

2014

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

Cristina Thompson

University of Wollongong, cthompso@uow.edu.au

Kate Williams

University of Wollongong, kathrynw@uow.edu.au

Darcy Morris

University of Wollongong, darcy@uow.edu.au

Karen Quinsey

University of Wollongong, kquinsey@uow.edu.au

Sonia Bird

University of Wollongong, marcolin@uow.edu.au

See next page for additional authors

Follow this and additional works at: <https://ro.uow.edu.au/ahsri>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

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

Abstract

Eight organisations received funding through the Health Workforce Australia (HWA) Expanded Scopes of Practice (ESOP) Nurses in the Emergency Department (NED) sub-project. The common goal was to improve ED flow and reduce waiting times for patients with non-life-threatening presentations while providing safe and high quality care. Each organisation implemented a different model of ESOP nursing care in the Emergency Department (ED). Three priority groups of patients were targeted. Three sites focused on patients presenting with mental health issues, aiming to deal with their specialised needs efficiently and effectively. One site initiated an ED review clinic staffed by clinical nurse consultants. Four sites aimed to enhance nurses' skills and confidence in dealing with common presentations. Two were based in rural areas and an important goal was to prevent unnecessary transfers to larger, regional hospitals. Two targeted paediatric patients with the goal of facilitating faster assessment, treatment and discharge.

Keywords

hwa, final, sub, department, emergency, nurses, project, evaluation, report, program, practice, scopes, expanded

Publication Details

C. Thompson, K. Williams, D. Morris, K. Quinsey, S. Bird, C. Kobel, P. Andersen, S. Eckermann & M. Masso, HWA Expanded Scopes of Practice program evaluation: Nurses in the Emergency Department sub-project: final report (Australian Health Service Research Institute, Wollongong, Australia, 2014). <http://ahsri.uow.edu.au/content/groups/public/@web/@chsd/documents/doc/uow177109.pdf>

Authors

Cristina Thompson, Kate Williams, Darcy Morris, Karen Quinsey, Sonia Bird, Conrad Kobel, Patrea Andersen, Simon Eckermann, and Malcolm Masso

HWA Expanded Scopes of Practice Program Evaluation: Nurses in the Emergency Department Sub-Project

Final Report

July 2014

Cristina Thompson

Kate Williams

Darcy Morris

Karen Quinsey

Sonia Bird

Conrad Kobel

Patrea Andersen

Simon Eckermann

Malcolm Masso



An Australian Government Initiative

This project was possible due to funding made available by Health Workforce Australia.

Acknowledgements

The authors acknowledge that the evaluation would not have been possible without the contributions and cooperation of a number of groups. In particular we would like to thank the project team members and staff of the respective organisations involved in the evaluation of the Expanded Scopes of Practice program, as well as Clinical Advisors and members of the Project Advisory Group. The support from key staff of Workforce Innovation and Reform within Health Workforce Australia, Australian Government, is also gratefully acknowledged.

Finally, the authors acknowledge the contribution made by colleagues from the Australian Health Services Research Institute during the course of the evaluation. In particular we would like to thank Kathy Eagar, Luise Lago, Milena Snoek, Elizabeth Cuthbert and Cheryl Blissett.

Suggestion citation

Thompson C, Williams K, Morris D, Quinsey K, Bird S, Kobel C, Andersen P, Eckermann S and Masso M (2014) *HWA Expanded Scopes of Practice Program Evaluation: Nurses in the Emergency Department Sub-Project Final Report*. Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong.

Table of contents

List of acronyms	iv
Key messages	v
Executive summary	vi
1 Introduction and background	1
1.1 Description of HWA's strategic agenda in Expanded Scopes of Practice	1
1.2 The case for change	1
1.3 Objectives of the Nurses in ED sub-project	1
1.4 Description of sites	2
1.5 Structure of report	3
2 Implementation and program delivery	4
2.1 Service delivery models and scopes of practice	4
2.2 Requirements for Expanded Scope of Practice nurses	5
2.3 Role of the lead sites	6
2.4 Set-up and establishment phase	6
2.5 Implementation of Expanded Scopes of Practice	6
2.6 Barriers and enablers in relation to implementation	9
3 Training evaluation	12
3.1 NED2, NED5, NED6 and NED7 training programs	12
3.2 NED8 training program	23
4 Impact	30
4.1 Introduction	30
4.2 Activities of ESOP nurses	30
4.3 Impact on consumers	31
4.4 Impact on providers	35
4.5 Impact on the system	52
4.6 Unintended consequences	61
5 Economic evaluation	64
5.1 Introduction	64
5.2 Return on investment of HWA funds	64
5.3 Returns – potential contribution towards ED performance and NEAT	66
5.4 Acceptability of the ESOP model of care	68
5.5 Best bets for future investment	68
6 Sustaining innovation	69
6.1 Innovation characteristics	70
6.2 Context	72
6.3 Capacity	74
6.4 Processes and interactions	76
6.5 Sustainability outcomes	79

6.6	Dissemination	81
6.7	Summary.....	82
7	Prospects for wider implementation	84
7.1	Suitability of the model.....	84
7.2	Requirements for success	85
7.3	Lessons learned.....	9
7.4	National scalability	85
8	Key achievements	88
8.1	Effectiveness and efficiency (HWA Domain 1)	88
8.2	Workforce capacity and skills development (HWA Domain 2).....	90
8.3	Leadership and sustainability (HWA Domain 3)	93
8.4	Workforce planning (HWA Domain 4).....	94
8.5	Workforce policy, funding and regulation (HWA Domain 5).....	95
8.6	Conclusion	95
	References	96
Appendix 1	Funding allocation and dates by project.....	99
Appendix 2	Methods of the national evaluation, HWA-NED	100
Appendix 3	Identifying patients in the target group	113

List of figures

Figure 1	Report structure	3
Figure 2	NED sites training program aggregate domain scores	14
Figure 3	NED8 Criteria Led Discharge Training Pathway	23
Figure 4	NED8's training program aggregate domain scores	24
Figure 5	Responses to NED patient experiences and satisfaction survey	33
Figure 6	Experience of ESOP nurses (n = 29, sites = 7, excluding NED8).....	38
Figure 7	Experience of ESOP nurses (n = 65, NED8 only).....	39
Figure 8	Responses to NED staff survey	43
Figure 9	Patients in the target group discharged within four hours – baseline and implementation	57
Figure 10	Influences on sustainability (adapted from Stirman et al. 2012)	70
Figure 11	Evaluation framework.....	101

List of tables

Table 1	Description of sites	3
Table 2	Models of expanded scope of practice in EDs	4
Table 3	Nurses in ED - project staff summary.....	5
Table 4	Training provided.....	7
Table 5	Implementation of Nurses in ED projects	8
Table 6	Descriptive statistics for Nurses in ED trainee survey (four sites).....	15
Table 7	Opportunities for training program development.....	22
Table 8	Descriptive statistics for ESOP trainee survey (NED8)	24
Table 9	Opportunities for training program development.....	29

Table 10	Total ED presentations and NED presentations by site – implementation period	31
Table 11	Descriptive statistics for ESOP personnel survey items (excluding NED8)	36
Table 12	Descriptive statistics for ESOP personnel survey items (NED8 only)	37
Table 13	Responses by professional group	45
Table 14	Summary of baseline and implementation data periods by site	52
Table 15	All of ED monthly presentations treated by an ESOP nurse by site – implementation period	53
Table 16	Number of all ED presentations in the target group by site and period	55
Table 17	Number of all ED presentations in the target group and number treated by ESOP nurses by site – implementation period ^a	55
Table 18	Patients in the target group discharged within four hours – baseline and implementation	56
Table 19	Patients in the target group discharged within four hours by primary practitioner – implementation period ^a	57
Table 20	Patients in the target group who re-presented within 96 hours for the same health care problem by practitioner – baseline and implementation	58
Table 21	Patients in the target group who were re-presented within 28 days – baseline and implementation	59
Table 22	Patients in the target group who died following admission from the ED within 28 days – baseline and implementation	59
Table 23	Patients in the target group who ‘did not wait’ – baseline and implementation	60
Table 24	Patients in the target group who ‘left against medical advice’ – baseline and implementation	60
Table 25	Patients in the target group seen by the ESOP nurses who were discharged – implementation period ^a	61
Table 26	HWA funding received	64
Table 27	Patients in the target group in baseline and implementation period	65
Table 28	Patients treated by ESOP-NED in implementation period in relation to investment by HWA	65
Table 29	Patients in the target group that met NEAT (left within 4 hours) in baseline and implementation period	66
Table 30	Contribution to NEAT performance and corresponding number of patients	67
Table 31	Mental health presentations recorded as being resolved without the need for admission or referral – baseline and implementation	67
Table 32	Sustainability prospects – NED sub-project	80
Table 33	Advanced and extended nursing practice	84
Table 34	HWA Domains and corresponding KPIs, evaluation methods and tools used in the NED sub-project evaluation	103
Table 35	National evaluation tools completed by NED sub-project	105
Table 36	Additional evaluation tools, HWA-NED	107
Table 37	Interviews with ESOP practitioners and key stakeholders, HWA-NED	110
Table 38	Professional roles of key stakeholders by site, HWA-NED	111
Table 39	Diagnosis codes for NED1 – patients treated by an ESOP nurse during the implementation period	113
Table 40	Diagnosis codes for NED2 – patients treated by an ESOP nurse during the implementation period	116
Table 41	Diagnosis codes for NED3 – patients treated by an ESOP nurse during the implementation period	117
Table 42	Diagnosis codes included in the patient cohort for NED8 – paediatric patients treated by an ESOP nurse during the implementation period	118

List of acronyms

CLD	Criteria-led discharge
ED	Emergency Department
ESOP	Expanded Scopes of Practice
ESPPN	Extended Scope of Practice Paediatric Nurse
ET	Evaluation Tool
FTE	Full Time Equivalent
GP	General Practitioner
HWA	Health Workforce Australia
ICD10	International Classification of Disease version 10
KPI	Key Performance Indicator
MHLN	Mental Health Liaison Nurse
MHNP	Mental Health Nurse Practitioner
NEAT	National Emergency Access Target
NED	Nurses in the Emergency Department
PAG	Project Advisory Group
RPL	Recognition of Prior Learning
UCC	Urgent Care Centre

Key messages

- Expanded Scopes of Practice nursing models aim to improve patient flow through the Emergency Department, reduce waiting times for patients in the less-urgent triage categories, and free medical staff to focus on urgent cases.
- Within the Nurses in the Emergency Department sub-project, a diverse range of models of care were tailored to local needs. Settings, target groups of patients and objectives varied among the eight funded organisations. Three focused on mental health, one implemented an Emergency Department review clinic, two addressed the needs of rural hospitals, and two focused on paediatric patients.
- All models were supported by clinical guidelines and a clearly delineated scope of practice developed in collaboration with clinical leaders.
- Engaging with medical and nursing staff at all levels was crucial to the acceptance and successful implementation of the models of care.
- Rather than expanded scopes of practice, it is more accurate to say that sites achieved their goals of ensuring nurses could work to the full extent of their existing scopes of practice.
- Three sites employed senior nurses (nurse practitioners or clinical nurse specialists / consultants) in new Emergency Department roles. Four sites implemented competency-based training designed for local needs. Competency-based training relies on sufficient throughput of suitable patients, coinciding with the availability of clinical supervisors to carry out assessments. Although resource-intensive, this training successfully contributed to professional development and facilitated improvements to local service delivery.
- One project site's training program enabled nurses to discharge paediatric patients via criteria-led discharge pathways, which was a true expansion of the scope of practice. More than 120 registered nurses were trained and the program was embedded in usual practice.
- All models of care operated safely. Factors that contributed to high-quality care included the selection of highly qualified and experienced nurses, strict clinical governance arrangements and an Emergency Department environment that encouraged cooperation and consultation.
- Patients seen by Expanded Scopes of Practice nurses were discharged faster, on average, than similar patients seen by other health professionals in the Emergency Department. The sub-project resulted in nearly 1,900 additional patients being treated and discharged within the national four-hour target. There was improved National Emergency Access Target performance at all participating sites and part of this improvement was due to the contribution of Expanded Scopes of Practice nurses.
- The effectiveness of the model depends in part on staffing capacity. Limited staffing, particularly at rural sites, means that work within Expanded Scopes of Practice roles needs to be balanced with other Emergency Department and hospital demands. In order to provide a continuous service, organisations need enough Expanded Scopes of Practice -trained nurses to cover absences due to leave and training.
- Consumers reported positive experiences of care and high levels of satisfaction. Medical and nursing staff and managers acknowledged the difficulty of demonstrating measurable impacts on workforce productivity, but described less tangible benefits in terms of reduced pressure on medical staff, increased confidence that appropriate care was being provided, and anecdotal observations of improved patient flow through the Emergency Department.
- The Expanded Scopes of Practice model appears to be an effective retention strategy. Nurses were positive about the training. Over 80% said they were satisfied with the new role, felt it had enhanced their careers and planned to continue for the foreseeable future.
- The innovation has been sustained at six sites, and the models of care embedded in standard practice. Based on evidence of efficiency, effectiveness and acceptability, three models (a mental health clinical nurse specialists model, an Emergency Department review clinic staffed by clinical nurse consultants and criteria-led discharge pathways for common paediatric presentations) are presented as having the best prospects for wider implementation.

Executive summary

Eight organisations received funding through the Health Workforce Australia (HWA) Expanded Scopes of Practice (ESOP) Nurses in the Emergency Department (NED) sub-project. The common goal was to improve ED flow and reduce waiting times for patients with non-life-threatening presentations while providing safe and high quality care. Each organisation implemented a different model of ESOP nursing care in the Emergency Department (ED). Three priority groups of patients were targeted.

Three sites focused on patients presenting with mental health issues, aiming to deal with their specialised needs efficiently and effectively. One site initiated an ED review clinic staffed by clinical nurse consultants. Four sites aimed to enhance nurses' skills and confidence in dealing with common presentations. Two were based in rural areas and an important goal was to prevent unnecessary transfers to larger, regional hospitals. Two targeted paediatric patients with the goal of facilitating faster assessment, treatment and discharge.

Methods

Evaluation of the NED 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

A total of 173 nurses were recruited to ESOP roles. Most sites recruited from within the organisation, which was a deliberate strategy to ensure sustainability. Selection criteria varied according to the model of care, but all were highly experienced and many had post-graduate qualifications. The number of ESOP nurses at each site was generally limited to between two and six, with the exception of one site where all registered nurses in the ED were eligible to take part. At that site, 123 nurses completed the training and competency assessments required to carry out ESOP duties.

Three sites used project funding to recruit nurse practitioners, clinical nurse consultants working towards nurse practitioner status, or clinical nurse specialists into new positions in the ED. These senior nurses brought their existing expertise into the project and did not require training beyond orientation to the workplace. They were used to deliver specialist care for mental health patients (two sites) and to assess, treat and discharge low-acuity patients and those returning to the ED for review (one site).

Most of the NED projects did not implement a truly expanded scope of practice role but rather empowered and enabled nurses to work to the full range of their existing scope of practice. This was supported through a framework of clinical guidelines, protocols and pathways.

The scope of practice was carefully and clearly defined at each site and supported by clinical guidelines or protocols. Clinical leaders were involved in developing these documents, and this engagement was crucial to acceptance and successful implementation of the models of care. The scope of practice needed to align with accepted industrial classifications in relation to diagnosis and discharge. Lack of clarity about these limits delayed training and implementation in some projects. A few projects found that gaining approval for medication standing orders or nurse-initiated medications was delayed by resistance from medical staff and internal organisational committees.

Early and ongoing engagement and communication with ED medical and nursing staff was essential. Steering committees and working groups provided opportunities for departmental representatives to be involved in the project through meetings and other regular contact. Two project teams from New South Wales used healthcare redesign methodology to assist with their project and found this greatly increased awareness of the many steps, processes, people, resources and depth of communication necessary to successfully achieve projects aims and objectives and ensure sustainability.

Sites encountered a range of challenges related to their diverse models of care. Intensive negotiations resulted in a better understanding of documentation requirements for mental health assessment at one site, and achieved approval for after-hours admissions by mental health nurses at another. External stakeholders were especially relevant to the rural projects. At one rural site, small number of General Practitioners raised concerns about medical responsibility, accountability and liability. At the other, difficulties arose regarding the ability of nurses to order imaging and X-rays and these could not be overcome. Where project teams were unsuccessful in their negotiations, models of care had to be adjusted accordingly.

Paediatric specialists and hospital executives strongly supported the paediatric projects. At NED8, the project benefitted from a history of successful implementation of criteria-led discharge programs in other parts of the hospital. This helped gain high-level support from the hospital executive and ED management.

Each project used established clinical governance processes within their organisations to ensure that ESOP nurses had clear lines of professional accountability, understood policies and practices relating to clinical governance and could monitor incidents and adverse events. Most projects applied accepted frameworks or guidelines for ethical and responsible practice or appropriate practice guidelines. Training was a key element of several projects and was specific to each site.

Training

Three project teams elected to recruit nurses with the skills they required for the ESOP role and did not develop a training program. Five project teams delivered 'in-house' competency based adult education programs of varying structure, content and duration. Most of these sites aimed to increase the capacity of a carefully selected group of existing staff, addressing skills and competencies specific to the ESOP model of care at each site. They trained small numbers of nurses (from four to twenty-four). In contrast, one (NED8) implemented a large-scale training program across all ED registered nurses to support the implementation of criteria-led discharge pathways.

The mental health clinical nurse consultants at NED2 received targeted training including a two-day "Coaching for Performance" workshop, in-service sessions on mental health recovery, a university-delivered short course on brief interventions for personality disorder, and competency assessment in using medication and pathology standing orders.

The two rural sites, NED5 and NED6, each provided practical skills training supplemented by online courses and supervised practice. At NED5, trainees undertook five modules over a six-month period. These focused on assessment and treatment of common, non-life-threatening presentations. The NED6 training involved three modules delivered by an external training provider, a 10-week online course for rural X-ray operators and the opportunity to complete a Certificate IV in Training and Assessment so that nurses could train and support other emergency nursing staff.

Four registered nurses at NED7 completed a four-day Paediatric Foundations Program at NED8 followed by a one-day, in-house course covering use of the pathways and the scope of practice. Practical training was also provided. All ED nurses at NED8 were given the opportunity to

undertake three short, self-directed e-learning packages, followed by competency assessment and clinical mentoring by a paediatric emergency physician.

By the end of December 2013, NED5 had successfully trained 14 nurses, four had not yet completed and six had withdrawn from the project. NED6 had two of the six trainees withdraw in February 2013 because they did not want to undertake the Certificate IV. In the end, none of the nurses completed this component. Two were assessed as competent in suturing, three in application of plaster casts, and three in ear, nose and throat examination. Although four nurses completed the radiology training, this was not implemented due to industrial issues and lack of local support. All four nurses at NED7 completed their training and commenced ESOP roles in October 2012. NED8 trained a total of 123 nurses (93% of eligible ED nurses) by the end of March 2013.

Nurses at NED2, NED5, NED6 and NED7 were generally positive about their training experiences. Of the 23 trainees who returned surveys, more than 90% agreed or strongly agreed that the content was pitched at the right level and was delivered in a logical manner, that staff encouraged trainees to ask questions and seek assistance, and that they would recommend the training to others. Formal evaluation of the training programs delivered at these four sites was limited by the lack of documentation and data provided. Nevertheless, all four sites implemented training that successfully contributed to staff professional development and facilitated improvements to local service delivery. Partnering with higher education providers could address some of the issues raised in the evaluation.

Nurses at NED8 also expressed a high level of satisfaction with their training. Of the 51 nurses who returned surveys, more than 90% agreed or strongly agreed that the training met their expectations, the content was pitched at the right level and delivered logically, materials were appropriate, staff were knowledgeable and facilitated independent practice and decision making and assessments were relevant and clearly explained. A formal evaluation concluded that the training pathway for criteria-led discharge at NED8 was both innovative and effective. Although designed to meet this hospital's specific needs, it is a good example of an ESOP initiative with the potential for wider implementation.

Impact

The variety of different models precluded meaningful comparisons among sites. Instead, data for Key Performance Indicators were collected during the implementation period at each site and compared with baseline figures for the same site. The economic evaluation focused on the return on investment for the expended HWA funds and the potential for the ESOP nursing models to improve their hospitals' performance against national four-hour targets.

ESOP nurses saw 11,615 cases during the implementation period, representing 2.5% of all ED presentations at the participating hospitals. Of these, 11,032 cases involved patients in the ESOP target groups. The volume of cases varied a great deal across sites, as did success in identifying and serving patients within the defined target groups. Sites with the highest volume were NED1 (2,159 cases, or more than 30% of target patients), NED4 (4,610, 8%), NED7 (2,499, 20%) and NED8 (1,136, 12%).

Patients seen by ESOP nurses were discharged faster, on average, than similar patients seen by other health professionals in the ED. Averaged across all sites, 73.5% of patients seen by ESOP nurses were discharged from the ED within four hours. This compared to 62.8% of similar patients seen by other health professionals during the implementation period. The sub-project resulted in nearly 1,900 additional patients being treated and discharged within the national four-hour target.

All participating hospitals improved their National Emergency Access Target performance over the course of the sub-project. The overall percentage of target patients discharged from ED within four hours rose from 57.0% at baseline to 63.8% in the post-implementation period.

Approximately one percentage point of this improvement was due to the contribution of ESOP nurses.

The investment per patient seen by ESOP nurses averaged \$188, or 5.3 patients per \$1,000 spent by HWA. This calculation does not include the costs borne by the implementation sites or the costs of developing and implementing the training components of the model. There was wide variation in the investment per patient across the sites, with some highly cost-efficient and others less so.

Safety and quality data were not reported consistently across sites. The limited available information indicates similar outcomes for ESOP compared with usual care. Interviews with ESOP nurses and stakeholders identified a set of common factors that were seen as important contributors to safety and quality. These included careful selection of experienced nurses, relevant training and strict clinical governance structures. ESOP nurses described the characteristics of ED environments that supported their practice, including a 'risk averse' culture in which they had the capacity to decide that a patient was not within their scope and the ready availability of clinical review and mentoring. ESOP nurses took great care to educate patients and ensure they understood the next steps in resolving their health issues, which often involved referral to a General Practitioner or a return to the ED for review.

