thigh lvl
M751	Rotator cuff syndrome	S760	Injury of muscle and tendon of hip
M752	Bicipital tendinitis	S761	Injury of quadriceps muscle and tendon
M753	Calcific tendinitis of shoulder	S762	Injury adductor muscle & tendon thigh
M755	Bursitis of shoulder	S763	Inj musc tend posterior musc group thigh
M764	Tibial collateral bursitis	S764	Inj oth & unsp muscles tendons thigh lvl
M765	Patellar tendinitis	S770	Crushing injury of hip
M766	Achilles tendinitis	S798	Oth specified injuries of hip and thigh
M768	Oth enthesopathy low limb exclude foot	S799	Unspecified injury of hip and thigh
M771	Lateral epicondylitis	S800	Contusion of knee
M773	Calcaneal spur	S801	Contusion oth & unsp parts low leg
M775	Other enthesopathy of foot	S809	Superficial injury of lower leg unsp
M778	Other enthesopathies NEC	S810	Open wound of knee
M779	Enthesopathy unspecified	S819	Open wound of lower leg part unsp
M791	Myalgia	S820	Fracture of patella
M7919	Myalgia site unspecified	S821	Fracture of upper end of tibia
M7950	Residual FB in soft tissue mult sites	S8218	Other fracture of upper end of tibia
M796	Pain in limb	S822	Fracture of shaft of tibia
M7960	Pain in limb multiple sites	S8228	Other fracture of shaft of tibia
M7969	Pain in limb site unspecified	S823	Fracture of lower end of tibia
M7989	Oth spec soft tissue disorders site unsp	S8238	Oth fracture of lower end of tibia
M7999	Unsp soft tissue disorder site unsp	S824	Fracture of fibula alone
M842	Delayed union of fracture	S8240	Fracture of fibula part unspecified
M843	Stress fracture NEC	S8242	Fracture of shaft of fibula
M8449	Pathological fracture NEC site unsp	S825	Fracture of medial malleolus
M8560	Other cyst of bone multiple sites	S826	Fracture of lateral malleolus
M8569	Other cyst of bone site unspecified	S827	Multiple fractures of lower leg
M869	Unspecified osteomyelitis	S828	Fractures of other parts of lower leg
M889	Paget's disease of bone, unspecified	S8281	Bimalleolar fracture ankle
M8999	Unspecified disorder of bone site unsp	S8282	Trimalleolar fracture ankle
M925	Juvenile osteochondrosis tibia & fibula	S8288	Fracture of other parts of lower leg
M929	Juvenile osteochondrosis unspecified	S829	Fracture of lower leg part unspecified
M940	Chondrocostal junction syndrome [Tietze]	S830	Dislocation of patella
M9499	Unsp disorder of cartilage site unsp	S831	Dislocation of knee
M954	Acquired deformity of chest and rib	S8310	Dislocation of knee unspecified
M958	Oth spec acquired defrm, musculoskeletal	S832	Tear of meniscus current
Q659	Congenital deformity of hip unspecified	S833	Tear articular cartilage knee current
R104	Other and unspecified abdominal pain	S834	Sprain strain inv collateral ligmt knee
R202	Paraesthesia of skin	S8340	Sprain & strain unsp collateral ligament
R208	Oth & unsp disturb of skin sensation	S8344	Rupture of medial collateral ligament
R229	Localised swelling mass and lump unsp	S835	Sprain & strain inv cruciate ligmt knee
R252	Cramp and spasm	S8350	Sprain & strain of unsp cruciate ligmt
R262	Difficulty in walking NEC	S836	Sprain & strain oth & unsp parts knee
R268	Oth & unsp abnormalities gait & mobility	S837	Injury to multiple structures of knee
R294	Clicking hip	S841	Injury peroneal nerve at lower leg level
R51	Headache	S842	Inj cutan sensory nerve at low leg lvl
R520	Acute pain	S849	Injury of unsp nerve at lower leg level
R522	Other chronic pain	S859	Inj unsp blood vessel at lower leg level
R529	Pain unspecified	S860	Injury of Achilles tendon
R600	Localised oedema	S861	Inj oth musc tend post musc grp low leg
S008	Superficial injury of oth parts of head	S863	Inj musc tend peroneal musc grp low leg
S0188	Open wound of other parts of head	S868	Inj oth muscles tendons at low leg level
S019	Open wound of head part unspecified	S869	Inj unsp muscle tendon at lower leg lvl
S024	Fracture of malar and maxillary bones	S870	Crushing injury of knee
S025	Fracture of tooth	S878	Crushing injury oth unsp parts lower leg

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S026	Fracture of mandible	S897	Multiple injuries of lower leg
S030	Dislocation of jaw	S898	Other specified injuries of lower leg
S034	Sprain and strain of jaw	S899	Unspecified injury of lower leg
S035	Sprain strain jt & ligmt oth & unsp head	S900	Contusion of ankle
S050	Inj conjunctiva corneal abrasion wo FB	S901	Contusion of toe(s) wo damage to nail
S069	Intracranial injury unspecified	S903	Contusion of othv & unsp parts of foot
S129	Fracture of neck part unspecified	S908	Oth superficial injuries of ankle & foot
S134	Sprain and strain of cervical spine	S9081	Abrasion of ankle and foot
S136	Sprain strain jt & ligmt oth & unsp neck	S909	Superficial injury of ankle & foot unsp
S142	Injury of nerve root of cervical spine	S913	Open wound of other parts of foot
S143	Injury of brachial plexus	S917	Multiple open wounds of ankle and foot
S146	Injury of other & unsp nerves of neck	S920	Fracture of calcaneus