The models were implemented on a small scale at most sites, with relatively few staff, so the 'dose-response' impact was expected to be correspondingly small and difficult to detect above the noise of other concurrent changes in the ED environment. Stakeholders acknowledged the difficulty of measuring impacts on efficiency and productivity but described less tangible benefits such as reduced pressure on medical staff and increased confidence that timely and appropriate care was being provided. There were many anecdotal observations that the ESOP models had improved patient flow through the ED.

Consumers reported positive experiences and high levels of satisfaction with ESOP nursing care. More than 75% of survey respondents strongly agreed that the nurse listened carefully, understood what was wrong, understood their concerns and believed their problems were real. More than 80% strongly agreed that the nurse seemed comfortable dealing with their problems. Overall satisfaction was also very high, with seven in ten patients rating their ED experience as very good (9/10 or 10/10). The quality of emotional support and the effectiveness of the treatment provided by ED nurses were key predictors of overall satisfaction with the ED experience. A small group of respondents would have preferred a more thorough examination, more tests and more information about the cause of the problem and the expected time to recovery, suggesting areas for future improvement.

At the NED1 site, which ran its own survey, mental health patients reported that they appreciated the nurses' patience, willingness to listen and evident understanding of the patient's problems. Patients valued having ED procedures and processes explained to them, which made them feel calmer and reassured. They also acknowledged mental health nurses' knowledge of services specific to their needs.

Staff working alongside the ESOP nurses accepted and understood the roles and felt comfortable providing advice. However, almost half did not understand the educational preparation required for the role. More comprehensive communication and training strategies could be introduced to support change management in the ED. Nurses with personal qualities such as reliability and flexibility were highly valued by their colleagues.

Nurses had high levels of confidence in their ability to provide patient information and appropriate care. The vast majority were comfortable approaching other staff for advice. More than 80% said they were satisfied with the ESOP role, felt it had enhanced their careers and were planning to stay on for the foreseeable future. The ESOP nursing model of care appears to be an effective retention strategy, providing an expanded clinical role and further career

pathways for the nursing workforce. The intention of nurses to continue in the role is likely to be an important contributor to the sustainability of the model.

Conclusion

On the whole the ESOP nursing models were implemented within a receptive culture, which is a positive indicator of sustainability. Key stakeholders at most sites were optimistic about the future of the ESOP models and committed to seeing them continue. They recognised the need to embed the changes in normal practice and to continue demonstrating and communicating benefits to stakeholders at all levels of the organisation. The innovation was sustained at six sites, and partially sustained at the remaining two.

Effectiveness and efficiency depend in part on staffing capacity – the ‘dose-response’ impact – and at most sites the number of ESOP nurses was small. This reduced the ability of organisations to provide a continuous service, and in smaller EDs the ESOP nurses had to balance their roles with other demands. At some sites implementation was delayed because competency-based training relied on the availability of clinical supervisors to carry out assessments, as well as sufficient throughput of suitable cases. A longer implementation and evaluation period and a larger ‘dose’ of the innovation are required in order to judge the efficiency of many of these models. Nevertheless, the balance of evidence from this evaluation indicates that these nursing models can contribute to delivering timely and high quality care.

Most of the models were highly tailored to local contexts and needs. While this is desirable and necessary for stakeholder engagement and to maximise local impacts, it limits the extent to which the models can be generalised to other settings. Based on the evidence of impact, acceptability and cost efficiency, three ‘best bets’ for wider implementation were identified: NED1 (mental health clinical nurse specialists); NED4 (an ED review clinic staffed by clinical nurse consultants); and NED8 (criteria-led discharge pathways for common paediatric presentations).

1 Introduction and background

1.1 *Description of HWA's strategic agenda in Expanded Scopes of Practice*

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 (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, Nurses in the Emergency Department (NED), draws on innovative models of care delivery that have been developed by State and Territory health authorities. These models equip nurses with the skills and experience to extend their roles to deal with a specific range of urgent but non-life-threatening presentations in the Emergency Department (ED) setting. They have the potential to improve patient outcomes, reduce waiting times and ease pressure in areas 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 models. 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 NED 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 initiative aims to introduce expanded scope of practice to nursing roles to support medical practitioners and other members of the health care team to focus on consumers with higher triage categories.

Around Australia, hospital EDs operate in diverse contexts and have differing needs and challenges. Nevertheless, a set of national priority areas – mental health, paediatrics and rural and remote health – guided and shaped the models implemented in HWA-NED. Each of the eight selected organisations trialed a different model of ESOP nursing care in the ED. Three focused on patients presenting with mental health issues, aiming to deal with their specialised needs efficiently and effectively. The remaining five sites focused on improving ED flow and reducing waiting times for patients with non-life-threatening presentations. Strategies ranged from a review clinic staffed by highly experienced nurse practitioners to specific training designed to enhance nurses' skills and confidence in dealing with common presentations. Two sites were based in rural areas and an important goal was to prevent unnecessary transfers to larger, regional hospitals. Two targeted paediatric patients with the goal of facilitating faster assessment, treatment and discharge. Models were implemented to meet local needs at each site and were evaluated to assess what worked, for whom, under what conditions, and which aspects could be applied nationally.

1.3 *Objectives of the Nurses in ED sub-project*

As reported in the Request for Proposals documentation, the objectives of the NED 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 nursing roles;
- Facilitate the redesign of the workforce to match the changing needs of the service and not the determination of professional boundaries;
- Implement 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 innovative models of extended scope of practice for nurses 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 potentially improving performance against 4 hours waiting time targets for triage categories 4 and 5.
- Support medical staff in the environment of workforce issues in relation to ED medical practitioners and to reduce workforce time constraints to allow a focus on higher level ED presentations (Australasian triage categories 1-3);
- Develop from these successful models toolkits and implementation guidelines including training requirements to support national implementation.¹

Although the original documentation referred to ESOP nurses as “standalone practitioners in the ED”, it should be noted that this is only possible for models staffed by nurse practitioners, who have the legal authority to operate autonomously. Most of the models aimed to increase the skills and knowledge of experienced registered nurses while acknowledging that they are not able to diagnose patients and require patients to be signed off by medical staff before they can be discharged from the ED. The goal at these sites was to enable ESOP nurses to

“...operate as interdependent practitioners in the ED environment with the scope to assess, refer for diagnostics, treat and discharge consumers in collaboration with a medical or nurse practitioner”.²

1.4 Description of sites

A description of the eight HWA-funded NED sub-project sites is provided in Table 1. The funding allocated by Health Workforce Australia is included in Appendix 1.

¹ HWA Request for Proposals: Extended Scope of Practice for Nurses in Emergency Departments (Implementation Sites) HWA-RFP/2011/010.

² HWA Nurses in ED Project Advisory Group supporting papers 10 October 2012

Table 1 Description of sites

Project site	Location	Brief description	~ bed number
NED1	NSW	A major metropolitan public teaching hospital with an existing Mental Health Nurse Practitioner (MHNP) who provides individual patient care in the ED and also runs a MHNP-led outpatient clinic.	More than 500
NED2	NSW	The region's major referral and teaching hospital.	More than 500
NED3	VIC	The two sites in which the ESOP service was implemented were both metropolitan teaching hospitals.	Between 200-500 at each service
NED4	NSW	A major public teaching hospital.	440
NED5	NSW	The four services (hospitals and multi-purpose services) in which the ESOP service was implemented were from one Local Health District,	Less than 50 at each service
NED6	VIC	This rural / regional hospital provides comprehensive acute care services to the local community and surrounding district.	Less than 50
NED7	VIC	A metropolitan teaching hospital, the ED is a major provider of Paediatric Emergency Care with approximately 20,000 paediatric presentations per annum.	200–500
NED8	VIC	A major specialist paediatric hospital.	200–500

*Information taken from either MyHospitals website or organisation's website.

1.5 Structure of report

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

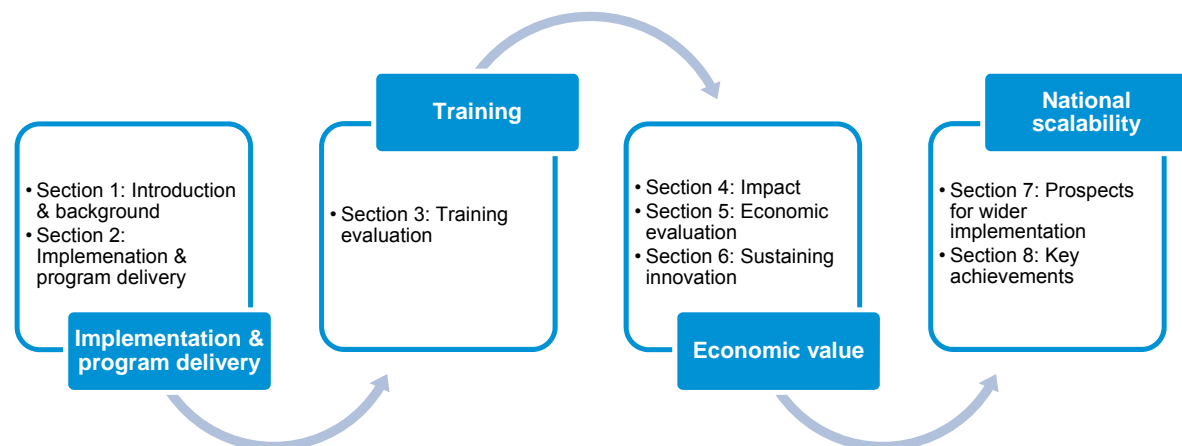


Figure 1 Report structure

A synthesis of the key findings and final results of the overall HWA-ESOP 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

This sub-project focused on ESOP opportunities in mental health, rural / regional locations and paediatrics, in addition to one locality which focused on an ED Review Clinic model of care. Implementation occurred across eight organisations and a wide range of different models of care were implemented (Table 2).

Three sites targeted mental health patients. The NED1 model involved expansion of the service provided by a well-established nurse practitioner; the NED2 model involved expanding the role of existing clinical nurse consultant positions in the hospital's ED; NED3 appointed two nurse practitioners to work across the EDs at two separate sites. NED 4, a metropolitan site and two rural / regional sites (NED 5 and NED6) focused on increasing the skills and expanding the capacity of registered nurses to improve ED patient flow. The two paediatric sites aimed to reduce ED waiting times and length of stay (NED7 and NED8) by expanding the role of existing staff with the use of clinical guidelines, protocols and clinical pathways.

One issue raised by the Project Advisory Group (PAG) is that most of the NED projects are not implementing a truly expanded scope of practice role but are rather encouraging nurses to work to their full scope of practice. This does not mean that projects are not innovative for the organisation they are based within, but not all projects can be said to be genuinely innovative for the nursing profession. This is well illustrated by the NED1 project where the existing clinical nurse consultants were fulfilling a role that focused predominantly on only one of the five domains of a clinical nurse consultant (clinical service and consultancy) under their industrial award. The aim of the project was to expand their scope into the other four domains (clinical leadership, research, education, and clinical service planning and management).

Table 2 Models of expanded scope of practice in EDs

Site	Model
NED1	Nurses employed as clinical nurse specialists in mental health liaison to work in ED in a team led by a nurse practitioner. The team provided support and advice to ED clinicians and access to mental health nursing expertise for patients, their families and significant others. The team was available 7 days per week, from 7.30am to 10pm. All patients seen by the team remained the responsibility of medical staff who were consulted regarding any decisions about referral, transfer of care, treatment and discharge. The team worked closely with the psychiatric services, with mentorship and supervision provided by the nurse practitioner.
NED2	Expanded the role of six mental health clinical nurse consultants (5.0 Full Time Equivalents, FTEs) working in ED. Historically, the role of the nurses focused on initial assessment of patients presenting to ED with a mental health issue. Their scope was expanded to include brief therapeutic interventions for patients with self-harm, suicidal thoughts or diagnosed personality disorder; ordering medications and pathology under standing orders; and initiating admissions to mental health units. Role included liaison with consultation/liaison psychiatry team and non- ED-based mental health staff.
NED3	Two full-time mental health nurse practitioners appointed to work across two EDs in NED3 to complement an existing mental health triage service staffed by nurses and social workers available 24 hours per day, 7 days per week at both sites. Shifts spread across each day of the week, covering peak demand periods (morning and afternoon shifts). Weekly supervision provided by consultant psychiatrist.
NED4	Three registered nurses employed as clinical nurse consultants, all in the final stages of working towards endorsement as nurse practitioners. Mentoring and clinical supervision provided by an emergency physician. The project focused on two patient cohorts: (1) those leaving the ED prior to commencing or completing their episode of care; (2) those requiring review within 48 hours of their ED presentation who are unable to access primary care. The latter was addressed by establishing a 'review clinic'. Following assessment, diagnosis and treatment in the ED, suitable patients were referred for follow up by the nurses in the review clinic. The nurses also assisted with managing low-acuity presentations to the fast track service e.g. minor injuries, removal of foreign bodies, mild to moderate asthma, infections. The nurses used medication standing orders and were guided by hospital protocols. The ED Review Clinic was available 7 days per week, from 9.30am to 6pm.
NED5	Extended the skills and knowledge of registered nurses working in four rural EDs. Focus on high-

Site	Model
	volume non-life-threatening presentations, in triage categories 4 or 5. Ten clinical pathways were developed which allowed the registered nurses to assess, manage and discharge patients, without the need for medical review. Each clinical pathway was linked to a medication standing order.
NED6	Expanded the scope of practice of four registered nurses in the Urgent Care Centre (which is effectively an ED), with a focus on clinical procedures for common presentations: suturing; application of plaster for simple, stable fractures; and ear, nose and throat conditions. Establishment of a remote operator X-ray service for minor upper and lower limb injuries was intended to be part of the model but was not implemented. The nurses worked a mix of shifts, including at night. Local General Practitioners (GPs) provide a limited on-call service for the Urgent Care Centre, with no medical cover at night.
NED7	Four registered nurses (2.4 FTE) recruited from existing ED personnel to improve care and reduce waiting times and length of stay for paediatric patients in triage categories 4 and 5. Focus on common illnesses and injuries e.g. bronchiolitis, croup, asthma, wound care, ear pain, burns, lacerations, limb injuries, minor head injuries, gastroenteritis/abdominal pain. The nurses assessed patients, commenced treatment, ordered diagnostic tests and coordinated referral and follow-up of patients according to clinical guidelines and pathways. Patients assessed by medical staff prior to discharge. Shift times adjusted to cover peak demand.
NED8	All ED nurses (approximately 123 personnel) eligible to receive training, completed competency assessment and undertook expanded role as part of their normal practice. The project extended the hospital's existing criteria-led discharge initiatives to include three respiratory conditions (asthma, croup and bronchiolitis) and gastroenteritis. Patients sent home according to criteria-led discharge pathways, with standardised diagnosis-specific discharge letters.

2.2 Requirements for Expanded Scope of Practice nurses

Five project teams (NED1, NED5, NED6, NED7 and NED8) worked with existing personnel. Others used project funding to recruit additional positions to work in the ESOP role. Those project teams who decided to recruit additional positions were all successful in attracting suitable candidates. For several project teams, most of these personnel came from within their own organisation, often re-locating from another part of the service. NED3 recruited two highly trained personnel from outside their organisation. In total, 173 nurses were engaged in ESOP roles, with 123 coming from one site and the majority recruited from within the organisation conducting the project (Table 3).

Table 3 Nurses in ED - project staff summary

	# of ESOP clinicians	Years' experience	# trained overseas	# with post-graduate qualifications	# working in organisation prior to recruitment
NED1	5	5.5-30	1	4	2
NED2	6	3-36	0	6 (all registered nurses)	6
NED3	2	4-31	1	3	1
NED4	3	9-24	0	3	3
NED5	24	5-40	1	24 (all registered nurses)	24
NED6	6	22-34	0	6 (all registered nurses)	6
NED7	4	~5	0	3	4
NED8	123	unknown	unknown	unknown	123
Total	173		~3	~49	169

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

Some projects experienced changes in ESOP staff and while this had the potential to impact on implementation, all project teams appeared to manage this situation. NED4 had a key ESOP nurse transfer to another hospital to take up a nurse practitioner appointment. Due to restrictions on recruiting new personnel, the other ESOP nurses working part-time increased their hours to cover this vacancy. At NED1, a departing clinical nurse specialist was replaced with a newly recruited staff member.

Two project teams had staff withdraw from the ESOP initiative during the training phase. NED6 had two of their six trainees withdraw from the project in February 2013 as they did not wish to

complete all components of the training program. NED5 had six nurses withdraw from the project over the course of the training program.

2.3 Role of the lead sites

HWA deliberately elected not to appoint a lead site, given the diversity of nursing models of care under implementation. This approach to the NED sub-project provided an opportunity to assess the lessons to be learned from implementing a range of initiatives, as opposed to a common model of care.

2.4 Set-up and establishment phase

The projects all had different models of care, with some creating new roles and others building on existing roles or services. This meant that for some sites there was not enough time to set-up the project before implementation commenced. These projects were consumed by start-up tasks and this reduced the time available for internal and external stakeholder engagement at the project commencement. The development of training programs – especially the development of competencies and documentation of specific guidelines and pathways – required expertise and support, and the time allocated to this phase was underestimated by several projects.

Most project teams found the workload in the set-up phase much greater than anticipated. For some projects this was exacerbated by project officers who, though enthusiastic and dedicated, were new to project management. Project management requires communication and organisational skills as well as confidence to get the project up and running. The project officer may possess these skills or alternatively they have been provided by other staff in the organisation. Two project teams from New South Wales used healthcare redesign methodology to assist with their project and found this greatly increased awareness of the many steps, processes, people, resources and depth of communication necessary to successfully achieve projects aims and objectives and ensure sustainability. Overall, a longer time frame was needed for the set-up phase.

2.5 Implementation of Expanded Scopes of Practice

Each project used established clinical governance processes within their organisations to ensure that ESOP nurses had clear lines of professional accountability; understood policies and practices relating to clinical governance and could monitor incidents and adverse events. Most projects applied accepted frameworks or guidelines for ethical and responsible practice or appropriate practice guidelines. Training was a key element of several projects and was specific to each site. The type and extent of training is described here briefly (Table 4) with more detail – including evaluation of the quality of training programs – in Section 3.

Table 4 Training provided

Site	Training
NED1	No formal training program. Orientation to the ED, informal one-to-one training, case discussions and clinical supervision by the nurse practitioner.
NED2	Two-day 'Coaching for Performance' workshop with follow-up coaching sessions. Structured in-service sessions on mental health recovery within the ED and Psychiatric Emergency Care Centre. Program run by a University on brief intervention for personality disorder. Training and assessment of competence in using medication and pathology standing orders. Joint training session with ED registered nurses working with mental health consumers in the ED. Training in reflective practice, process mapping and working with people with personality disorders.
NED3	The project employed two nurse practitioners (one was a nurse practitioner candidate when recruited but was endorsed soon after). Little additional training was required to prepare these staff for their ESOP roles, apart from orientation to the ED environment, the mental health service, and NED3.
NED4	The nurses in this project were working towards endorsement as nurse practitioners so no formal training was provided.
NED5	Training conducted over 6 months, consisting of 5 modules – ear pain, eye problems, minor limb injuries, minor lacerations, vomiting and diarrhea. Each module included an online education component (taking about 20-30 minutes to complete), face-to-face skills education (lasting about 4 hours) and competency assessment in the use of clinical pathways. Each nurse spent two days working in a major Hospital's ED under the supervision of a nurse practitioner. The program included recognition of prior learning (RPL) e.g. relevant graduate certificate nurse course.
NED6	Training program provided by an external registered training organisation including three modules: (1) suturing; (2) application of plaster for simple, stable fractures; (3) management of presentations for ear, nose and throat conditions. 10-week online course from a University designed to meet licensing requirements for rural X-ray operators in the State. Mentoring and supervision from local experts, including GPs. Certificate IV in Training and Assessment so that the nurses could provide ongoing education and support to other emergency nursing staff.
NED7	Four-day Paediatric Foundations Program conducted at a major Hospital. In house, one-day course covering clinical pathways and expectations regarding their scope of practice. Education on relevant procedures e.g. laceration repair with tissue glue, X-ray ordering. Various local, competency-based, education packages e.g. nurse initiated medications, basic and advanced life support, paediatric procedural sedation.
NED8	Three self-directed e-learning packages that cover: criteria led discharge, respiratory assessment and hydration assessment. All nurses completed competency-based assessments and received clinical mentoring from the Paediatric Emergency Physician based in the ED.

The scope of practice for the nursing positions needed to align with accepted industrial classifications specifically in relation to diagnosis and discharge. Lack of clarity about these limits delayed training and implementation in some projects. A few projects found that gaining approval for medication standing orders or nurse initiated medications was delayed by resistance from medical staff and internal organisational committees.

The attainment of clinical competencies is contingent upon adequate numbers of clinical cases. This was not always possible with current presentations, and projects implemented other strategies to address this. However, this impacted on the time frames initially proposed for training and attaining competency. Those projects which recruited staff already trained and with

the required competencies to deliver the ESOP model of care were able to achieve full implementation within weeks or months of recruitment.

Some projects found that once implementation commenced, rosters, leave cover and hours of service delivery needed to be changed from what was originally implemented. Key milestones in the implementation of each project are summarised in Table 5.

Table 5 Implementation of Nurses in ED projects

Site	Implementation milestones
NED1	Nurses employed as clinical nurse specialists to work in the Mental Health Liaison Nurse team. Model of care fully implemented from March 2013. One nurse resigned in April 2013 and was replaced. Between September 2012 and September 2013, 1923 patients were seen by the ESOP nurses.
NED2	Engagement of the clinical nurse consultants was initially poor. They had each been employed for some years with the current model of care and struggled to see the benefit of the project. Assistance was sought with the use of clinical redesign methodology which includes a focus on stakeholder engagement. Increased engagement of the clinical nurse consultants was also facilitated with a practice development approach. Implementation commenced in April 2013. Standing orders approved for medications and pathology.
NED3	Nurse practitioners employed on the project commenced in December 2012. Model fully implemented in January 2013. One of the nurse practitioners resigned in June 2013 and was replaced by a nurse practitioner candidate. Some local difficulties gaining authorisation for prescribing formulary. Between April and November 2013, 278 patients were seen by the nurse practitioners, of which 110 were seen solely by the nurse practitioners.
NED4	Three positions employed (total 1.4 FTE). The full-time position resigned when they became endorsed as a nurse practitioner to work elsewhere. The two part-time staff then worked additional hours. Four ED nurses identified to undertake advanced clinical training in preparation for replacing ESOP staff when they leave. It was originally intended that project scope would include low-priority patient ambulance transfers and presentations requiring mental health assessment, neither of which eventuated. The main aspect of the project was the establishment of an ED Review Clinic, which opened in September 2012. This was guided by clinical redesign methodology and a review of the literature on ED review clinics. In the first 12 months of operation, 3,372 patients were reviewed in the ED Review Clinic.
NED5	In February 2013, the project was endorsed as policy by the Local Health District. Clarification was required in the early stages of the project as to whether the ESOP nurses could perform this role, or whether it was outside their scope of practice. By December 2013, 14 nurses (of the original 24) had completed the training, 4 were in the process of completing the training and 6 had withdrawn. From July to December 2013, 59 patients were treated by the 14 ESOP nurses.
NED6	Four registered nurses (out of six originally recruited) in the Urgent Care Centre completed the training. The four training modules were completed in October 2012 (plastering), November 2012 (suturing), March 2013 (ear, nose and throat presentations) and April 2013 (diagnostic radiology). By December 2013, two nurses had attained competency in suturing, three had attained competency in the application of plaster casts and three nurses had attained competency in ear, nose and throat examination. Although four registered nurses completed the training and examination requirements for providing a limited after-hours radiology service, this aspect of the project was not implemented due to industrial issues and lack of local support. The online course for Certificate IV Training and Assessment was undertaken between October 2012 and June 2013. Two nurses refused to undertake the course and subsequently withdrew from the project in February 2013; no nurses successfully completed this component of the training pathway.
NED7	In-house training program conducted in September 2012. The nurses commenced in their ESOP roles in October 2012.
NED8	The time taken to complete the training program and competency assessments took longer than anticipated, with 32% of ED nurses trained in January 2013, increasing to 68% by the end of March 2013, to a total of 123 nurses (93% of eligible ED nurses) over the course of the project. Criteria-led discharge pathways implemented from February 2013. The availability of appropriate patients for criteria-led discharge was affected by the opening of four observational beds in a short stay unit in November 2012, aimed at patients who required observation for less than 12 hours. This reduced the number of patients remaining in ED to be cared for by ESOP nurses. This changed in April 2013, with relocation of the beds to medical imaging where they were staffed with ESOP nurses.

2.6 Lessons learned

Based on the experiences at each of the eight sites, there were two main lessons regarding implementation of the NED models, both closely linked to the 'requirements for success' identified in Section 7.2:

- 1) Good project management is important to the success of the project. This includes allocating sufficient resources to project management, including appropriate personnel, taking time to plan the project (while at the same time being flexible enough to respond to changing circumstances), and having clear goals and deliverables (and being realistic about both goals and deliverables).
- 2) Implementation is very much influenced by the context within which implementation is taking place, particularly the extent to which the context is receptive to change.

The second of these lessons is well illustrated by the following comments from project final reports:

- 'The primary lesson from this project is the requirement of an effective and meaningful executive partnership between senior nursing and senior medical staff' (NED3 final report).
- 'It is important that the project team understands and plans for challenges that may develop based on organisational culture, politics and power' (NED5 final report).
- 'Project plans should be developed following a thorough process of reviewing the need for change' (NED6 final report).
- 'The stakeholder population is larger and more diverse than we envisaged' (NED7 final report).
- 'NED8 executive management engagement and project endorsement were paramount as was ED management engagement' (NED8 final report).

2.7 Barriers and enablers in relation to implementation

2.7.1 Communication and stakeholder engagement

Projects used various mechanisms to engage with stakeholders including meetings, information sessions, staff information and training sessions and site visits. The formation of steering committees and working groups were popular ways of engaging critical internal stakeholders as they provided an opportunity for departmental representatives to be involved in the project through regular meetings and other contact.

Across all the projects, the majority of stakeholder engagement has been of an internal nature with personnel such as nursing staff, ED staff, clinical / medical staff and mental health staff. Early consultation with ED medical and nursing staff and collaboration in the review and development of the model of care and patient pathways was consistently reported as critical to success. Involving ED personnel in joint problem-solving helped project teams to overcome obstacles during the set-up phase and including other clinicians in the process of clinical guideline development worked well in improving ownership of the project and producing better guidelines.

NED4 identified the importance of a senior medical sponsor for medical support to cope with the challenges arising in the early project stages. Both paediatric projects received strong support from paediatric specialists and hospital executives to implement their new models of care. At NED7, the paediatric emergency physicians and the paediatric emergency nurse practitioner were very enthusiastic and supportive. This project ran a series of six education sessions for all ED staff on various aspects of the project to inform and communicate with the large number of nursing staff in the ED. The NED8 project benefitted from a history of successful implementation of criteria-led discharge programs in other departments of the hospital, which helped the project gain strong support from the ED management and hospital executive.

A positive enabling factor identified by many teams related to the opportunity the ESOP project provided to work with other members of the health care team and collaboratively develop training programs, policies, processes and clinical guidelines. NED2 engaged nurse educators and the clinical nurse consultants involved in the project to develop training packages. At NED6, key stakeholders contributed information that assisted with the development of relevant policies and guidelines to support the expanded scope of practice. At NED1, effective collaboration and consultation with ED medical and nursing staff, as well as the psychiatry team, enabled useful feedback on the development and refinement of mental health liaison nursing team processes.

Both rural sites recognised the importance of early stakeholder engagement for successful implementation and sustainability, with a particular focus on engaging GPs and other primary care providers. NED5 had three committees to support its project: a steering committee, a clinical advisory group; and a research group which included people with strong skills and interests in data analysis and research. NED5 worked with their Executive Director of Medical Services to engage GPs in the smaller rural towns selected for project implementation although there was limited GP support for the project. A small number of GPs raised concerns about medical responsibility, accountability and liability. In the NED6 project, difficulties expanding the scope of practice of nurses in the area of imaging and X-rays highlighted the importance of early and ongoing strategies for stakeholder engagement.

The NED4 project reported difficulties in getting stakeholder buy-in for the inclusion in their model of mental health patients needing low-medical risk clearance. After ongoing negotiations a decision was made to exclude this patient group from the project scope.

Engagement of external stakeholders was less common but included organisations that could assist the development and promotion of the project (e.g. the work done by the NED6 project to engage an external training provider).

Consumers were involved in the implementation and evaluation processes in various ways. Some sites had consumer representatives in working parties; others disseminated project information through posters and flyers or took advantage of media opportunities. There was particular emphasis on consumer engagement at the mental health sites. NED3 used a survey of service users to help guide project development. At NED2, a consumer consultant was appointed to the steering committee and also liaised with the project officer regularly regarding policies, training and evaluation, facilitating one session during the training program. After the consumer consultant helped trial the patient survey tool, two consumers were employed to coordinate survey distribution and interview people who had used the service.

2.7.2 Resources

The most common barrier raised by implementation sites in relation to resources was inadequate time for the project set-up phase. Most project teams underestimated the time that recruitment and ethics approval processes would absorb. This problem was exacerbated for sites that did not allocate enough resources to project management. Other tasks affected by the short set-up phase include recruitment, policy development, establishment of clinical governance processes and education design tasks. Many of these tasks could have been managed prior to commencing implementation of the model of care with a longer lead-in period. Most projects were required to gain approval for certain elements of the model of care, such as the use of standing orders relating to providing medication or ordering pathology. For some project teams this approval process took considerable time to navigate.

NED1 identified that the competing demands of the tight evaluation timeline and high clinical load for the project lead created pressures. NED4 reported concerns about the time required to manually link records relating to patients presenting by ambulance as booked cases (or non-emergency transports to the ED). This difficulty in getting data that accurately captured the patient journey was one factor that influenced the team's decision to reconsider the inclusion of these patients in their patient target group. This team also identified that considerable time and

resources were required in the set-up phase to resolve data quality issues and develop automated reports to allow monitoring of the project. The NED6 project team found the lack of doctors on-call overnight (from 22:00 hours to 08:00 hours) was a significant barrier as the ESOP registered nurses could not assess, treat and discharge patients independently within their current scope of practice.

2.7.3 Role clarity

Several sites were unaware that they were responsible for conducting their local evaluation in addition to contributing to the national evaluation. One site advised they had received 'mixed messages' about evaluation requirements believing their local plan had been endorsed by HWA early in the set-up phase to subsequently find they were expected to contribute to the national evaluation.

The projects for implementation in rural regions (NED5 and NED6) were developed in part to address the problem of limited medical cover in these geographic areas. However both of these project teams needed to review their model of care to ensure that the expanded scope role as it related to assessing and discharging patients remained within the accepted parameters of professional practice for the industrial classification of the nursing positions working within the EDs. This generated some frustration for project teams but currently only nurse practitioners are authorised to practice independently and within their defined scope of practice (without medical review) and nurses working outside their scope of practice may not have appropriate medical indemnity cover. The HWA Nurse Clinical Advisor provided a range of suggestions to overcome this barrier including the use of telehealth, negotiating with medical staff to take calls overnight and/or negotiating to access medical staff after hours at other hospitals. NED5 established an ESOP policy and ESOP scope of practice to ensure that the role of the nurses was clearly defined in instances when medical cover was not available.

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 evaluation reflects the tertiary education standards endorsed by the Australian Tertiary Education Quality and Standards Agency. It has been generated from triangulating multiple data sources, which are described in the 'Methods' section in Appendix 2. The key objective for the training evaluation was a review of the training programs and their delivery and the extent to which they result in 'work ready' participants.

The training evaluation for the NED sub-project was complicated by the diversity of the models of care implemented across the eight organisations and various implementation sites. A consequence of funding a range of nursing models was that no two projects were alike. Several project teams elected to recruit nurses with the skills they required for the ESOP role and did not develop a training program (NED1, NED3 and NED4). These sites – NED1, NED3 and NED4 – are not discussed in this section of the report.

Four project teams delivered 'in-house' competency based training programs of varying structure, content and duration. These sites aimed to increase the capacity of a carefully selected group of existing staff, addressing skills and competencies specific to the ESOP model of care at each site. They trained small numbers of nurses (from four to twenty-four). In contrast, NED8 implemented a large-scale training program across all ED nursing staff, delivering training in-house to support the implementation of criteria-led discharge pathways. Because the training at this site differed so markedly in approach, it is discussed separately in the analyses presented below.

The range of models of care created challenges for the training evaluation as not all evaluation tools were, (as originally devised), appropriate for all project teams. This generated a much higher need for the revision of evaluation tools and negotiation around their use than has occurred with any other HWA-ESOP sub-project. Even with modification of the training evaluation tools, these were generally poorly completed with significant gaps in data. In part omissions are thought to be related to project teams' level of experience with program design and knowledge of quality indicators relevant in adult education.

Where NED projects were based in larger organisations, there appeared to be higher levels of support, particularly with data collection and analysis. The absence of a lead site was problematic where less experienced project teams did not have this resource. Project teams based in smaller organisations found the implementation of the national evaluation activities resource intensive. Many of the models of care implemented were new to the organisation and this meant that effective change management was essential for the NED project teams.

While providing an evaluation of these training programs, this report also identifies areas for future development of training to support ESOP-NED programs.

3.1 NED2, NED5, NED6 and NED7 training programs

3.1.1 Structure of training programs

Across these four implementation sites, program structures utilised a variety of learning modalities including theoretical modules, in-service education and workshops (including skills training) and clinical experience. Some programs offered distance or e-learning packages to enhance accessibility to training materials. Self-directed learning and the adoption of adult teaching and learning principles were common. In most cases learning pathways were clearly articulated. The length of the program, number of training hours and requirements varied considerably.

NED2

NED2 undertook to improve the accessibility and efficiency of the mental health service in ED. This project aimed to remove barriers so that mental health clinical nurse consultants could work to their full scope of practice. The training pathway was competency based and structured to reflect recovery focused values. Development of the program occurred subsequent to consultation with stakeholders and this delayed implementation until appropriate engagement processes were established. A steering committee provided guidance and expert advice and included consumer representation. Clinical guidelines, standing orders and policies to facilitate and support successful implementation of the project were developed. The education component of the program was delivered as six training workshops over seven days.

The training program empowered registered nurses to provide brief intervention therapy for people presenting with personality disorder and the implementation of standing orders for medication administration and requisition of pathology orders, for 18-65 year olds who required mental health admission after hours.

NED5

The NED5 project team implemented a model of care that enabled registered nurses to assess, manage and discharge patients presenting to the ED (with specified conditions), without review by a medical officer. The nurses managed these presentations in accordance with a clinical pathway designed for the project. The pathway allowed senior nursing staff to provide intervention for patients who met the Australian Triage Scale 4 and 5 in four sites across the Health District. The program was developed in consultation with stakeholders and established an Advisory Committee to guide development and implementation. The training program included two sets of online learning modules: the first addressed patient assessment and clinical governance and the second consisted of clinical presentations and procedures for eye pain, minor limb injuries, ear pain, minor laceration and vomiting and diarrhoea. After successful completion of all online education packages, participants attended four hours of face-to-face education sessions and practiced clinical skills related to assessment and management of clinical presentations covered in the on-line learning modules. The ESOP nurse trainee then progressed to a two-day experience working alongside a nurse practitioner to complete skill-based training and competency assessments. On completion of all program components the nurse was authorised to practice as an ESOP nurse in the ED.

NED6

NED6 aimed to expand the scope of practice of registered nurses working in the Urgent Care Centre (UCC). The nursing unit manager of the UCC and supervising medical officers were closely involved in the design and content of the training pathway which was congruent with the nurses' position description and the project's model of care. The training program was modular and focused on four areas of practice: suturing; application of plaster for simple, stable fractures; provision of limited diagnostic radiology procedures; and management of presentations for ear, nose and throat conditions. It included online components as well as practical training, competency assessment and ongoing mentoring and supervision. Trainees were also required to undertake the Certificate IV in Training and Assessment (TAE 40110). The modular approach increased accessibility to training as the modules could be incorporated within the nursing roster. The practical application provided sound grounding in clinical skills necessary to meet specified program outcomes. Placement at other clinical facilities as part of the training program exposed trainees to a wide variety of learning opportunities.

NED7

NED7 developed a training program for an Extended Scope of Practice Paediatric Nurse (ESPPN), allowing registered nurses in ED to develop knowledge and skills to initiate treatment for paediatric patients with minor illnesses and injuries. This included asthma, croup, bronchiolitis, ear pain, below elbow limb injuries, lacerations and minor head injury. Standing orders and practice protocols / guidelines were developed to support nurses working in the ESOP-NED role. The training program was developed by the NED8. The structure of the

program included 40 hours of theory, 16 hours of simulation and 16 hours of practice. The program contributed the equivalent of 30 continuing professional development hours. Theory was delivered over four study days. Content included nursing assessment, planning and management of infants, children and adolescents. The hospital e-learning platform provided online education for nurses to complete medication credentialing requirements.

At NED7 the number of study days available to address the program requirements appeared limited. Extending this would provide additional opportunities to engage in other activities to reinforce theory integration in practice and address participant concerns regarding the length of training time. There was considerable difference between the learning time in this program and other ESOP training pathways addressing similar areas of practice. The content of the program could be better aligned with the requirements for expanded practice.

3.1.2 Experience of ESOP trainees

A survey was conducted to capture the nurses' overall impressions of the training they completed in 2013. Despite the differences in models of care and associated training programs the responses across the four sites were consistently positive.

Nurses who had completed a training program were asked to rate a range of factors across four domains: course delivery, content, assessment methods and teaching staff. Ratings were made on a five-point scale from (1) *Strongly agree* to (5) *Strongly disagree*. The 29 items were based on factors identified as important contributors to learning outcomes and were supplemented by open questions which gave respondents an opportunity to comment on aspects of the training they found useful, and what they would like to see improved. A 72% response rate was achieved across the four sites (23 out of 32). Findings should be interpreted with caution due to the small numbers of respondents.

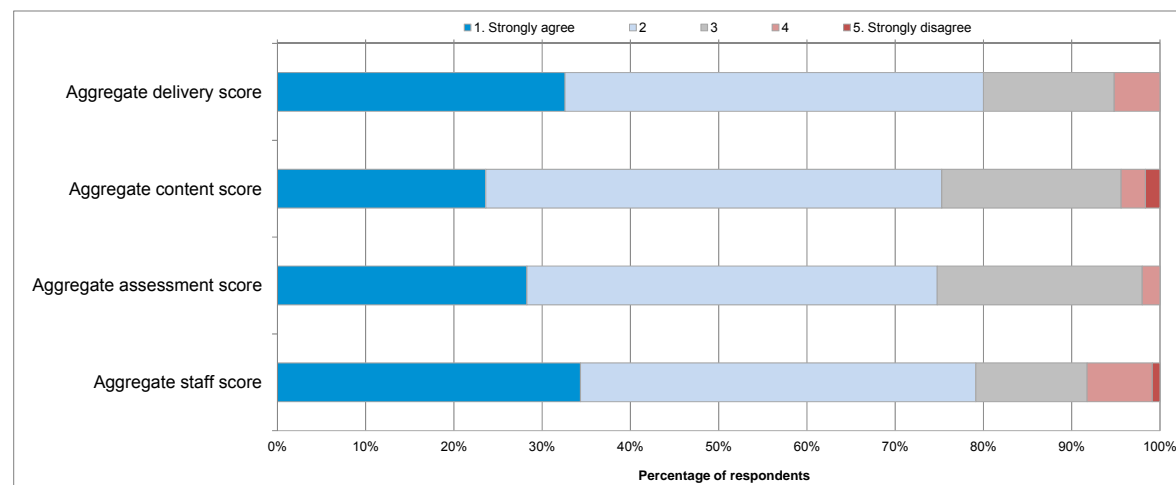


Figure 2 NED sites training program aggregate domain scores

The findings for the ESOP-NED training program for the four implementation sites are reported in Figure 2 and Table 6. The experience across training program delivery appears to have been positive. The positive results are demonstrated by a minimum of 75% agreement from respondents with each domain (indicated by a rating of 1 or 2). The results displayed relate to the experience of all ESOP-NED trainees from NED2, NED5, NED6 and NED7, with the full sample of respondents (n=23). High mean scores for each item were reported (means ranged from 3.55 to 4.45 out of a possible maximum score of 5). Areas for possible improvement include simulation training and the delivery of constructive feedback by training staff.

Table 6 Descriptive statistics for Nurses in ED trainee survey (four sites)

Item	Full sample		
	N	Mean (SD)	Range
1. The training program met my expectations	23	4.04 (0.64)	3-5
2. The training program was well organised	23	4.04 (0.82)	2-5
3. The objectives of the training program were clearly identified	23	3.91 (1.00)	2-5
4. Content was delivered in a logical manner	23	4.22 (0.60)	3-5
5. Training materials (work books, readings, handouts) were appropriate for my needs	23	3.87 (0.92)	1-5
6. There was an appropriate balance between theoretical and practical components	23	3.61 (0.84)	2-5
7. Content was pitched at a level appropriate to the expanded scope of practice role	22	4.27 (0.63)	3-5
8. Necessary equipment and resources were available to complete the training program	23	4.04 (0.71)	3-5
9. Techniques used to present material were appropriate for the training program	23	4.09 (0.60)	3-5
10. The training program provided for debriefing and / or clinical supervision	23	3.78 (1.04)	1-5
11. Learning through simulation assisted me to prepare for the expanded scope of practice role	22	3.55 (1.01)	1-5
12. Assessment tasks were relevant to the training program	20	3.90 (0.72)	3-5
13. The assessment requirements were clearly explained	21	4.00 (1.00)	2-5
14. The assessments were challenging and at an appropriate level	20	3.90 (0.72)	3-5
15. Assessment tasks were graded fairly	19	4.16 (0.69)	3-5
16. Assessment feedback was timely	19	4.11 (0.74)	3-5
17. I was provided with accurate, timely information about the training program	22	4.05 (0.79)	2-5
18. I was informed of any changes within the training program in a timely manner	22	3.95 (0.95)	2-5
19. Training program staff had good knowledge of the subject material	23	4.30 (0.82)	2-5
20. Training program staff facilitated independent practice and decision making with appropriate guidance	23	4.13 (0.81)	2-5
21. Training program staff helped trainees to develop professional confidence and competence	23	4.04 (1.02)	2-5
22. Training program staff provided supportive clinical supervision	23	3.91 (1.08)	2-5
23. Training program staff assisted trainees to relate theory and practice	23	3.96 (0.77)	2-5
24. Training program staff challenged trainees to think critically and problem solve	23	4.04 (0.82)	2-5
25. Training program staff encouraged trainees to ask questions and / or ask for assistance	23	4.35 (0.78)	2-5
26. Training program staff guided students to identify their own learning needs	23	3.96 (0.71)	3-5
27. Training program staff provided individual constructive feedback, identifying both strengths and weaknesses	23	3.70 (1.15)	1-5
28. Training program staff were accessible when assistance was required	23	4.04 (1.11)	1-5
29. I would recommend this training program to others	22	4.45 (0.67)	3-5

Qualitative analysis

Qualitative analysis of the additional comments provided further insights into aspects of the training programs that were well received by trainees. Medication and pathology standing orders were noted by each respondent from NED2 as aspects that particularly met their learning needs. NED5 trainees particularly valued practical sessions with instructors, as they allowed for technique correction and feedback. They also appreciated working with nurse practitioners, and the online learning aspects of the program. Respondents from NED6 provided examples of program components that were most valued by trainees as the development of individual competencies and courses relevant to the model of care implemented in their organisation (such as the plaster, X-ray, suture and 'ear, nose and throat' courses). One respondent from NED7 noted that there was comprehensive coverage of conditions and presentations that nurses would be most likely directly responsible for.

3.1.3 Training timeline and time to completion of requirements

The teams from NED2, NED5, NED6 and NED7 opted to implement their project using their existing workforce. This was a deliberate strategy to build capacity in personnel who were likely to remain in the organisation.

Most project teams made the assumption that registered nurses taking part in ESOP initiatives were competent in their core clinical skills and possessed knowledge of key concepts in emergency nursing. This included enhanced patient assessment and triage knowledge and skills that were perceived to be at a level beyond that of a registered nurse. Enrolment pre-requisites and appointment processes for nurses undertaking the training varied from project to project.

NED2

All trainees were mental health clinical nurse consultants based in the ED. They had extensive clinical experience in mental health and in the ED setting. Six nurses enrolled in the program and five completed the training. One nurse resigned during the implementation period.