S159	Injury unsp blood vessel at neck level	S921	Fracture of talus
S16	Injury of muscle & tendon at neck level	S922	Fracture of other tarsal bone(s)
S198	Other specified injuries of neck	S9220	Fracture of tarsal bone(s) unspecified
S199	Unspecified injury of neck	S9222	Fracture of cuboid foot
S2080	Spfl injury oth & unsp thorax unsp	S9223	Fracture of cuneiform foot
S2200	Fracture of thoracic vertebra level unsp	S923	Fracture of metatarsal bone
S223	Fracture of rib	S924	Fracture of great toe
S2232	Fracture of one rib oth than first rib	S925	Fracture of other toe
S2240	Multiple rib fractures unspecified	S927	Multiple fractures of foot
S229	Fracture of bony thorax part unsp	S929	Fracture of foot unspecified
S233	Sprain and strain of thoracic spine	S930	Dislocation of ankle joint
S234	Sprain and strain of ribs and sternum	S931	Dislocation of toe(s)
S235	Sprain & strain oth & unsp part thorax	S9310	Dislocation of toe(s) unspecified
S280	Crushed chest	S932	Rupture ligaments at ankle & foot level
S290	Injury muscle & tendon at thorax level	S9330	Dislocation of foot part unspecified
S298	Other specified injuries of thorax	S9331	Dislocation of tarsal (bone) joint unsp
S299	Unspecified injury of thorax	S934	Sprain and strain of ankle
S300	Contusion of lower back and pelvis	S9340	Sprain and strain of ankle part unsp
S301	Contusion of abdominal wall	S9348	Sprain and strain of oth parts of ankle
S3090	Spfl inj abdo low back part unsp unsp	S935	Sprain and strain of toe(s)
S3200	Fracture of lumbar vertebra level unsp	S936	Sprain & strain oth & unsp parts foot
S323	Fracture of ilium	S943	Inj cutan sensory nrv at ankle foot lvl
S328	Fx oth & unsp parts lumbar spine pelvis	S949	Injury unsp nerve at ankle & foot level
S3283	Fracture of pelvis, part unspecified	S960	Inj musc tend lng flex musc toe ankle ft
S332	Disloc sacroiliac sacrococcygeal joint	S968	Inj oth muscles tendons ankle foot lvl
S335	Sprain and strain of lumbar spine	S969	Inj unsp muscle tendon at ankle foot lvl
S336	Sprain and strain of sacroiliac joint	S970	Crushing injury of ankle
S337	Sprain strain oth & unsp lmbr spine pelv	S978	Crushing injury oth parts ankle & foot
S342	Injury nerve root lumbar & sacral spine	S997	Multiple injuries of ankle and foot
S346	Inj perph nerve abdo lower back pelvis	S998	Oth specified injuries of ankle and foot
S390	Inj muscle tendon abdo low back pelvis	S999	Unspecified injury of ankle and foot
S397	Oth mult inj abdomen lower back pelvis	T002	Spfl inj inv mult regions upp limb
S398	Oth spec inj abdomen lower back pelvis	T003	Spfl inj inv mult regions low limb
S399	unsp injury abdomen lower back & pelvis	T008	Spfl inj inv oth cmb body regions
S400	Contusion of shoulder and upper arm	T009	Multiple superficial injuries unsp
S408	Oth spfl injuries shoulder upper arm	T019	Multiple open wounds unspecified
S4088	Oth spfl injuries shoulder upper arm	T0290	Multiple fractures, unspecified, closed
S409	Spfl injury shoulder & upper arm unsp	T039	Mult dislocations sprains strains unsp
S411	Open wound of upper arm	T064	Injuries musc tend inv mult body regions
S420	Fracture of clavicle	T068	Oth spec injuries inv mult body regions
S4200	Fracture of clavicle part unspecified	T07	Unspecified multiple injuries
S421	Fracture of scapula	T080	Fracture of spine, level unsp closed
S4210	Fracture of scapula part unspecified	T090	Superficial injury of trunk level unsp
S4211	Fracture of body of scapula	T092	Disloc sprain strain unsp jt ligmt trunk
S4214	Fracture glenoid cavity & neck scapula	T100	Fracture of upper limb, lvl unsp closed
S422	Fracture of upper end of humerus	T110	Superficial injury upper limb level unsp

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S4220	Fracture upper end humerus part unsp	T112	Disloc sprain jt ligmt upp limb lvl unsp
S4221	Fracture of head of humerus	T115	Inj unsp muscle tend upper limb lvl unsp
S4222	Fracture of surgical neck of humerus	T120	Fracture of lower limb, lvl unsp closed
S4223	Fracture of anatomical neck of humerus	T130	Superficial injury lower limb level unsp
S4224	Fracture greater tuberosity humerus	T132	Disloc sprain jt ligmt low limb lvl unsp
S423	Fracture of shaft of humerus	T135	Inj unsp muscle tendon low limb lvl unsp
S424	Fracture of lower end of humerus	T141	Open wound of unspecified body region
S4240	Fracture lower end humerus part unsp	T1420	Fracture of unspecified body region clsd
S4241	Supracondylar fracture of humerus	T143	Disloc sprain strain unsp body region
S427	Mult fractures clavicle scapula humerus	T144	Injury of nerve(s) of unsp body region
S428	Fracture oth parts shoulder & upper arm	T146	Injury muscles & tendons unsp body rgn
S429	Fracture of shoulder girdle part unsp	T148	Other injuries of unsp body region
S43	Disloc sprain jt & ligmt shoulder girdle	Z094	F/U exam after Rx of fracture
S430	Dislocation of shoulder joint	Z478	Other spec orthopaedic follow-up care
		Z501	Other physical therapy