NED5

All ESOP nurses were registered nurses and had to supply evidence of completion of a DETECT (Detecting Deterioration, Evaluation, Treatment, Escalation and Communicating in Teams) program as well as recent attendance at an applicable short course that included competency assessment. Examples of acceptable short courses included a: Graduate Certificate in Nursing (Emergency or Critical Care); First Line Emergency Care Course; Trauma Nursing Care Course; Emergency Paediatric Course; and the Australian Triage Scale Education Course. Recognition of prior learning (RPL) on the basis of documentary evidence was permitted. Twenty-four nurses enrolled in the ESOP training program and during the course of implementation six withdrew. At the time of this report fourteen had successfully completed the training program.

RPL procedures were well articulated and appropriate records of evidence were maintained. It was, however, difficult to determine if the RPL framework was appropriate, given the absence of specific criteria for the levels and outcomes of assessment in the courses previously undertaken by applicants. If RPL is awarded for ESOP course components, evidence should be aligned with the program / course learning outcomes and assessments. Given the number of assumptions about pre-requisite knowledge and skills, the criteria for enrolments require further consideration. If practical components are to be recognised as prior learning, trainees should be required to demonstrate sustained competence.

NED6

For nurses to be included in the training program, they had to apply successfully for an ESOP nursing project role and address a range of selection criteria (refer to Section 2). Initially six nurses enrolled in the program, all of whom had extensive emergency nursing experience and had spent many years in the ED environment. Relatively early into implementation two nurses withdrew because they foresaw difficulties completing the Certificate IV. By the end of the implementation period four nurses achieved partial completion. All four completed the clinical skill components but none completed the Certificate IV.

NED7

NED7 specified that nurses wishing to enrol in the training program had to have current paediatric experience and a minimum of one year experience in the ED post-graduation. They also required evidence of ongoing professional development. Four nurses enrolled in the training and all were endorsed in the Extended Scope of Practice Paediatric Nurse (ESPPN) role.

3.1.4 Scope, content and relevance

The scope of practice varied according to the aspect of practice extended. Content was developed accordingly. Most organisations implemented training programs to enhance practice that would be considered within the scope of practice for a registered nurse. The level of and content of these programs was in some cases not in keeping with an ESOP. The projects

established at NED2, NED5, NED6 and NED7 were essentially about assisting nurses in the ED to work to their full scope of practice.

NED2

Content was developed with recognition of the extensive expertise of the participating nurses and included: brief intervention therapy; working with people with personality disorders in ED; coaching performance – clinical leadership; intervention training (standing orders for pathology and medication administration, policy guidelines relating to after-hours admissions); reflective practice and process mapping; incorporating family as carers; and working in recovery orientated ways. The education component of the program was offered over seven days that were spread across the implementation period.

NED5

Learning modules focussed on assessment and management of: eye problems; minor limb injury; minor laceration; ear pain and vomiting and diarrhoea. Each of the modules addressed: pathophysiology; assessment; management using clinical pathways and standing orders; paediatric considerations; documentation and discharge. All modules were compulsory and took approximately 20 minutes to complete.

Learning outcomes for the program were specified but they tended to address the lower end of Bloom's (1971) taxonomy with trainee's performance evidenced by exploration, understanding, development, and demonstration. This raises questions about the level of the program and whether this is congruent with an expanded scope of practice. Some of these descriptors and outcomes would be difficult to measure in their current form. Learning outcomes should be revisited to include attributes in keeping with higher cognitive levels of ability, such as critical thinking, synthesis and clinical reasoning.

NED6

The position description requirements for the ESOP role were congruent with expectations of the scope of practice for a registered nurse and did not exceed what would commonly be expected of nurses working in the emergency setting where medical cover is not available 24/7. Clinical guidelines were established for all elements of the model of care and specified that the registered nurses were not to practice as a 'stand-alone' practitioner. They were required to consult with a medical practitioner who maintained accountability for the management plan for the patient being treated. Therefore the nurses were fulfilling delegated tasks that had previously been provided by medical officers. NED6 used a Registered Training Organisation to deliver the training program as this was an affordable and accessible option and while this group was nationally accredited as a training provider this does not mean that the skills provided to the nurses would be recognised in another organisation or jurisdiction. NED6 reported that the program scope, content and relevance were congruent with established standards of good practice.

NED7

Documentation states that the program was designed to prepare registered nurses with advanced knowledge and skills (beyond that expected of a registered nurse division 1 and 2) to work autonomously in the ESPPN role. However information supplied shows that the model of care does not go beyond the Australian Health Practitioner Regulation Agency scope of practice for division 1 and extensions to scope of practice were approved by the implementation site's scope of practice nursing committee. This is contradictory and raises questions about the ESPPN position and scope of practice. The distinction between registered nurse division 1 role and ESPPN extended scope was unclear from the course materials and supplementary information provided.

Specific learning outcomes were not provided for course components and program materials take the form of protocols or procedural documents specifying actions. Most require patients to be referred to a medical officer for assessment prior to administration of medication or

discharge. Documentation provided by the project team noted that exceptions to the clinical practice taught on the program could only be authorised by the nurse unit manager of ED or the emergency paediatric consultant. This is not congruent with the ability to function autonomously and independently as specified in the role description. Careful consideration was given to developing standing orders to support the ESOP role and a medication credentialing training and assessment process.

3.1.5 Staff qualifications

Senior ED nurses, nurse educators, nurse practitioners and consultants were the main providers of training, supervision and assessment. At some sites, components of the program were delivered by external providers. Some nurse educators held post-graduate qualifications. Others were described as having the qualifications to deliver the training they provided. Little or no detail is provided about ESOP experience, qualifications or scholarly activities. The senior medical and nursing staff who mentored the trainees were experienced in supervising students and were highly supportive of the nurse trainees.

If ESOP programs aimed to establish credit with higher education for post-graduate qualification then the credentials of training staff would require further consideration. While these may have been appropriate, detail has not been provided precluding evaluative comment.

3.1.6 Facilities and resources

All four project teams elected to develop 'in-house' training resources. Survey results indicate that development and delivery of the training programs was resource intensive and it would be difficult to maintain any program without continued funding. Collaborating with a higher education provider may have provided more extensive resources and the necessary infrastructure to address quality indicators. Limited information was available about the facilities and equipment / training resources used to deliver programs which preclude evaluative comment.

3.1.7 Teaching and learning environment

All education programs were conducted in house. Little or no information was available about the support provided to trainees, issues occurring throughout implementation and how these were addressed.

While an evaluative comment cannot be made specific to each teaching and learning environment, the overall survey results from ESOP-NED nurses about their training experience were positive. There was some concern about the level of understanding among other staff about their role and capability.

3.1.8 Assessment methods

The assessment requirements, their form and structure varied between the four training programs. The nurse trainees reported some anxiety at having to complete competency-based assessments, particularly given the extent of clinical experience of most trainees.

NED2

Information regarding the assessment of trainees was not included in sufficient detail to provide an evaluative comment.

NED5

Trainees were required to achieve a pass of 80% for online theory. The rationale for determining 80% as a pass was not provided. Competency assessment is usually pass/fail requiring achievement of all criteria. The inclusion of critical criteria needed for a pass should be included to provide assurance of safety. Trainees undertook several competency assessments and were assessed using a detailed competency framework. Five assessments, one for each of the five areas of expanded practice, were developed. Specific elements of practice to be

achieved with performance criteria were included. A yes/ no, format was used to indicate achievement of mastery, reducing the competency assessment to a task check list.

The development of criteria that signify levels of practice is needed to assist supervisors to make decisions about competence and address issues related to the validity and reliability of assessment outcomes. Without this there is a risk that one individual's practice criteria becomes the benchmark on which decisions are made. These criteria may or may not be consistent with other assessors or best practice. Training staff met monthly to review the records of patients who had been seen by an ESOP nurse using evaluation criteria developed for this purpose. While this provides some evidence of moderation and use of quality standards, there is no detail about what happened if questions were raised about performance.

NED6

The training program had a clearly articulated assessment schedule with documented competency requirements. Templates were provided for assessors. These would be improved through the development of a companion guide that specifies a level of practice to assist benchmarking and determination of consistent outcomes. The training program required each nurse to undertake five clinical assessments for each new skill (e.g. their suturing would be assessed five times). This was found to be an arbitrary measure and did not accommodate the varying learning needs of the participants. The program was modified to allow more time to complete the clinical assessments. There was no formal moderation of assessment. As a result, it was not possible to provide assurance that different assessors were congruent in their application of the standards. Determining the validity and reliability of the assessment instruments is outside the scope of this evaluation.

NED7

The ESPPN competency assessment framework consisted of a check list for: medication quiz; patient assessment; ear examination; wound management/slings/ crutches; limb assessment / pulled elbow management and paediatric sedation. There was no evidence of a scoring or marking guide that specified the minimum level of practice and defined competent practice. This left the assessment process open to individual interpretation and raised questions about the validity and reliability of assessment outcomes. Competency assessments were undertaken at the bedside. It was noted in documentation provided that it was "not always possible to assess all areas of competency at the bedside due to lack of opportunity or exposure". It is unclear what this meant for the ESPPN role and whether assessments were completed using simulation or if in fact some nurses did not complete all assessments. Given that 100% of trainees completed the training pathway this raises questions about the assessment process and RPL processes. Moderation procedures and appeal mechanisms were not included and details regarding the award of certification / records of achievement were not provided.

3.1.9 Modifications to the training program

No training program modifications were reported to have occurred during the implementation period.

3.1.10 Training program sustainability

Sustainability of the training program beyond the implementation period was a concern for all project teams.

NED2

The hospital executive stated a commitment to ensuring project outcomes were sustained but funding would be required to sustain the education program.

NED5

The project team identified that further funding would facilitate review and improvements to the model and enable continuation. The project team recognised the need for formal recognition and a credentialing process.

NED6

The Certificate IV was a key strategy to ensure that the newly trained nurses could train others where appropriate; however as previously identified this component was unsuccessful. At the time of this report no source of ongoing funding to support further training has been identified.

NED7

The project team considered how new nurses recruited to ED could be educated and integrated into the program. While the training program was provided by another institution there was a view that it could be run 'in-house' using a combination of short courses and on line learning, however funds had not been identified at project conclusion.

3.1.11 Training program capacity and impact

All project teams reported that the training programs had enhanced capability and positively impacted on service delivery by:

- Providing a new clinical pathway supporting career development
- Expanding employment opportunities
- Introducing opportunities for ED nurses to articulate to higher degree programs of education.

Further information about the impact of the ESOP role is reported in Section 4.

NED2

NED2 reported that the project had improved outcomes for mental health consumers. This was evidenced by improved NEAT performance and consumers indicating satisfaction with their experience of care. A comparison through process mapping and consumer journey analysis before and after the introduction of the ESOP project demonstrated that the enhanced scope of the clinical nurse consultant and changes to work flow had increased the timeliness of the provision of care. Clinical nurse consultants are reported to feel empowered in their new role.

NED5

NED5 reported that local evaluations provided evidence that nurses' job satisfaction had improved. This was supported by qualitative data collected by the national evaluation team. The project team also claimed that there was evidence that service delivery had improved.

NED6

NED6 reported that a particular group of patients presenting with conditions that require the ESOP nursing skills were seen in a more timely and efficient manner and that there was a high level of community support for the project with improved community attitudes about the level of service provided at the UCC. The major advantage for the public was a reduced need to travel to another hospital after-hours for simple wounds, plasters and aural health issues.

There was a high level of acceptance within the organisation for the ESOP role and local visiting medical officers / GPs were supportive of the project and continued to provide training and clinical supervision. Other nurses in the hospital considered the ESOP nurses as a resource and additional source of support. The ESOP nurses expressed high levels of satisfaction with their enhanced skills and wished to continue to apply these after the project ended. Nurse initiated X-ray had not been authorised at the time of this report; this generated a risk that newly acquired skills would be lost if not put into practice.

Anecdotal feedback, observation at site visits and trainee responses to survey tools demonstrated that the nurse trainees had the knowledge, skills and confidence to undertake the ESOP role and were performing the additional clinical tasks (plastering, suturing and aural examination) effectively.

NED7

NED7 reported that the training program has enhanced patient care and improved the capacity of the nurses to ensure consistency and that expected minimum standards of care were met. Empirical evidence supporting this was not provided.

3.1.12 Budget and expenditure

The cost of the development and implementation of the training pathway programs were all fully met from HWA funds. All funds allocated for training were expended for all programs. Each project team supplemented the training with 'in-kind' resources. No project team was able to provide a definitive costing for training program development or implementation.

3.1.13 Summary and conclusions

Although every implementation site submitted a final report, documentation across the ESOP-NED sub-project was limited with some sites failing to submit complete information and evaluation data. Overall there are concerns regarding the level of programs and whether these have been developed at an ESOP level or rather enhanced the capability of existing staff that had not previously been realised. The lack of detail does not necessarily indicate that quality processes were not employed, but makes it difficult to provide any assurance that these programs could be replicated and implemented nationally.

All sites have successfully implemented a training program that appears to have positively contributed to the professional development of staff and facilitated improvements to local service delivery. To enhance future development it is recommended that the best of both worlds (practice and education) are brought together. Partnering with higher education may address some of the issues raised in this evaluation.

Aspects of program structure that could generally be strengthened include:

- improved training program approval processes
- development of training content consistent with the skill requirements of an ESOP
- enhanced stakeholder consultation and input into program development and review
- inclusion of clearly articulated learning outcomes with descriptors appropriate for ESOP e.g. assessment, critical appraisal, synthesis, clinical reasoning
- increased detail about how the training program provides trainees with opportunities to meet learning outcomes
- specified learning time for each training component
- detailed competencies appropriate to the ESOP role
- enhanced practice based learning modalities such as simulation to facilitate skill development and competence

Several areas for development were identified from the training evaluation and these are summarised in Table 7.

Table 7 Opportunities for training program development

Training component	Opportunities for improvement
Program content and structure	Align program scope and content with professional requirements
	Ensure content is evidence based
	Formulate learning experiences that provide opportunities for trainees to achieve competencies
	Develop assessment requirements that are clear and published before the commencement of the training program
	Plan and implement processes for monitoring and evaluating the quality of the practice experience for the trainee
	Acknowledge different learning styles
	Provide information about standard course materials/ learning modules and necessary equipment
	Detail teaching and learning resources available to support trainees achieve training program outcomes
	Explain additional professional practice education opportunities for trainees
	Provide evidence of facilities and resources for simulation to enhance the development of practice skills
Program delivery	Clarify pre-requisite qualifications and experience and program entry criteria
	Develop robust policy and procedure with criteria for award of RPL
	Provide opportunities for trainees to discuss progress and learning needs
	Engage teaching staff with appropriate knowledge and experience
	Advise trainees about access to teaching and support staff
	Implement annual teaching evaluations
	Articulate clearly marking criteria (including descriptors/levels) for assessment tasks
	Deploy a variety of assessments that reflect learning outcomes
	Ensure appeal mechanisms are explicit and available to trainees
	Prepare assessors to promote greater consistency and enhance validity and reliability of assessment outcomes
Program scalability	Ensure assessment criteria reflect the scope of practice and professional requirements
	Establish approval processes for program evaluation and modification approval
	Formalise the ESOP training program by documenting authority to practice/certification and maintaining records of achievement
	Establish protocols for credentialing and re-credentialing
	Partner with a higher education provider to extend resources and address credentialing for the ESOP training program
	Implement quality indicators to ensure the training program is fit for purpose
	Establish ongoing audit and review
	Invest in project management
	Address regulatory and legislative barriers
	Engage key stakeholders in strategies for sustained program implementation

3.2 NED8 training program

NED8 elected to train every nurse in the ED as the training supported a model of care that was embedded as usual practice.

3.2.1 Structure of training program

The aim of this initiative was to introduce an expanded scope of practice that allowed registered nurses to discharge patients using a care plan and treatment pathway specific to the patient's diagnosis. The project was called the Criteria-Led Discharge (CLD) program. Where CLD was used clinicians treating patients, handover responsibility to specially trained nurses to provide care, determine when the patient's needs have been met and it is safe to discharge them from ED. In doing so, this practice frees medical staff to see critical patients and thus improves the overall flow of patients through the ED.

Training was provided to all nursing staff in the department. The CLD in-service education sessions conducted included a brief outline of the HWA project, evaluation requirements, outline of the responsibilities of all nursing staff and the competency assessment required. Each nurse completed three self-directed learning packages for self-directed learning prior to assessment. These were ED Criteria-Led Discharge, Paediatric Respiratory and Paediatric Hydration. Packages were developed to ensure accurate, up to date information was available and standard, consistent practice was provided (Figure 3).

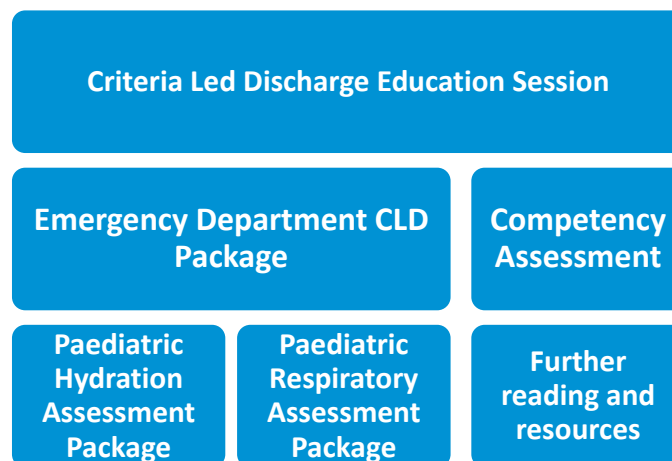


Figure 3 NED8 Criteria Led Discharge Training Pathway

The program was developed by a team of nurses and medical staff. In consultation with key stakeholders (consultants, nurse practitioners, unit managers, education team, nurse specialists and staff from associated departments), they managed the development, training, implementation and review of the project. A steering committee advised and oversaw the implementation as a whole. Criteria were developed for diagnosis and discharge. Education was provided for all nursing staff working in the ED at NED8. It was a requirement that education packages and competency assessments were successfully completed prior to nurses being delegated authority to discharge patients.

3.2.2 Experience of ESOP trainees

A survey was conducted to capture the nurses' overall impressions of the training they completed in 2013. Nurses who had completed the CLD training program were asked to rate a range of factors across four domains: course delivery, content, assessment methods and teaching staff. Ratings were scored on a five-point scale from (1) *Strongly agree* to (5) *Strongly disagree*. The 29 items were based on factors identified as important contributors to learning

outcomes and were supplemented by open questions which gave respondents an opportunity to comment on aspects of the training they found useful, and what they would like to see improved. A 45% response rate was achieved at NED8 (51 out of 114).

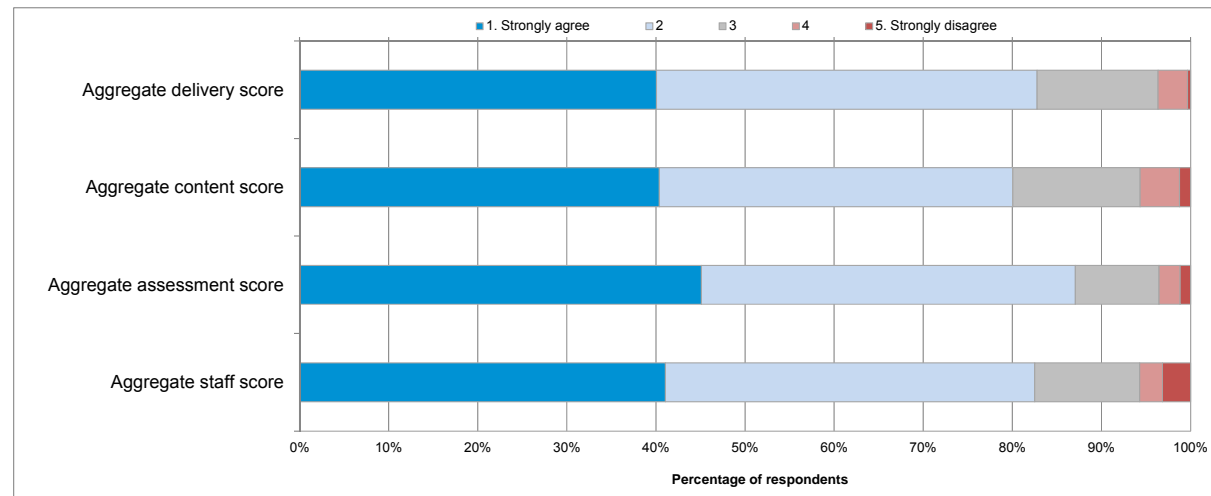


Figure 4 NED8's training program aggregate domain scores

The findings for the ESOP training program are reported in Figure 4 and Table 8. Experience with training program delivery was positive. These results are demonstrated by a minimum of 80% agreement from respondents with each domain (indicated by a rating of 1 or 2). The results displayed relate to the NED8's training pathway, with the full sample of respondents (n=51) being the largest cohort in this analysis. High mean scores for each item were reported (means ranged from 3.53 to 4.61 out of a possible maximum score of 5). Areas for possible improvement include simulation training, the balance between theoretical and practical course components and the accessibility of training program staff for support and assistance.

Table 8 Descriptive statistics for ESOP trainee survey (NED8)

Item	Full sample		
	N	Mean (SD)	Range
1. The training program met my expectations	51	4.22 (0.67)	2-5
2. The training program was well organised	51	4.08 (0.87)	2-5
3. The objectives of the training program were clearly identified	51	4.35 (0.72)	3-5
4. Content was delivered in a logical manner	50	4.44 (0.58)	3-5
5. Training materials (work books, readings, handouts) were appropriate for my needs	51	4.61 (0.63)	2-5
6. There was an appropriate balance between theoretical and practical components	51	3.86 (0.94)	2-5
7. Content was pitched at a level appropriate to the expanded scope of practice role	51	4.37 (0.77)	1-5
8. Necessary equipment and resources were available to complete the training program	50	4.06 (1.00)	1-5
9. Techniques used to present material were appropriate for the training program	51	4.27 (0.75)	2-5
10. The training program provided for debriefing and / or clinical supervision	51	3.94 (1.01)	1-5
11. Learning through simulation assisted me to prepare for the expanded scope of practice role	51	3.53 (0.99)	1-5
12. Assessment tasks were relevant to the training program	51	4.24 (0.68)	2-5
13. The assessment requirements were clearly explained	51	4.37 (0.82)	1-5
14. The assessments were challenging and at an appropriate level	51	4.31 (0.79)	2-5
15. Assessment tasks were graded fairly	51	4.33 (0.82)	1-5
16. Assessment feedback was timely	51	4.12 (0.97)	1-5
17. I was provided with accurate, timely information about the training program	50	4.26 (0.80)	2-5
18. I was informed of any changes within the training program in a timely manner	48	4.04 (0.97)	1-5
19. Training program staff had good knowledge of the subject material	51	4.51 (0.67)	3-5
20. Training program staff facilitated independent practice and decision making with appropriate guidance	51	4.33 (0.79)	1-5
21. Training program staff helped trainees to develop professional confidence and	51	4.14 (0.94)	1-5

Item	Full sample		
	N	Mean (SD)	Range
competence			
22. Training program staff provided supportive clinical supervision	51	3.90 (1.17)	1-5
23. Training program staff assisted trainees to relate theory and practice	51	4.08 (0.98)	1-5
24. Training program staff challenged trainees to think critically and problem solve	50	4.14 (0.95)	1-5
25. Training program staff encouraged trainees to ask questions and / or ask for assistance	51	4.33 (0.71)	3-5
26. Training program staff guided students to identify their own learning needs	51	4.16 (0.88)	1-5
27. Training program staff provided individual constructive feedback, identifying both strengths and weaknesses	51	4.02 (0.97)	1-5
28. Training program staff were accessible when assistance was required	51	3.86 (1.15)	1-5
29. I would recommend this training program to others	51	4.18 (0.84)	2-5

Qualitative analysis

Qualitative analysis of the additional comments provided further insights into aspects of the course that were well received and opportunities for improvement. The majority of comments related to the resources. Workbooks were described as thorough and easy to follow. Other aspects of the training program identified by respondents as meeting learning needs included individual yet standardised assessment, recognition of previously acquired skills, completion of competencies, and the availability of champions and trainers. Although a number of respondents noted that they had covered some material previously, the opportunity to revise this material was valued. The flexibility of a self-directed learning package was identified as an appropriate mechanism for workplace learning.

The most commonly identified program components requiring improvements were related to assessment, particularly the lack of availability of staff to conduct assessment and sign off on competencies. The lack of practical work and a view that the training was quite basic was also raised.

3.2.3 Training timeline and time to completion of requirements

Training commenced in early 2013 and by the end of March 68% of eligible nurses had completed the learning packages. By the end of the project 123 of the 130 eligible nurses had completed education and CLD competencies.

Initially all existing nursing staff in ED undertook the program in-service. This took 45 minutes and was undertaken in groups or with individuals over a three week period. The in-service education continued during the length of the project to ensure that new staff and staff returning from leave were appropriately prepared for the ESOP role.

It was recognised that there was a mixture of skills and ability across the team and that the time needed to complete the training pathway would vary. Existing staff were expected to complete the program in two months. Six months was allowed for new staff to complete the training and demonstrate competency. New graduate nurses with neither paediatric nor emergency experience were required to have at least six months experience in the ED before completing the CLD competencies. Casual nursing staff and agency nurses were not eligible to undertake the program.

During the implementation period 130 nurses enrolled in the training program. Of those only 14 were employed full time. Five part-time staff withdrew. All the full-time staff successfully completed the program and 93% of part-time staff.

3.2.4 Scope, content and relevance

There is a clearly articulated learning pathway that specifies training requirements to address the model of care. The program structure consists of three primary components: in-service education; learning packages and detailed flow charts. Learning outcomes are specified and provided direction for content and practice expectations.

There is evidence of ongoing quality measures employed during the implementation process with regular review of the training pathway. Feedback was obtained from assessors and trainees and issues were addressed by the steering committee. There is evidence that quality assurance was applied during the development and use of surveys. Survey tools were administered prior to the commencement of the training and post completion and aimed to compare quality of care outcomes pre and post training.

Learning packages included a mixture of theory and practical activities. Education and training materials were linked to local Clinical Practice Guidelines. Program content included: information about the current and expanded scope of practice and protocols; CLD criteria and patient pathways; paediatric respiratory and hydration assessment, illness and care; triage and practice competencies for CLD. Further consideration should be given to content delivery including utilisation of on-line resources

Survey feedback from trainees confirmed satisfaction with the program. It was perceived as being well organised with clear objectives, user-friendly training materials and content that was delivered in a logical manner. An evaluative assessment found that:

- Structure and content of individual learning packages included a learning aim with the focus of this on improving knowledge and confidence; however specific learning outcomes were not included.
- Content level is congruent with an undergraduate nursing program. For example the respiratory package includes gross anatomy, control of respiration and principles of airflow and this content is taught in the first year of most Bachelor of Nursing programs. Whilst this information may have been included for purposes of revision it is below the level expected for an ESOP role.
- The package and assessment questions require additional readings. Information providing directions about which readings and where they might be obtained are not specified. The quality of the package would be enhanced by in-text citations to identify the source of diagrams / information.
- Exercises in the learning package are predominantly task orientated and of a low level, for example these include matching items and labelling diagrams.

Survey results indicate that trainees thought that the inter relationship between professional practice, theory, research and the assessment practices were appropriate. Previously used clinical practice guidelines and competencies used by NED8 were reviewed and approved as relevant to the CLD intervention.

NED8's documentation included a disclaimer that no responsibility is taken for actions, errors or omissions. Given the statement is on a learning package, the context may be misinterpreted. In evaluating the program it appears that the scope and 'pitch' of this content may not align with an expanded role. The inclusion of more exercises that require practice assessment skills and completion of scenarios that require synthesis of data, critical thinking and clinical reasoning would enhance the learning packages.

3.2.5 Staff qualifications

Two senior ED nurses were responsible for coordinating the CLD program. They are registered with the Australian Health Practitioner Regulation Agency and permanent employees of NED8. These nurses were experienced educators, had many years' clinical experience and postgraduate qualifications in emergency nursing. One holds a Certificate IV in Workplace Training and Assessment.

NED8's education team supported the training program. Four members hold post graduate qualifications in emergency nursing and have a high level of knowledge and skills in paediatric emergency nursing. The project team, ED education team and nurse practitioners were involved

in the development and assessment of competencies. It is unclear what educational background or experience they had in program development.

Clinical nurse specialists, nurse practitioner candidates and unit managers became assessors once they had completed the competency assessment. Further consideration should be given to the process and criteria for selecting assessors. Lack of further detail makes it difficult to make an evaluative comment about the appropriateness of staff employed to teach this program. If training in competency assessment has not been provided for program staff this should be explored.

3.2.6 Facilities and resources

In addition to the program learning packages trainees were encouraged to use additional resources to meet their learning needs. If this was essential additional materials should be provided in the learning package. Partnering with a higher education provider may extend resources for future offerings of the ESOP program. Simulation was not utilised in the training program.

3.2.7 Teaching and learning environment

The staff / trainee rapport was reported to be very positive, with training staff described as helpful, approachable, supportive and knowledgeable. One trainee noted that as:

“all staff are your fellow colleagues...it creates a supportive environment”.

A variety of senior ED personnel assisted trainees to integrate theory with practice and conducted competency assessments. This made good use of their expertise and allowed trainees to organise assessments with staff they felt comfortable with.

Self-directed learning was a strategy for addressing various learning styles. For trainees experiencing difficulty with study, self-directed learning may provide flexibility; but it can also be challenging for adult learners who may need support. The project team and nurse practitioners made themselves available to assist trainees and learning packages included detailed explanations, descriptive pictures and diagrams.

The trainees were encouraged to complete course work during quieter times in ED however this busy environment may not be conducive to study. Further consideration should be given to how space, time and support could best be made available for trainees to complete the program. Part-time staff and those rostered to treatment areas where there were fewer assessors may require additional assistance to complete the training pathway. Data identified that completion rates for part-time employees was lower than rates for full-time employees. The practice of ‘double signing’ was implemented as part of the CLD process to provide support for staff and address quality measures ensuring public safety. Trainees were encouraged to evaluate the program and feedback sheets were included in all learning packages.

3.2.8 Assessment methods

Competency assessments were linked to each learning module. This included evaluating knowledge and skills related to respiratory and hydration assessment and management of associated illnesses. Trainees were required to undertake three learning modules with each module and related competency assessments took between 30 to 90 minutes to complete. Model answer sheets were developed for assessors. This was an effective strategy to promote consistency in expectations and assessment practices.

The level of questions and practice is considered low with participants asked to recall theory, locate equipment, discuss, highlight or state information. Examples of assessment exercises include listing factors, providing definitions, answering true/false questions and undertake low level multiple choice questions. Some clinical scenarios were included which required higher order thinking and demonstrated application of knowledge. The time taken to complete

assessments was much longer than anticipated. The trainee makes a self-declaration of achievement and undertakes to maintain their level of knowledge and skill. The form is signed by the assessor. The training framework provides limited opportunities for trainees to demonstrate competency in undertaking assessment procedures including decision making and the competent use of CLD. This and a method for scoring achievement in practice terms is needed to guide assessment expectations and determine the required level of practice. As trainees suggested, having fewer assessors may promote greater consistency in assessment outcomes.

Assessors were encouraged to seek support and guidance from the education team regarding ESOP trainees learning needs and issues related to competence. In addition education for assessors was provided when needed.

Transparent assessment processes and expectation regarding achievement including the number of assessment opportunities should be included in program materials. This is especially important if all staff are expected to be competent in CLD. Where assessment outcomes indicated that further education and training was required this was provided. Nurses did not assume responsibility for implementing CLD until after competencies had been assessed and achieved.

A system for awarding and recording certification in CLD would demonstrate authority to practice at this level and provide a means where recognition by prior learning can be acknowledged. There may be opportunity to use existing learning management systems in place at the hospital.

3.2.9 Modifications to the training program

A process of continual review was implemented to ensure that learning materials and processes were appropriate. Data supplied suggests learning packages were reviewed and additional information added, however the form of these modifications is unclear. Prior to the training program all CLD recommendations by nurses had to be countersigned by an assistant unit manager, nurse practitioner or clinical nurse specialist. This policy was revised and CLD recommendations can now be countersigned by nurses who have completed the ESOP training program.

3.2.10 Training program sustainability

The CLD procedure has been embedded in the ED and will be sustained. The training program will be maintained within the existing infrastructure of the ED and hospital. Training resources, including the learning packages and competency documents, developed during the project will be available in an online format for future use. This will also be the case for the CLD forms. The organisational commitment to this initiative is evident by additional diagnoses CLD pathways being developed for use in the ED.

3.2.11 Training program capacity and impact

While there is limited evidence to support claims that the length of stay improved for patients managed on the CLD pathways, the NED8 found high levels of parent and carer satisfaction with the model. Further detail is provided in Section 4.

Staff believe the program has had a positive impact on the flow of patients through the ED. Medical and nursing practitioners within the ED confirmed that while they were still required on occasion to review patients appropriate for CLD, they had increased time to focus on more acute patients.

3.2.12 Budget and expenditure

The initial project budget allocated by HWA was insufficient for the scale of implementation. Additional funds were approved by HWA and all funds allocated for training were expended. NED8 estimated that the cost of development of the training program and education of the 123

nurses in the ED at approximately \$74,000. This did not include the 'in-kind' contribution provided by other medical, nursing and education personnel throughout the implementation period.

3.2.13 Summary and conclusions

Nurse discharge is recognised as an expanded scope of practice necessitating further education. The training pathway has been well constructed to meet this need for the NED8. While this program was designed to meet the specific context of this hospital the concept provides a good example of an ESOP initiative with capacity for replication at other sites. Completing the CLD training for 123 nurses and embedding the practice change within the ED in the project implementation period was a significant achievement and should be commended.

The strengths of the program include the:

- articulation of a well-structured, competency based learning pathway that specifies training requirements to meet the ESOP
- inclusion of ongoing quality measures employed during the implementation process e.g. 'double signing' off of CLD process to ensure public safety
- development of education and training materials linked to local clinical practice guidelines
- production of high quality training materials that were easy to follow
- planned and well executed program delivery
- establishment of realistic expectations for completion times and planned strategies to include new staff
- promotion of consistent expectations of the required level of competency e.g. model answer sheets for assessors
- utilisation of a steering committee to guide project decision-making
- provision of a supportive learning environment
- development of staff and trainee rapport
- identification of the potential to replicate the program

Areas for development were identified from the training evaluation and these are summarised in Table 9.

Table 9 Opportunities for training program development

Training component	Opportunities for improvement
Program content and structure	Address the level of content and scope of the program so that this is congruent with an ESOP role
	Articulate learning outcomes for each CLD training package
	Develop further the competency assessment framework and criteria
	Include more information and guidance regarding assessment requirements
	Develop online learning resources
Program delivery	Include simulation in the training program
	Use fewer assessors to promote greater consistency and enhance validity and reliability of assessment outcomes
	Develop criteria and processes for the award of RPL
	Extend IT capability to identify and track patients managed by CLD
	Implement assessor training (specifically competency assessment)
	Explore funded study and work release models to facilitate completion
Program scalability	Create space, time and support for trainees to complete the program within the ED
	Develop credentialing processes / protocols
	Formalise the ESOP training program by developing a system for issuing transcripts / certification
	Partner with a higher education provider to extend resources and address credentialing for the ESOP training program

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 nurses both within and outside the ESOP nurse 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 nursing 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 nurses 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.

4.2 Activities of ESOP nurses

To provide a context for understanding the impacts of the ESOP nursing models, the number of cases seen at each site is presented below. This information has been obtained from administrative data collected over the course of the sub-project by sites and submitted to the national evaluators for compilation, cleaning and analysis. Information regarding the methods of data collection and analysis is provided in Appendix 2.

There were a total of 460,516 presentations across all of the sites during the implementation period (Table 10 implementation periods varied across sites, see Section 4.5). The ESOP nurses treated a total of 11,615 cases, representing 2.5% of all ED presentations across all sites during this period. The largest number of ESOP cases was seen at NED4, with 4,626 patients or 7.2% of that site’s total ED presentations. The next highest volumes of ESOP cases were recorded at NED7 and NED1, with 4.6% and 2.5% respectively of all ED presentations at these sites seen by ESOP nurses. At NED2, NED3 and NED5 the ESOP nurses saw less than 1% of their site’s total ED presentations.

Table 10 Total ED presentations and NED presentations by site – implementation period

Site	Total ED presentations	No. of months	Total ED presentations per month	Total ESOP-NED presentations		ESOP-NED presentations per month
				#	% of total presentations	
NED1	95,181	16	5,948.8	2,359	2.5	147.4
NED2	44,321	9	4,924.6	188	0.4	18.8 ¹
NED3	85,624	10	8,562.4	306	0.4	30.6
NED4	64,188	15.5	4,141.2	4,626	7.2	298.5
NED5	24,348	6	4,058.0	57	0.2	9.5
NED6	10,039	15	669.3	106	1.1	7.1
NED7	62,181	11	5,652.8	2,830	4.6	257.3
NED8	74,634	11	6,784.9	1,143	1.5	103.9
Total	460,516	93.5	4,925.3	11,615	2.5	122.9

¹ ESOP data was provided for 10 months, therefore the number ESOP-NED presentations per month is 188/10.

² Includes data from two hospitals in NED3 services.

³ NED7: Volume of ESOP activity is questionable as data quality checks were not possible due to required data items not provided.

4.3 Impact on consumers

The evaluation framework included one KPI for consumer impacts. High levels of consumer satisfaction and experiences with ESOP nurse services (KPI 1.6) 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). Our 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.

Three sites – NED4, NED6 and NED2 – used the complete survey as provided in the *Compendium of Data Requirements and Evaluation Tools* with no changes or only minor modifications to suit local contexts (Thompson et al., 2012b). NED3 used all questions except item 19. However, the data from NED3 were provided to the national evaluation team in aggregated form, which limited the types of analyses in which it could be included. In the analyses reported below, NED3 has been excluded unless stated otherwise.

Neither NED6 nor NED7 sites included item 16 in their versions of the survey. NED7 also omitted items 4 and 7 and changed the wording of item 11 to read, "The nurse provided education in a clear, concise manner". The most substantial changes were made by the NED8 site. Of the 16 experience items, NED8 only used Q5 and Q6. The three satisfaction items – time to see the nurse, care received from the nurse, and the overall ED experience – were also included, enabling us to combine and compare these data. The other questions in the NED8 survey were specifically designed for the local context and model of care.

NED1 used a custom-designed, nine-item survey which covered some similar content to the 'Patient experience and satisfaction survey' but had a different response format. It was therefore impossible to incorporate those data or compare them with data from the other NED sites. A summary of the patient survey results from NED1 is provided below; see the site's final report for further details. In the analyses reported below, results from "all sites" exclude NED1.

Surveys took place in late 2013. The method of administering the survey varied from site to site. The three mental health sites conducted interviews with patients. The two paediatric sites issued paper surveys to family members or carers before the patient was discharged. When completed, these were placed in secure containers in the ED or, in a few cases, returned by mail. NED4 and NED6 issued paper surveys to patients at discharge. The other rural site, NED5, interviewed patients by telephone.

Support was provided by the national evaluation team, including a draft participant information sheet, guidelines for administering the survey, an online version of the survey and spreadsheets for data entry by those who preferred to use a paper version. All sites except NED6 had ethics approval for the evaluation. Response rates were: NED1, 36%; NED2, 88%; NED3, 19%; NED4, not reported; NED5, 32%; NED6, 92%; NED7, 63%; NED8, not reported.

A total of 422 surveys were returned with signed consent forms. The average age for the "fourth door", rural and mental health sites was 39.2 years (SD 20.3 years, range 1 to 94) and for the paediatric sites was 3.9 years (SD 3.4 years, range newborn to 17). The gender distribution did not vary significantly from site to site, and overall 41.5% of patients were female. For the paediatric sites, 92% of surveys were completed by parents or carers. All responses from the mental health sites, 92% from NED4 and 50% from the rural sites were from patients. Sixty-eight percent of patients at NED2 had previously presented to ED for a similar problem. This was a significantly higher proportion than other sites (except NED4, which ran an ED review clinic), reflecting the chronic nature of mental health issues.

Data screening removed seven cases where it was apparent that errors had been made in completing the surveys, leaving 411 for analysis (395 for analyses excluding NED3, which had 27 responses, 6.4%). The numbers (and valid percentages) of respondents from each site were: NED1, 0; NED2, 22 (5.2%); NED4, 73 (17.3%); NED5, 10 (2.4%); NED6, 24 (5.7%); NED7, 44 (10.4%); NED8, 222 (52.6%). A further 14 patients were interviewed by the NED1 site using that site's own tool. Data checking ensured that NED8 – which provided more than half the responses – did not unduly influence the overall findings.

Results

Figure 5 shows responses to each of the first 16 items on the survey for all sites (n ranged from 103 to 387). Patient reports of their experiences were highly positive. More than 75% of respondents strongly agreed that the nurse listened carefully, understood what was wrong and their concerns and believed their problems were real. More than 80% strongly agreed that the nurse seemed comfortable dealing with their problems. The remaining 11 items elicited strong agreement from more than 60% of respondents. Comparing across all the items, patients were a little less positive about the information provided on the cause of the problem and how long it would take to recover. More than 10% disagreed or strongly disagreed with these statements, and there were similar levels of disagreement with the statements regarding the thoroughness of the examination, and whether sufficient tests were ordered.

More than two thirds of respondents (275; 67.0%) were very satisfied with the time it took to be seen by the nurse, and three quarters (310; 76.5%) were very satisfied with the experience of being cared for by the nurse. Responses to the final question ranged from 0 (5, 1.3%) to 10 (183, 47.8%). Most respondents (272; 71.01%) rated their overall experience of the ED as 9 or 10 out of a possible 10. Twenty (2.3%) respondents were dissatisfied with their overall experience, giving it a rating of 5/10 or lower.

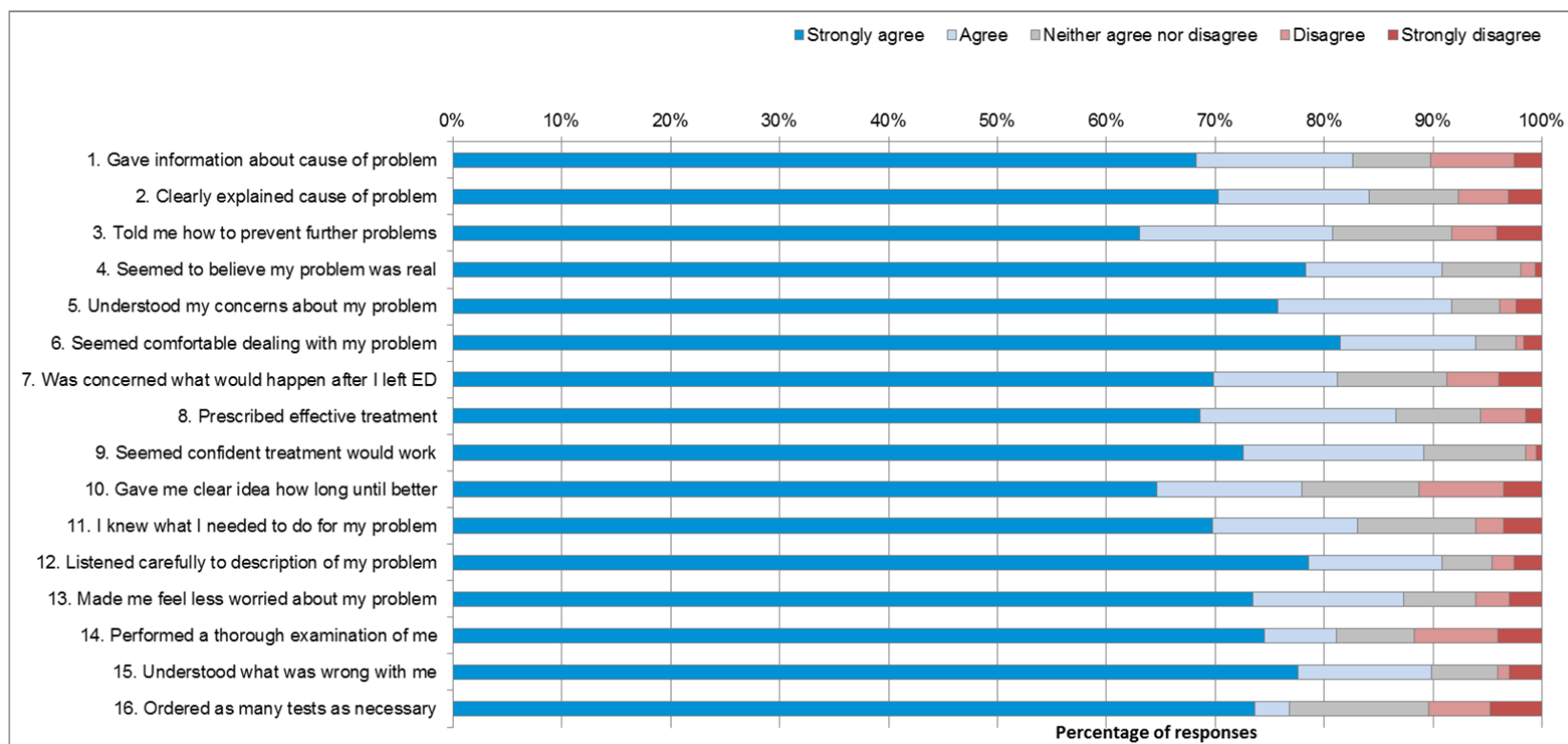


Figure 5 Responses to NED patient experiences and satisfaction survey

To identify the key factors that most strongly predicted overall satisfaction with the ED experience, variables were entered into a multiple regression analysis. (NED3 was not included.) Because overall satisfaction varied according to gender, this was controlled for in the first step, but was not significant ($\beta = -.10$, $p = .318$). Satisfaction with the time to see the nurse and with the nursing care received (items 17 and 18) were entered in the second step. Satisfaction with time to see the nurse was a significant predictor, $\beta = .59$, $p = .001$. The 16 experience items were entered in the third step. The final equation explained 85% of the variance in overall satisfaction with the ED experience, F change = 6.70 ($df = 16, 79$), $p < .001$. Satisfaction with time to be seen by the nurse was no longer a significant predictor once the experience items were entered. Instead, the strongest predictors of overall satisfaction were experiences relating to emotional support. Patients were more satisfied if they reported that the nurse understood their concerns (item 5, $\beta = .55$, $p < .01$) and made them feel less worried (item 13, $\beta = .86$, $p < .001$). The effectiveness of the treatment (item 8, $\beta = .47$, $p < .01$) and (marginally) the thoroughness of the examination (item 14, $\beta = .30$, $p = .058$) were other significant contributors. Two items were negatively related to overall satisfaction: listening carefully to the patient (item 12, $\beta = -.39$, $p < .01$) and providing information about what to do for the problem (item 11, $\beta = -.44$, $p < .01$).

Factors that might affect patients' experiences include the type of project and characteristics of the site itself. Kruskal-Wallis tests were used to check for differences according to type and site. NED3 could not be included in these analyses.

Responses to all the patient experience items and the three satisfaction items differed significantly between sites and between types of projects (all p values $< .001$). Examination of the mean ranks showed that the mental health type received substantially lower ratings for patient experience and satisfaction than the other three types of sites. Patients seen at NED2 (the only mental health site in the analysis) gave substantially lower experience and satisfaction ratings than patients from the other sites.

One likely explanation for this finding is that the type of patients seen at NED2 differed from those seen at other sites. The nature of mental health patients means they present to ED with a chronic condition that needs to be managed rather than resolved in that setting. The task for ED staff is therefore somewhat different from dealing with injuries, infections and other acute presentations that may be more responsive to emergency care. Most of the respondents from NED2 were interviewed while they were still inpatients in the hospital. This can be contrasted with a patient who attends the ED with an illness or injury and leaves within a few hours with the prospect of rapid and/or full recovery. As indicated above, mental health patients are more likely to have repeated presentations to ED for similar issues over long periods of time and may therefore have lower expectations of the timeliness and effectiveness of care they will receive. Thus, mental health patients may be more inclined to be critical of ED services. Further, their ability to understand and make judgements about improvements in care may be impaired due to their mental state. The final report for NED3 (another mental health site) aptly sums up these issues:

"The consumer has presented to the ED due to a need for a mental health assessment – on occasion with police presence or under duress ... The consumer's impressions, perceptions and retention of what was said and done in relation to the care being provided by the mental health nurse practitioner may have been affected by their mental state at the time. This may be reflected in the data obtained in relation to the consumer's experience of care." (NED3 final report)

Exploratory analyses comparing the NED3 and NED2 data established that, for most items, there was no significant difference in patient ratings. (Patients at NED3 had lower ratings for two experience items, and higher ratings for one satisfaction item; all other items were similar.) In addition, qualitative data from the telephone interviews at NED3 indicated that many patients did not fully understand the expanded practice role of the mental health nurses. The project

team recommended development of an information sheet for patients, clarifying the role and explaining assessment and other processes, to demystify the new scope of practice and raise awareness in the community. These findings provided support for our view that mental health patients in general, rather than NED2 patients in particular, were inclined to rate their ED experiences and satisfaction less positively than patients with other kinds of ED presentations.

Further support is available from the NED1 final report, which presented data from their 9-item survey as well as open comments by patients. Almost 85% of the 14 respondents agreed “to a considerable extent” with the statements that the specialist mental health nurse was competent and professional, and they would recommend making the service available in other ED settings. However, only 31% and 38% respectively agreed “to a considerable extent” that the service provided by the mental health nurse was prompt and streamlined, and met their health needs. Overall, 69% were satisfied “to a considerable extent” with the care provided.

This variability in responding was echoed in the open comments. While most were positive, some highlighted the “repetitive and lengthy nature of assessment and history taking which was perceived as excessive and unnecessary under the circumstances” (p. 30). Patients had “difficulty in answering these types questions when presenting to ED in a distressed state” (p. 31). One patient acknowledged that his responses may have been affected by the fact that he was confused and unwell. Logistical issues such as lack of beds for admission sometimes led to lengthy waits, with consequent impacts on experience and satisfaction ratings.

Positive comments about the NED1 service highlighted the mental health nurses’ patience, willingness to listen and evident understanding of the patient’s problems. Patients valued having ED procedures and processes explained to them, which made them feel calmer and reassured. They also acknowledged mental health nurses’ knowledge of services specific to their needs.

Conclusions

In general, respondents were highly positive about their experiences of care under the NED sub-program. The overwhelming majority reported that the nurses seemed comfortable dealing with their problems, listened carefully and provided emotional support. A small group of respondents would have preferred a more thorough examination, more tests and more information about the cause of the problem and the expected time to recovery, highlighting some areas for possible improvement in the future. Three-quarters of respondents were very satisfied with the care they received, and two-thirds were very satisfied with the waiting time to be seen by the nurse. Overall satisfaction was also very high, with seven in ten patients rating their ED experience as very good (9/10 or 10/10). The quality of emotional support and the effectiveness of the treatment provided by ED nurses were key predictors of overall satisfaction with the ED experience.

Patient experience and satisfaction ratings were significantly lower at NED2, the only mental health project included in the analysis, compared with other sites. Qualitative and quantitative data from the two other mental health sites supported the proposition that mental health patients are likely to be less satisfied due to the nature of their problems, which tend to be chronic, require repeated presentations and may result in high levels of distress and confusion at the time of the ED visit.

4.4 Impact on providers

Three KPIs in the Evaluation Framework addressed the impact on providers. The turnover rate for ESOP nurses (KPI 1.3) was used as an indicator, along with results from a survey and semi-structured interviews that explored their experiences and satisfaction with the role in greater depth. Attitudes of other stakeholders, particularly staff working alongside the ESOP nurses, were measured using a staff survey tool developed by the national evaluation team (KPI 1.7). In addition, semi-structured interviews were conducted in the later stages of the program to assess

perceptions of the impacts of the ESOP nurse role on key stakeholders including medical and nursing staff, other allied health practitioners and managers in the ED (KPI 1.8).

4.4.1 Turnover and retention of ESOP nurses

Self-reports from the nurses who took part in the sub-project indicate high levels of retention, which is a prerequisite for the sustainability of the ESOP models. Almost 90% of respondents (excluding NED8) said they were planning to stay on in the expanded role for the foreseeable future, and about 7% strongly disagreed. Numbers at NED8 were similar: about 86% of respondents said they were planning to stay on, and about 6% disagreed or strongly disagreed that they would remain in the role. All sites did the survey, but response rates were low at some sites. This has the potential to bias the findings, because those who were less satisfied may have been less likely to complete the survey and also to stay on in the roles. Other findings from the survey are reported below.

4.4.2 ESOP nurses' 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.

Survey of ESOP personnel

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 results for the NED sites excluding NED8. NED8 results are displayed in Table 12.

Table 11 Descriptive statistics for ESOP personnel survey items (excluding NED8)

Item	Full sample		
	N	Mean (SD)	Range
1. Staff have a good understanding of my new role & functions	29	3.86 (0.95)	1-5
2. Other key stakeholders have a good understanding of my new role & functions	29	3.62 (0.86)	1-5
3. My professional skills & expertise are acknowledged by other staff	29	4.07 (1.16)	1-5
4. Staff have a good understanding of how my skills & expertise differ from other nurses	29	3.69 (1.00)	1-5
5. Staff have a good understanding of the educational preparation required	29	3.41 (0.95)	1-5
6. Staff acknowledge that I have the skills & knowledge to provide appropriate care	28	3.86 (1.04)	1-5
7. Staff acknowledge that I have the skills & knowledge to provide education & information	29	3.79 (1.15)	1-5
8. I feel confident that I have the skills & knowledge to provide appropriate care	29	4.24 (0.99)	1-5
9. I feel confident that I have the skills & knowledge to provide education & information	29	4.31 (0.93)	1-5
10. Changes to practices, protocols & policies helped me implement my expanded role	28	4.07 (0.81)	2-5
11. Changes to attitudes & beliefs in my work place helped me implement my expanded role	29	3.62 (0.98)	2-5
12. I feel confident dealing with patients in my expanded role	29	4.24 (0.91)	1-5
13. Patients are comfortable that I have the skills & expertise to provide appropriate care	29	4.14 (0.83)	2-5
14. My expanded role makes the service where I work more effective	29	4.03 (1.18)	1-5
15. My expanded role improves access to emergency care	29	3.93 (1.16)	1-5
16. My expanded role improves quality of care for specific patient groups	29	4.10 (1.14)	1-5
17. I am comfortable approaching other staff for advice regarding patient management	29	4.31 (1.07)	1-5
18. Appropriate personnel are available to supervise / mentor me whenever needed	29	3.86 (1.13)	1-5
19. I am satisfied with my expanded role & feel it has enhanced my career	29	4.24 (0.91)	1-5
20. I am planning to stay on in my expanded role for the foreseeable future	28	4.21 (1.07)	1-5

Table 12 Descriptive statistics for ESOP personnel survey items (NED8 only)

Item	Full sample		
	N	Mean (SD)	Range
1. Staff have a good understanding of my new role & functions	65	4.11 (0.79)	1-5
2. Other key stakeholders have a good understanding of my new role & functions	65	3.38 (0.76)	1-5
3. My professional skills & expertise are acknowledged by other staff	65	3.98 (1.01)	1-5
4. Staff have a good understanding of how my skills & expertise differ from other nurses	65	3.75 (0.94)	2-5
5. Staff have a good understanding of the educational preparation required	65	3.69 (0.97)	1-5
6. Staff acknowledge that I have the skills & knowledge to provide appropriate care	64	4.02 (0.86)	1-5
7. Staff acknowledge that I have the skills & knowledge to provide education & information	65	4.17 (0.80)	1-5
8. I feel confident that I have the skills & knowledge to provide appropriate care	65	4.54 (0.87)	1-5
9. I feel confident that I have the skills & knowledge to provide education & information	64	4.50 (0.87)	1-5
10. Changes to practices, protocols & policies helped me implement my expanded role	65	4.06 (0.95)	1-5
11. Changes to attitudes & beliefs in my work place helped me implement my expanded role	65	3.98 (0.94)	1-5
12. I feel confident dealing with patients in my expanded role	65	4.51 (0.92)	1-5
13. Patients are comfortable that I have the skills & expertise to provide appropriate care	65	4.34 (0.83)	1-5
14. My expanded role makes the service where I work more effective	65	4.58 (0.90)	1-5
15. My expanded role improves access to emergency care	65	4.54 (0.90)	1-5
16. My expanded role improves quality of care for specific patient groups	64	4.50 (0.93)	1-5
17. I am comfortable approaching other staff for advice regarding patient management	65	4.68 (0.90)	1-5
18. Appropriate personnel are available to supervise / mentor me whenever needed	65	4.18 (0.92)	1-5
19. I am satisfied with my expanded role & feel it has enhanced my career	65	4.12 (1.02)	1-5
20. I am planning to stay on in my expanded role for the foreseeable future	65	4.23 (0.95)	1-5

There was a response rate of 61% (94 out of 154) over all NED sites. NED8 achieved a 57% response rate (65 out of 114) and the remaining NED sites achieved a 72.5% response rate (29 out of 40).

As 65 of the total 94 respondents (69%) were from one project site (NED8), and the remaining 29 respondents were spread across seven projects sites, the results are reported by NED sites (excluding NED8) combined and NED8 separately.

Figure 6 shows responses to each of the 20 survey items for the sites excluding NED8. There were 28 or 29 responses for each item ('not applicable' responses have been excluded from analyses). Figure 7 shows responses from the nurses at NED8 (64-65 responses for each item). It can be seen that responses were very similar, with slightly lower levels of disagreement for the NED8 site compared to the other sites.

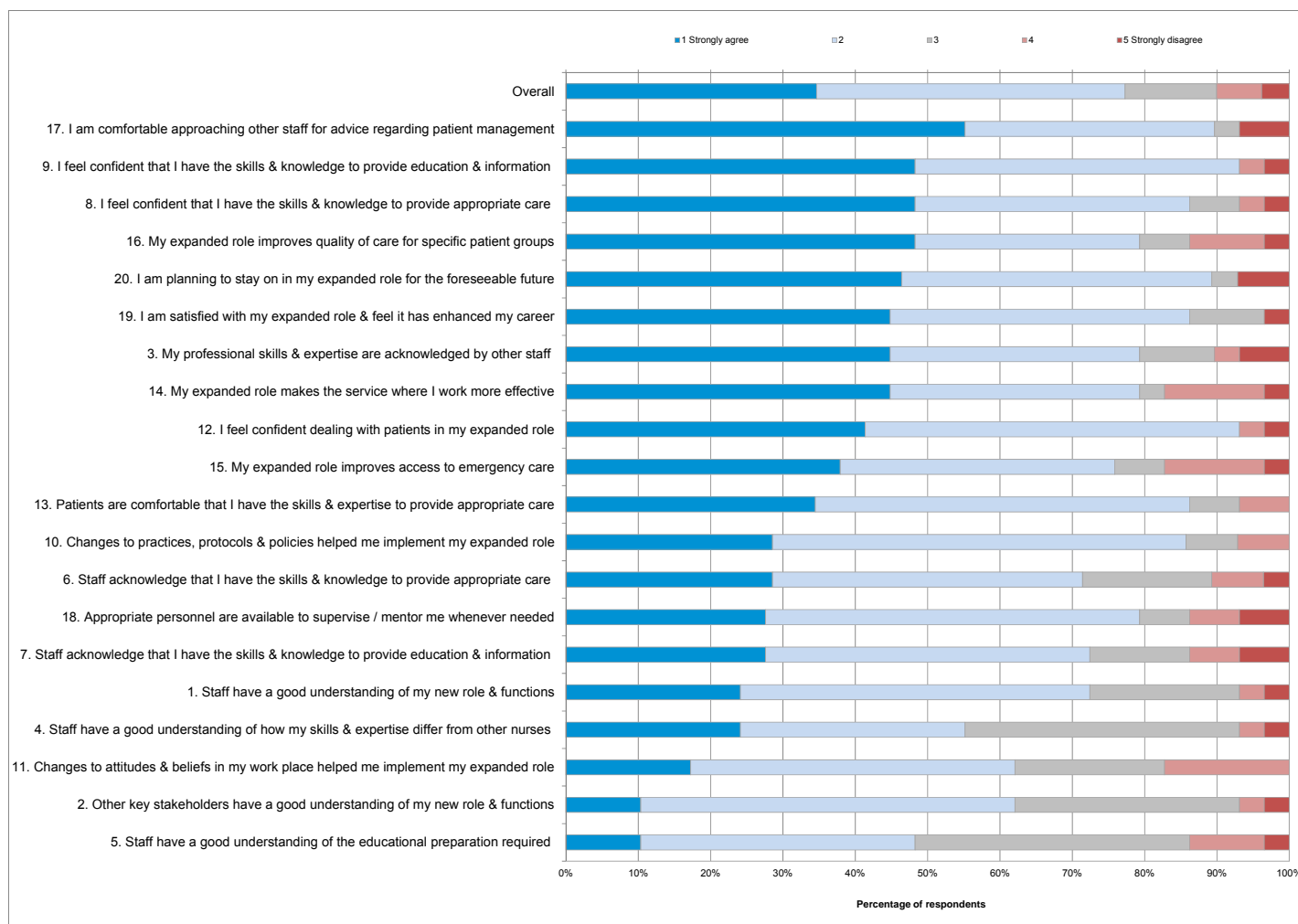


Figure 6 Experience of ESOP nurses (n = 29, sites = 7, excluding NED8)

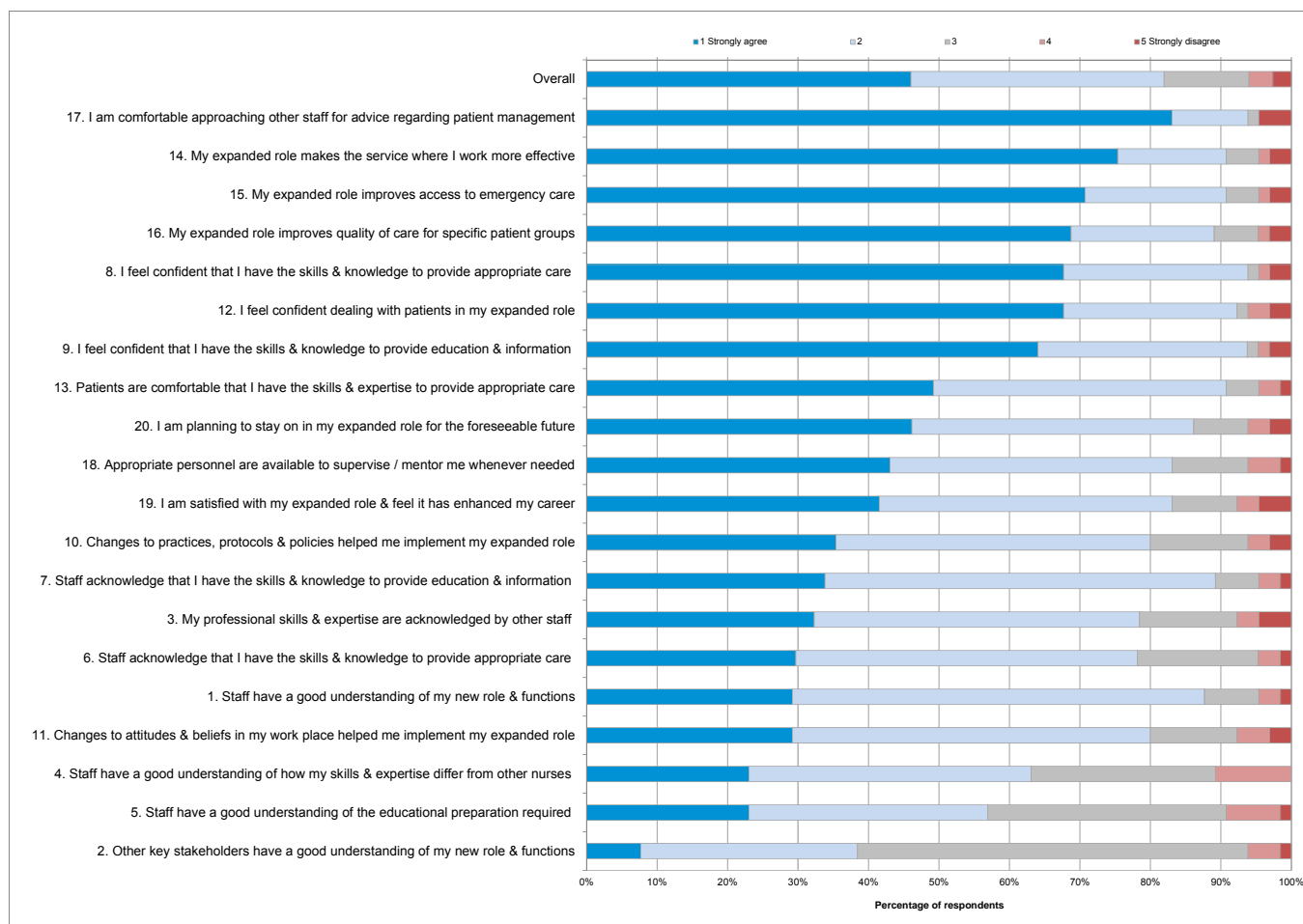


Figure 7 Experience of ESOP nurses (n = 65, NED8 only)

For all sites excluding NED8, most ESOP nurses were positive about their experiences of the role. A high level of agreement with the majority of statements from respondents was evident, although some disagreement was also apparent for each item, indicating experiences varied among individuals.

Respondents most strongly agreed with items that related to being comfortable approaching other staff for advice regarding patient management and confidence in their own skills and knowledge (e.g. to provide appropriate care, education and information). Respondents were also in strong agreement that their ESOP role improved quality of care for specific patient groups.

Items covering aspects such as understanding of the ESOP role and recognition of the ESOP nurses' skills and expertise tended to have the highest levels of disagreement and uncertainty. Over a third of respondents disagreed or were unsure that changes to attitudes and beliefs in the workplace had helped them implement their new roles. Less than half the respondents felt that other staff had a good understanding of the educational preparation required to undertake the role (item 5, mean = 3.69).

For NED8, responses were very similar to those for the other sites. NED8 respondents most strongly agreed with being comfortable approaching other staff for advice regarding patient management (item 17, mean = 4.68). The next strongest agreement among NED8 respondents was that their expanded role makes the service more effective (item 14, mean = 4.58) and improves access to emergency care (item 15, mean = 4.54). Confidence in their own skills and knowledge (e.g. to provide appropriate care, education and information) and improved quality of care for specific patient groups were also rated highly by NED8 respondents, as was the case for other NED sites. The strongest disagreement was with statements about the understanding and acknowledgement of other staff about the role and attitudes and beliefs in the workplace. This followed a very similar pattern to that evident in the results for other NED sites.

Nine respondents, including two from NED8, made additional comments. Four respondents were unreservedly positive, remarking on increased levels of confidence, satisfaction utilising new skills, the rewarding nature of the role and perceived benefits such as improved patient experiences, streamlining patient care and freeing doctors to focus on other patients. Other topics raised by respondents included the need for further support and mentoring to achieve confidence with some skills, and a lack of acknowledgement by other staff of the ESOP nurses' improved skills and knowledge.

Semi-structured interviews with ESOP nurses

The national evaluators interviewed 23 ESOP nurses at the close of the program, asking a range of questions to elicit their experiences of the role and their opinions regarding the models of care. Interviewees described a common set of factors they believed had contributed to ensuring safe and high quality care for patients. First and foremost was the selection of very experienced nurses and the provision of training to support the role, along with ongoing clinical supervision and case review processes. A thorough knowledge of assessment procedures allowed nurses to be confident they could detect and 'red flag' cases that were beyond their scope. This, combined with a risk-averse culture in the ED, enabled them to feel comfortable in deciding when a patient was out of scope. It was important for these nurses to have access to advice and to collaboratively review cases with nursing and medical colleagues.

"So there's kind of – clinically in the work that I do, so the way of assessing people if you like is sort of fairly standard in a sense. I mean individuals sort of act a little bit differently as we all do, but kind of a way that you do comprehensive assessments is sort of fairly standard. You know, involving in my role particularly, we are working with families, carers and other services, and making sure you sort of include that in the loop, that's particularly important... So the quality of assessment and risk assessment we do in [name deleted] is really – a fairly big part of the job. In terms of how then that is reviewed, is that the consultants...will review the clinical cases." (ESOP nurse)

"If you have the right people doing – in place, in that model of care...who are able to recognise issues that are beyond their scope, and involve further other medical staff you're not going to have any problems with patient safety." (ESOP nurse)

Working within the clinical guidelines or the specified scope of practice was another essential safety net that ESOP nurses highlighted in their comments. All were highly experienced and the expanded scope of practice built on their strong pre-existing skills and knowledge. The role required confidence and certain personal characteristics and attitudes that ESOP nurses believed would promote safe practice.

"...we have to do a certain amount of supervised practice before we can do it on our own. There are certainly guidelines in place. I mean, it's common sense as well if someone comes in and their arm is sticking out, I'm not just going to plaster it and send them home." (ESOP nurse)

"It goes back to how do you know the medication I gave you was the right one ... Because we are trained, we are professionals; the care is of the standard it should be. We have been assessed to say yes we're competent, and we aren't doing, what I would say is brain surgery. We are doing, what I would call first line basic interventions...We aren't making clinical diagnoses...you have the fact that we are registered, we are on a national system, we are professionals..." (ESOP nurse)

"Well, that's why I love the pathways. The clinical governance on them is very tight... and I'm a great believer in documentation." (ESOP nurse)

"So the safety element of it is that you work within your capacity. I mean, I'm not going to give medication if I don't feel comfortable doing that. I will consult, and I'm pretty conservative when it comes to that because it's new and it's like, I'm not going to be going in there willy nilly giving out medication. Direct admission, I still run it past a doctor of course. You can't just go in and be strong about that. But the safety of patients and practice from the nurse and the patient, that really hasn't changed. To me, they still belong to the ED. The safety of any kind of situation is within that procedure and protocol for that particular department. So, I mean, I don't go over boundaries. I stick within my constraints of what I think is okay. And my safety and the patient's safety is still at the very top." (ESOP nurse)

Patient education was another element in the system. ESOP nurses emphasised the importance of communicating clearly with patients (and, for the paediatric sites, carers) about their role, the extent of their scope of practice and the next steps in resolving the patients' health issues. Often this involved follow-up visits to a GP or a return to the ED for review.

"So, say it was a suturing, so we would always want to have the patient follow up with a doctor after doing the suturing, and explain signs of infection and all those sorts of things, and just really educate them on that, and getting them to follow up with the doctor. We can't order Tetanus, so if they need a Tetanus shot and things like that; we need to make sure that's followed up with them. For a plaster, we always get them to come back the next day for a plaster check to make sure that their hand's not falling off, or whatever." (ESOP nurse)

"Well, if – if someone say needed a back slab set I would probably ask them if they were happy if I put this back slab on, the doctor's – I've spoken to the doctor, he's told me what he wants. I have the training and experience to put it on." (ESOP nurse)

"I'm giving them more education, more support to care for their child. So then therefore it should be decreasing their chance of re-admission or re-presentation. But, look, there are

always risks, for me personally, I won't send the patient home if I'm not feeling a hundred per cent. I would get a doctor to review, there is nothing wrong with that..." (ESOP nurse)

One of the major benefits that ESOP nurses identified was an improvement in the consistency of care including referral and follow-up. Interviewees were also asked about possible consequences of the model for the efficiency of the ED. One negative comment was made, about the difficulty of balancing the ESOP role with other ED tasks. When the ESOP nurse was occupied with tasks such as suturing, the remaining nurses would have to manage other patients in the ED. This was only problematic for small services in rural locations.

"So, it perhaps that can put a little bit more pressure on you if the place is busy because suturing sometimes can take you an hour, depending upon how big it is, where it is, that sort of thing. I mean you probably wouldn't do anything sort of bigger than that, but if it's in the scalp and it can be quite difficult sometimes. It can take a little while, so you are reliant on your co-worker to actually get all the other work done." (ESOP nurse)

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 a survey (ET8c) and key stakeholder interviews (ET12).

All NED sites were given a 20-item version of the tool (ET 8c), adapted by the national evaluation team from a survey 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, $\alpha = 0.90$), Contribution (9 items, $\alpha = 0.94$) and Medication (2 items, $\alpha = 0.78$). These were very similar to the sub-scales found in the original study, which evaluated staff attitudes to 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".

The survey was modified extensively from site to site due to variation in the settings and models of care. Details of tool development and modifications are available on request.

Data were collected in late 2013 and early 2014. All sites except NED6 received ethics approval for the evaluation. 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. Most sites used an online tool, Survey Monkey, emailing invitations and links to staff, supplemented with paper surveys for those with slow or no internet access. Response rates were: NED1, not reported; NED2, 15%; NED3, not reported; NED4, 12%; NED5, approximately 10%; NED6, 69%; NED7, 44%; NED8, 32%. Variations in response rates were due to distribution strategies which were more targeted at some sites than others.

A total of 182 non-ESOP staff responded to the survey. Half the respondents (91, 50.0%) were registered nurses and a further eight identified themselves as nurse practitioners or enrolled nurses. Sixty-four responses (35.2%) were received from medical staff, two (1.1%) from allied health staff and 10 (5.5%) respondents described themselves as "non-clinical", "manager" or "other". Five (2.7%) from NED3 described themselves as "other – mental health leadership". Two respondents left this question unanswered.

Numbers of respondents from each site were as follows: NED1, 25 (13.6%); NED2, 31 (16.8%); NED3, 27 (14.7%); NED4, 22 (12.0%); NED5, 15 (8.2%); NED6, 18 (9.8%); NED7, 23 (12.5%); NED8, 21 (11.4%).

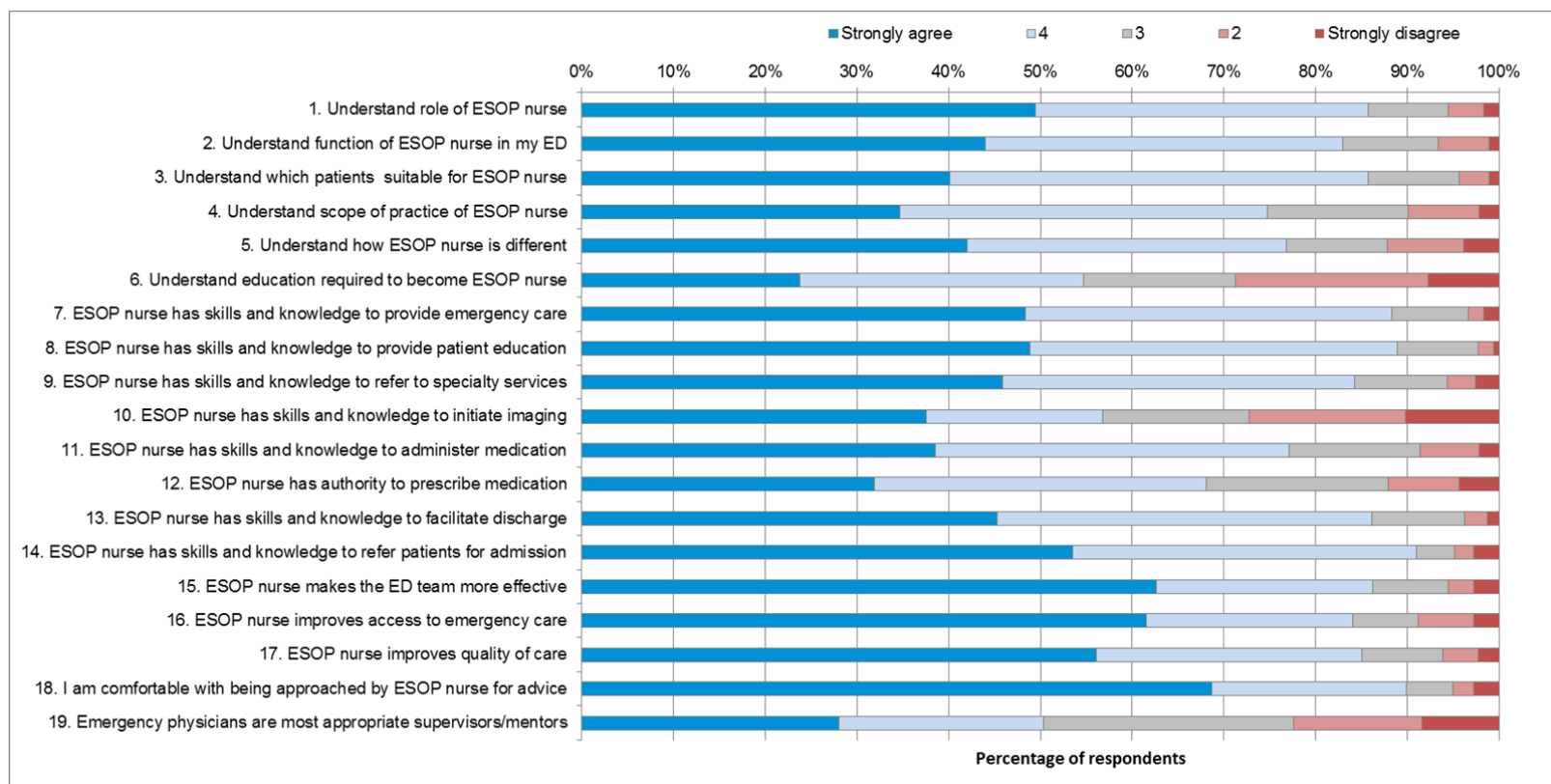


Figure 8 Responses to NED staff survey

Results

Figure 8 shows responses to each of the first 19 items on the survey. This figure should be interpreted with caution, bearing in mind that not all sites asked all questions. Overall, understanding and acceptance of the primary contact or expanded scope of practice nurse role in ED was very high among other staff members. More than 80% of respondents agreed or strongly agreed with the statement for 12 of the 19 items. Items with the most ambivalence and/or disagreement are listed below:

- (4) I have a good understanding of the scope of practice of the ESOP nurse
- (5) I have a good understanding of how the ESOP nurse is different to other nurses in the ED
- (6) I have a good understanding of the educational preparation required to become an ESOP nurse
- (10) The ESOP nurse has the skills and knowledge to initiate imaging
- (11) The ESOP nurse has the skills and knowledge to prescribe medication from standing orders/a limited formulary of drugs
- (12) The ESOP nurse has the authority to prescribe medication from standing orders/a limited formulary of drugs
- (19) Emergency physicians are the most appropriate personnel to supervise and/or mentor the ESOP nurse

About a quarter of those surveyed indicated they did not have a good understanding of the ESOP nurses' scope of practice or how these nurses were different from others in the ED, and almost half did not understand the educational preparation required to become an ESOP nurse. This suggests a need for more comprehensive communication and education strategies to support change management. The relatively high levels of ambiguity and disagreement for items about imaging and medication may reflect variation between sites both in the models of care and the exact wording of the question. Nevertheless, more than half agreed or strongly agreed that the ESOP nurse was capable of initiating diagnostic imaging and more than three-quarters agreed or strongly agreed that the ESOP nurse was capable of administering medication from a limited formulary or standing orders. Only around half agreed or strongly agreed that emergency physicians were the most appropriate supervisors and mentors for ESOP nurses, which again may reflect variation in the models of care.

There was overwhelming endorsement of the benefits of the ESOP role. More than half the respondents strongly agreed that the ESOP nurse role benefitted the ED by making the team more effective and improving access and quality of care (items 15-17). Nine out of ten respondents agreed or strongly agreed that they felt comfortable being approached by the ESOP nurse for advice regarding patient management.

Independent samples Kruskal-Wallis tests were used to check for differences according to the type of project. Participants' understanding of the ESOP nurse role and function, and their beliefs about the contributions of the ESOP nurse in ED, did not vary according to whether the project focused on mental health, rural, paediatric patients or the fourth door model. However, there were differences between types of projects in responses to questions about medication, imaging and supervision.

The mean ranks showed that respondents who worked with ESOP nurses in the rural models were less positive about their skills and authority to prescribe medication than those working with ESOP nurses in other types of projects. This finding should be interpreted with caution, as the sample for the rural model was small and represented only one site (the other site excluded this question). Staff who observed ESOP mental health nurses were less positive about their skills and knowledge regarding diagnostic imaging than were staff at the other types of projects (both rural sites excluded this question). Emergency physicians were seen as less suitable supervisors/mentors for mental health nurses compared with nurses working in other ESOP models.

A Kruskal-Wallis test was used to check for differences according to respondents' professional affiliations. To assist interpretation, specific job roles were allocated to four categories: nursing, medical, allied health and other. Five respondents who described themselves as "other – mental health leadership" were excluded from this analysis. Table 13 shows that ED nurses and staff in non-clinical roles had greater understanding of the ESOP nurse role and function than medical and allied health staff. There were no other differences according to professional affiliation.

Table 13 Responses by professional group

Sub-scale or item	Profession	N	Mean (SD)	Mean rank	Chi-Square
Contribution	All	180	4.35 (0.77)		6.41
	Nursing	99		92.66	
	Medical	64		86.25	
	Allied Health	2		20.25	
	Other	10		66.65	
Understanding	All	180	4.01 (0.83)		8.25*
	Nursing	99		95.90	
	Medical	64		74.93	
	Allied Health	2		53.50	
	Other	10		100.35	
Medication	All	143	3.97 (1.00)		1.39
	Nursing	82		72.34	
	Medical	44		64.93	
	Allied Health	2		53.75	
	Other	10		69.50	
Imaging skill	All	88	3.57 (1.40)		0.90
	Nursing	48		42.54	
	Medical	33		43.56	
	Allied Health	2		30.25	
	Other	1		30.00	
Supervision	All	143	3.48 (1.27)		2.01
	Nursing	84		68.59	
	Medical	43		74.53	
	Allied Health	2		50.50	
	Other	9		58.17	

Note. "Other" category excludes the "Other – mental health leadership" category (n=5) as this appeared only for NED3 and represented a mix of nursing, medical and allied health personnel. *p<.05, **p<.01, ***p<.001

Qualitative analysis

A total of 44 respondents chose to make additional comments. Of these, 16 were registered nurses and six were residents/interns. Senior doctors were most vocal; of the 30 emergency consultants who completed the questionnaire, 10 went on to write additional comments. All four types of nursing models were represented, although there were relatively few comments on the rural models.

About half the respondents were unequivocally positive in their assessments of the ED nurse initiatives. The word "excellent" appeared frequently in reference to the quality and impact of the nurses involved in these projects. The nurses' presence was seen to promote faster throughput of specific kinds of patients while maintaining high standards of care and relieving workload pressures on other staff.

"... an excellent and productive addition to our ED service." (Stakeholder-Emergency Consultant)

"This has been an excellent innovation for our ED." (Stakeholder-Emergency Consultant)

"It's fantastic as it decreases the time I need to take out of my role to discharge and educate [patients] when I am required to do other consultant tasks." (Stakeholder-Emergency Consultant)

"... have made a huge difference to our ED, they support the emergency nurses, decrease their workload and help to reduce the escalation of mental health patients." (Stakeholder-Registered Nurse)

"... extremely helpful during my 3 months as a resident. The shifts when they were working were often a lot more manageable and patients moved through the department a lot quicker." (Stakeholder-Resident/Intern)

Many respondents viewed the ESOP nurses as knowledgeable, trustworthy and highly skilled. The additional training they had undertaken for the role equipped them for providing education to patients and guidance to other ED staff members.

"Common, predictable course of illnesses would be safe to be discharged [via criteria-led discharge protocols] by experienced nurses". (Stakeholder-Medical staff member)

"It is so reassuring to have skilled, trustworthy clinicians for support and to learn from." (Stakeholder-Resident/Intern)

"They were particularly good for fast tracking patients for X-rays, cleaning, gluing and dressing simple lacerations and for providing support to the other nursing staff." (Stakeholder-Emergency Registrar)

However, a substantial minority of respondents had serious reservations about the expanded scopes of practice. Some were frustrated because they felt the scope was still too restrictive and did not provide sufficient benefits in terms of increased efficiency.

"I am concerned about the amount of dependency on medical staff ... Seemingly anything more complex than a dressing change requires a medical review which rather distorts the independent nature of the [ESOP nurse]." (Stakeholder-Emergency Consultant)

"Although the idea and concept of ESOP is very good I feel that they are very restricted in what they are able to do ... if they find an infection for example they cannot prescribe or treat the patient without a doctor attending, reassessing the patient and writing script, so it seems like a bit of double handling is occurring." (Stakeholder-Registered Nurse)

"Do very little additional to what usual nursing care is. Don't save any time when I subsequently have to see the patient myself." (Stakeholder-Emergency Registrar)

Ironically, others were concerned about possible risks arising from a scope that had been expanded too far. In particular, mental health nurses were seen as lacking specialist training and skills to advocate for mental health patients prior to admission, and for this reason it was thought that allowing nurses to facilitate direct admission of these patients was too risky and might lead to adverse outcomes. Still other respondents expressed confusion and asked for more explanation and information regarding the extent of the nurses' scopes of practice.

"Perhaps more education on what they can and can't do would be beneficial ..." (Stakeholder-Registered Nurse)

“However, as a junior doctor I found it confusing to delineate their exact scope and my role ... occasionally it felt like a more thorough triage had been performed, at other times I felt I was simply rubber stamping their work, which was complete in all aspects.”
(Stakeholder-Resident/Intern)

This observation – that the scope of practice and standard of care varied noticeably between individual ESOP nurses – was echoed by a few other respondents. ESOP nurses who could perform tasks reliably and were flexible in their roles, helping out in other areas when needed, were particularly valued.

Several respondents had suggestions for improving the day-to-day operation and efficiency of the ESOP ED nurse model, such as moving the nurse to a different location within the ED, streamlining paperwork and increasing staff coverage at night. There were mixed views on supervision and mentoring, reflecting the fact that the sub-project encompassed four distinct types of ESOP nurse models. Most comments related to the mental health sites, where a variety of supervisors and mentors were suggested, including: mental health nurse practitioners; psychiatric triage nurses; psychiatrists or psychiatric registrars. Emergency nurse practitioners and GPs or visiting medical officers were suggested as suitable mentors for ESOP nurses working in the rural model.

Finally, managing patient expectations was seen as a challenge for the efficiency and sustainability of the ESOP nurse initiative.

“There seem to be many instances of the parents wanting questions answered that are outside the scope of the [ESOP nurse], thereby resulting in many ‘ward rounds’ of these patients.” (Stakeholder-Emergency Consultant)

“It is important that patients also understand that they may come through an ED and not be seen by a medical practitioner as is commonly expected.” (Stakeholder-Resident/Intern)

Staff survey conclusions

Nurses, allied health staff and medical officers working alongside nurses in ESOP roles were, on the whole, very positive about the various models of care and their benefits. Despite the fact that the models varied greatly from site to site, both in the nature of the target patient group and the scope of practice, most respondents appeared to understand and accept these new ED roles. Their support is summed up by the fact that 90% agreed or strongly agreed that they felt comfortable in providing advice on patient management to the ESOP nurses. All professional groups supported the ESOP role, but nurses and “other” staff (e.g., managers) had a better overall understanding of its scope and function than did doctors and allied health staff.

The survey highlighted some areas which could be improved. A substantial minority did not understand how the ESOP nurses differed from other nurses in the ED, and almost half were not aware of the education required. More comprehensive communication and training strategies could be introduced to support workforce change management in the ED. There were high levels of endorsement for the ESOP nurses’ skills and knowledge in initiating diagnostic imaging and administering a limited range of medications. Although their peers and colleagues generally considered them competent at these tasks, administrative and regulatory barriers at some sites prevented the ESOP nurses from utilising these capabilities.

The four types of ESOP nursing models – mental health, rural, paediatric and “fourth door” – were very similar in the extent to which participants felt they understood the ESOP nurse role and function and believed it made a useful contribution to the ED. However, there were some differences in opinions regarding prescribing, ordering imaging, and supervision. Some of these probably reflected the nature of the model; for instance, emergency physicians were not seen as the most suitable supervisors for nurses in mental health roles. Other differences may be

due to the setting; rural nurses, who may be working in relative isolation, were seen as less capable of administering medication than ESOP nurses in other types of projects.

Qualitative comments provided a rich source of insights into staff members' experiences of working alongside the ESOP nursing models. The word "excellent" was often used to describe the standard of care provided by the ESOP nurses, and they were seen as improving throughput in the ED and easing workload pressures on other staff members. ESOP nurses were particularly valued when they were seen as reliable, highly competent and flexible enough to contribute to a wide range of ED tasks within their scopes of practice. Some respondents felt restrictions should be removed in order to maximise the perceived efficiency benefits of the models, whereas others expressed concerns about expanding scopes of practice too far, and still others requested further clarification of the ESOP nursing functions and models of care. Overall, staff members' comments were detailed and thoughtfully analytical, reflecting a depth of interest in and engagement with this type of ED workforce innovation.

Semi-structured interviews with key stakeholders

A total of 64 semi-structured interviews with key stakeholders at the eight sites were conducted by the national evaluation team at the close of the program. Details of the interview schedules and analysis methods can be found in Appendix 2 and supporting documentation (Thompson et al., 2012a). Stakeholders' views of the efficiency, effectiveness, safety and quality of the NED models are reported here, and their views on sustainability are incorporated in Section 6.

Medical stakeholders did not express any concerns with the quality of care provided by ESOP nurses. In fact, at several sites, clinicians stated that the care patients received under the ESOP model was better than usual care. One factor that contributed to this high level of quality was the careful selection of nurses with considerable experience and particular personal characteristics and attitudes. This view was consistent with the views of the ESOP nurses themselves, reported above.

"...often the nursing staff have had some gruelling exams and interviews that they've had to go through and regular learning activities as well to get to that stage. Also too, often lots of these nursing staff are doing a lot of extra things outside of their own time." (Stakeholder-Medical)

"As I understand it, they were carefully selected. Then they were trained, given specific additional training, then there are the protocols that they work from, then there's the senior, review by the senior doctor. So this is a chain of checks on their practice." (Stakeholder-Medical)

"...I do think they have been very professional, and they have - they're not cowboys by any means." (Stakeholder-Nurse)

The clinical guidelines for the ESOP models provided an essential framework for safe, high-quality care; a point also made by ESOP nurses. Stakeholders also pointed to processes such as case reviews as important aspects of quality assurance. During the course of the program, there was noticeable growth in the nurses' skills, knowledge and confidence and these were seen as benefitting the ED as a whole.

"Look, we've had a pretty rigorous process in terms of deciding what are the conditions, what are the mandatory exclusion criteria and the inclusion criteria, what would mandate the nursing staff needing to ensure that there's a medical review... So it's certainly not been something that's been initiated without a fair degree of thought, the group of three of us as senior clinicians, creating the pathways along with the nursing staff, on what the rules for inclusion, exclusion and mandated review would be. Yeah, look I can't think of anything other than the fact that we went into this very conscious of the fact that people were going to be worried." (Stakeholder-Medical)

“So if the concern was raised either as the result of an incident, or that somebody just thought ‘Something hasn’t happened but I can see this is an error about to occur’, then yes, it would be flagged to someone like myself as the Clinical Director within the Department... There’s a monthly meeting where we go through and analyse cases, or concerns that have been raised, so that that would go before that meeting to discuss it.” (Stakeholder-Medical)

“They have been wanting and seeking feedback and improvement throughout the process.” (Stakeholder-Nurse Manager)

“... you’ve actually seen an empowering of them making clinical decisions, and it’s also backed up with a framework. I mean, it’s fine to be able to make clinical decisions, but a lot of people don’t want to do that unless they’ve actually got a framework and a backup to work through with it. So I haven’t met anyone that doesn’t like ESOP that has gone through the training.” (Stakeholder-Nurse)

“I do quite a bit of the note auditing, so I go through the patients notes. That has changed dramatically, as far as I’m concerned... just the quality of the note writing has improved dramatically, so they’re starting to use specifically anatomical terms, and using correct medical language that’s appropriate. They’re putting more information in that’s appropriate and doesn’t necessarily mean more work, it’s more appropriate work.” (Stakeholder-Nurse)

The ESOP nurse was a constant presence in the ED which promoted standardised care, in contrast to junior doctors who rotated every three to six months. This continuity was seen as a valuable aspect of the ESOP nursing model and helped build trust and respect between members of the health care team. Inter-professional collaboration and cooperation, in turn, contributed to safe and effective care provision. ESOP nurses were valued for having a similar – very cautious – attitude to risk to medical staff and demonstrating respect for the boundaries of professional roles.

“... if you are part of the team, if you are working on the ground here, not coming in and flying out, there are continual high levels of scrutiny.” (Stakeholder-Medical)

Some stakeholders particularly appreciated the ESOP nurses’ specialist skills, especially in the case of the mental health sites.

“The other thing is there are more people who have knowledge about how to handle aggressive patients, ‘cause aggressive patients are difficult to manage in the ED and it often falls to the very senior staff to manage those patients because they are difficult. And so I think to have more people in the department who can do verbal de-escalation... Verbal de-escalation is key, and they are very good at that, so from that point of view I think the quality is better as well.” (Stakeholder-Medical referring to skills of mental health nurses)

“What do you mean by ‘safe’? Does that mean less people walk out because they’re frustrated? What is meant by ‘safe’, because is that patients that are de-escalated because they’re seen first, they’re greeted in a friendly way, you know, by staff who know what they’re doing. So are you saying that is the quality of assessment by the ESOP nurses the same as the quality of assessment by the registrars? I would say that the issue about the quality of the assessment by registrars is it’s far more uneven, can be very good or very bad. The question is, are there unnecessary admissions if, so I think that am I concerned about safety? I would say that the quality of assessment that’s done by an expanded scope of practice nurse is equal to the quality of a registrar.” (Stakeholder-Medical)

Others pointed to the role of ESOP nurses in improving communication with patients, particularly around the process of moving through the ED and what they could expect in terms of procedures and time to discharge. Their presence also helped medical staff to understand their own responsibilities in communicating with patients and this was seen as an important contribution to improving the quality of care.

“... I think it does force the medical staff to have a conversation with the family early in the course, not at the end. “Oh okay, you’re ready to go home now because...” You have that discussion half an hour after you’ve seen them, saying, “This is what we’re going to do. This is what we expect. This is when you’re going to go home. And this is the process.” ... And I have no doubt that one of the main things that causes stress for families in ED and many of our complaints are around communication and information. If they know what’s going to happen, even if it’s a stressful time or so on, they have some empowerment about the process. So I think that, even if they stay the same length of time, nothing else changes in their care, we’ve provided a better service. So the quality of the service is much better from a patient point of view.” (Stakeholder-Medical)

“I think also that the interaction they have with the nursing staff is different, that the nursing staff do take more ownership of the patients that they feel more responsibility to the patient and therefore their interactions with the patient are a little bit different. They feel they have responsibility to provide certain information and give certain communication to the families. So I think your communication with families is better because the medical staff aren’t thinking, “Oh, the nursing staff will do that,” the nursing staff aren’t thinking, “The medical staff will do that.” It’s very clear whose responsibility that is.” (Stakeholder-Medical)

Improved teamwork and communication were among the less tangible benefits of the model. Some stakeholders specifically commented on the fact that not all the impacts on efficiency and effectiveness would show up in the evaluation data.

“... in the absence of having really hard metrics to back it up, it’s going to be hard to either support or refute that either way ... we feel on the floor that it’s making things better, we feel we’re giving better quality of care, we feel it’s more efficient. But with so many other dynamic changes going on, to actually be able to measure that ..., that gets really hard for us ... we’ve looked at our efficiency of getting patients in and out of our observation beds and how that would compare to the more standard model of a patient being admitted... And we have been able to start giving some concrete measures on seeing better efficiency... They are simple, one system problems, that we’ve decided are safe to be managed in this way, so you’d expect them to be more efficient as well.” (Stakeholder-Medical)

“I can certainly say anecdotally for myself, my own practice, and other similar practitioners, yes, clearly it’s occurred. And I doubt we will ever get evidence to rigorously show that, because there are so many other changes that have gone on at the same time. So at the same time that this program’s been initiated, our patient numbers have been growing at about 10% to 15% per annum. So whilst we’ve instituted something to try and make medical flow more efficient, we have placed a whole additional workload on that medical flow. So I doubt we’ve seen a benefit, but I have no doubt that there is a benefit there. So I know anecdotally I will treat patients and I will spend a third of the time with that patient, because I’ve been able to pass them on.” (Stakeholder-Medical)

Consistent with these observations, many stakeholders found it difficult to provide any definitive information about productivity improvements. Most responded on the basis of instinct or ‘gut feel’ about patient flow in the ED. For several projects the ESOP nurse was seen as an additional resource to what had existed previously so this made fair assessment of productivity

improvements difficult. Nevertheless, there was a consistent view that the models of care had relieved some of the pressure from medical staff and facilitated patient flow through the ED, although there were the occasional dissenters at sites that experienced very low volumes of ESOP patients. A side benefit of this perception of improved productivity was the feeling of satisfaction experienced by staff who felt the patients were being seen faster and receiving better care.

“Look, I think, anecdotally I think that worked. And it’s certainly palpable on a busy evening when you had a really good ESOP nurse, you could feel the difference.”
(Stakeholder-Medical)

“It’s the 80/20 rule, right. So 80% of the work was done, I was doing 20% of what I did 100% of. And I think that actually makes a big difference to flow. And it makes a big difference in terms of public relations. So if you’re seen by somebody who is confident, competent and sensible, it actually doesn’t matter, and then can say “I’m going to get the senior doctor”, I think that’s a really good feeling, and certainly anecdotally the reports are really good from patient experience, is that they are seen faster, and there is a perception of caring that is greater than sitting in the waiting room for three hours. And it has to be.” (Stakeholder-Medical)

“It saves a great deal of time, in my opinion, and there’s been many times that I’ve been stuck in resuscitation for hours on end and I come out and the ESOP nurse has just done a fabulous job because she’s come in and briefly talked to me and I’ve said yes, yes, yes. She just goes and does it and I come out relieved because she’s essentially treated 10 patients while I’ve been in resuscitation. That level of security and confidence for me is important because I don’t have that same level of confidence in a brand new junior intern when it’s just their first day at work. That’s different and that’s not something that I can say you, back on the ... whatever screen we’re using as measurements of efficiency would show up.” (Stakeholder-Medical)

“...it wouldn’t save any money that I can - I certainly haven’t identified that myself. But I think it’s more efficient, in the sense that, obviously patient throughput. And I think it’s got an immeasurable thing in that - the staff satisfaction, and their professional satisfaction, and feelings of achievement, and all that sort of thing.” (Stakeholder-Nurse)

At sites with fewer staff, possible effects on efficiency and quality of care were limited by the availability of ESOP nurses to fill the ED roster. In rural and regional communities this created some confusion as word would spread about the new service and consumer expectations were raised that the service would be available when they needed it. When patients came to the ED expecting access to the ESOP nurse they were surprised if they were not available.

“One of the issues I would see – and this is anecdotal...is that if we’re only getting some of the staff trained, and therefore you turn up on the day when there is the nurse that’s got these skills, then we will treat you; then your brother or sister turns up the next day and that nurse is not on, and you’ve got the same complaint, you’ll be transferred out. So there is that...” (Stakeholder-Nurse Manager)

The care coordination role of the mental health nurses helped reduce the time that patients spent in the ED. However, some stakeholders at the mental health sites took a broader view of efficiency and effectiveness that went beyond NEAT to impacts on the health system as a whole.

“Well really I think the attitudes are very different here because ED is so obsessed with their four hour rule that they forget the most important thing is patient outcome. You know, it doesn’t matter how long the patient’s in ED it doesn’t matter how much it really costs at the end of the day, the most important thing is the patient outcome and then those things come secondary. So really I wouldn’t care if the patient was there for five

hours if the patient went home feeling that they had been treated and then a plan had been set out for them. That's the most important thing. If future that patient might then develop strategies and not have to come to ED and you know longitudinally it could actually be cost effective." (Stakeholder-Medical)

4.5 Impact on the system

Due to the variability in the ESOP-NED models across all of the NED project sites, it is not possible to compare sites directly. Based on the models of care at each site, target groups of patients have been defined to allow a comparison between the baseline and implementation periods. These periods 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-NED model (data submission 1). Although it was intended to be the period 1 October 2011 – 30 September 2012, there were some variations across the sites.
- Implementation was the period when the HWA funded ESOP-NED project was implemented (data submission 2 and 3). Although it was intended to be the period 1 October 2012 – 31 December 2013, there were variations across the sites due to differing models and ability to implement the models.

Table 14 Summary of baseline and implementation data periods by site

Site	Baseline	Adjusted baseline for analysis	No. of months	Implementation	No. of months
NED1	1 October 2011 – 31 August 2012		11	1 September 2012 – 31 December 2013	16
NED2 ¹	1 October 2011 – 1 April 2013	1 October 2011 – 30 September 2012	12	1 April 2013 – 24 January 2014	9 (10 for ESOP)
NED3 ²	1 October 2011 – 1 December 2012	1 October 2011 – 30 September 2012	12	1 December 2012 – 30 September 2013	10
NED4	1 October 2011 – 17 September 2012		11.5	17 September 2012 – 31 December 2013	15.5
NED5	1 October 2011 – 30 September 2012		12	1 July 2013 – 31 December 2013	6
NED6	1 October 2011 – 30 September 2012		12	1 October 2012 – 31 December 2013	15
NED7 ³	1 October 2011 – 30 September 2012		12	1 October 2012 – 31 August 2013	11
NED8	1 December 2011 – 1 February 2013	1 December 2011 – 30 November 2012	12	1 February 2013 – 31 December 2013	11

¹NED2 provided ESOP data for January 2014 but not ED data. NED2 ESOP data for January 2014 have been included in the analysis.

²NED3 provided ED data for the period 1 October 2013 – 31 December 2013 but did not provide ESOP data for this period, hence the implementation period is 1 December 2012 – 30 September 2013.

³NED7 provided ED data for the period 1 September 2013 – 31 December 2013 but did not provide ESOP data for this period, hence the implementation period is 1 October 2012 – 30 August 2013.

KPI 2.1 Increased number of consumers managed through the ESOP-NED in each of the implementation sites

Monthly figures for the number of patients treated by ESOP nurses at different sites show different patterns of change over the implementation period (Table 15). At NED1 and NED7, numbers were relatively low in the first month and consistently higher (average 154 and 269 respectively) in the following months. The number of patients treated by the ESOP nurses at NED8 was low during the first three months of implementation before a steep increase which continued for around five months before decreasing during the last three months of implementation. NED4 showed a similar trend with lower number of ESOP presentations during the first 3 months but then continued to treat more patients than most other sites throughout the remainder of the implementation period. There were no apparent increases in numbers of ESOP cases during the implementation period for any of the other sites.

Table 15 All of ED monthly presentations treated by an ESOP nurse by site – implementation period

Year	Month	NED1	NED2	NED3	NED4	NED5	NED6	NED7	NED8
2012	Sep	54			78				
	Oct	169			116		6	137	
	Nov	171			198		7	211	
	Dec	153		23	374		6	178	
2013	Jan	156		17	328		1	264	
	Feb	151		22	247		2	303	30
	Mar	164		36	329		1	225	40
	Apr	143	34	40	358		5	253	36
	May	138	22	41	296		16	300	150
	Jun	124	12	46	271		5	371	135
	Jul	149	9	31	304	1	13	306	158
	Aug	160	24	30	293	1	7	282	162
	Sep	163	40	20	298	18	16		151
	Oct	155	23		388	8	8		114
	Nov	165	8		317	16	8		81
	Dec	144	5		431	13	5		86
2014	Jan		11						
Total		2,359	188	306	4,626	57	106	2,830	1,143

4.5.1 Identifying patients in the target group

Defining a target group for each site was necessary to enable a performance evaluation by comparing results from the baseline period with the results from the implementation period. These groups are defined uniquely for each site based on a combination of Triage Category, age and primary diagnosis and act as a 'natural control group', allowing performance evaluation across periods for similar patient cohorts.

Identifying in-scope patients at mental health sites

NED1 hospital provided primary diagnosis data using SNOMED numerical codes. All diagnosis codes for all patients treated by an ESOP nurse during the implementation period were examined. A description for each numerical code was found using an online browser (<http://au.federationhealth.com/browser>) and all codes that were considered to be suitable as mental health diagnoses were used to define the patient cohort. There were 253 unique codes among the 2,359 ESOP presentations and eight were missing primary diagnosis. These eight were assumed to be in the mental health target group. Of the 2,351 presentations with a valid diagnosis, a total of 2,151 (91.3%) were included in the mental health target group. The same diagnosis codes were used to describe similar patients during the baseline period. As a result, 3,598 (6%) of all ED presentations during the baseline period were considered to be in the mental health patient cohort.

NED2 hospital provided primary diagnosis data using SNOMED descriptive codes. Diagnosis codes for all patients treated by an ESOP nurse during the implementation period were examined and all codes that were considered to be suitable as mental health diagnoses were used to define the patient cohort. There were 53 unique codes among the 188 ESOP presentations and 26 (13.8%) were missing primary diagnosis. These 26 were assumed to be in the mental health target group. Of the 162 presentations with a valid diagnosis, a total of 158 (97.5%) were included in the mental health target group. The same diagnosis codes were used to describe similar patients during the baseline period. As a result, 1,147 (2.4%) of all ED presentations during the baseline period were considered to be in the mental health patient cohort.

NED3 provided primary diagnosis data using ICD10 codes. Diagnosis codes for all patients treated by an ESOP nurse during the implementation period were examined and all codes that

were considered to be suitable as mental health diagnoses were used to define the patient cohort. There were 46 unique codes among the 306 ESOP presentations and 40 (13.1%) were missing primary diagnosis. These 40 were assumed to be in the mental health target group. Of the 266 presentations with a valid diagnosis, a total of 245 (92.1%) were included in the mental health target group. The same diagnosis codes were used to describe similar patients during the baseline period. As a result, 4,612 (4.8%) of all ED presentations during the baseline period were considered to be in the mental health patient cohort.

Identifying in-scope patients at NED4

NED4 hospital implemented the Fourth Door project which was based on the introduction of the ED Review Clinic focusing on Triage Category 3, 4 and 5 presentations. The target group is defined by all Triage Category 3, 4 and 5 presentations. During the implementation period there were 16 Triage Category 1 and 2 presentations which were seen by an ESOP nurse not specifically part of the target patient group so were intentionally omitted from any performance comparisons. The patient cohort for the baseline period was also defined as all Triage Category 3, 4 and 5 ED presentations.

Identifying in-scope patients at rural sites

NED5 and NED6 are rural sites and the focus of their projects was to minimise the need for transfers to larger, regional hospitals for non-urgent Triage Category 4 and 5 presentations. The target group for these sites is defined by all Triage Category 4 and 5 presentations. There were two Triage Category 3 patients at each site which were seen by an ESOP nurse not specifically part of the target patient group so were intentionally omitted from any performance comparisons. The target group represents 96.5% and 98.1% of all ESOP presentations during the implementation period for NED5 and NED6 respectively. The patient cohort for the baseline period was also defined as all Triage Category 4 and 5 ED presentations.

Identifying in-scope patients at paediatric sites

The focus of the project at NED7 was Triage Category 4 and 5 paediatric presentations with minor illnesses or injuries. The target group for this site is defined by all Triage Category 4 and 5 presentations aged less than 18 years. During the implementation period a total of 331 (11.7%) Triage Category 1, 2 and 3 presentations seen by an ESOP nurse not specifically part of the target patient group were intentionally omitted from any performance comparisons. The target group represents 88.3% of all ESOP-NED presentations during the implementation period. The patient cohort for the baseline period was also defined as all Triage Category 4 and 5 presentations aged less than 18 years.

NED8 provided primary diagnosis data using ICD10 codes and the focus of their ESOP-NED project was all paediatric patients presenting with Asthma, Bronchiolitis, Croup or Gastroenteritis. The target group was defined by these four diagnoses and represents 99.4% of all ESOP-NED presentations during the implementation period. The patient cohort for the baseline period was also defined as paediatric presentations with these diagnoses.

For further details of inclusions and exclusions of the ESOP-NED target groups please refer to Appendix 3.

4.5.2 Efficiency and effectiveness indicators

Table 16 summarises the number and percentage of all ED presentations that were in the target group for each of the ESOP-NED project sites for both periods.

Table 16 Number of all ED presentations in the target group by site and period

Site	Baseline ^a		Implementation ^b	
	#	%	#	%
NED1	3,595	6.0	7,088	7.6
NED2	1,147	2.4	1,557	3.7
NED3	4,612	4.8	4,110	5.1
NED4	40,230	93.0	59,466	92.8
NED5	24,514	55.2	14,326	58.9
NED6	6,999	84.4	8,631	86.0
NED7	12,196	19.3	12,436	20.0
NED8	8,850	13.9	9,281	15.1
Total	102,143	24.0	116,895	26.7

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

Presentations that could not be allocated to the target groups due to missing information (e.g. Triage Category, diagnosis or age) are excluded from percentage calculations. As a result across all sites there were a total of 31,089 (3.4%) presentations excluded from the baseline period and 22,120 (2.4%) from the implementation period.

The mental health project sites had the lowest proportion of presentations in their patient target groups. This was followed by the paediatric project sites and the rural project sites. The target group at NED4 represented approximately 93% of all ED presentations in both the baseline and implementation period.

Table 17 shows the number and proportion of patients in the target group who were treated by the ESOP nurses for each site.

Table 17 Number of all ED presentations in the target group and number treated by ESOP nurses by site – implementation period^a

Site	In Target Group		Those in the target group treated by ESOP nurses	
	#	%	#	%
NED1	7,088	7.6	2,159	30.5
NED2	1,557	3.7	184	11.8
NED3	4,110	5.1	285	6.9
NED4	59,466	92.8	4,610	7.8
NED5	14,326	58.9	55	0.4
NED6	8,631	86.0	104	1.2
NED7	12,436	20.0	2,499	20.1
NED8	9,281	15.1	1,136	12.2
Total	116,895	26.7	11,032	9.4

^a Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

Presentations that could not be allocated to the target groups due to missing information (e.g. Triage Category, diagnosis or age) are excluded from percentage calculations. As a result across all sites there were a total of 22,120 (2.4%) presentations excluded.

The ESOP nurses at NED1 treated around 31% of the patients in their mental health target group. Although the target group at NED4 represented almost 93% of all ED presentations, the ESOP nurses still managed to be able to treat almost 8% of this group. The ESOP nurses at both rural sites treated a very small proportion of the patients in their target groups. The ESOP nurses at both paediatric sites treated more than 10% of all patients in their target groups.

KPI 1.5 Increased number of Triage Category 3, 4 and 5 consumers seen by ESOP-NED discharged within 4 hours (as appropriate)

This KPI has been calculated using data item 21 Service episode end status, (refer to Thompson et al., 2012a and 2012b). To be consistent with the definition of the 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 ED service episode completed – departed without being admitted or referred to another hospital, and
3. Non-admitted patient ED service episode completed - referred to another hospital for admission).

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/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 patients in the target group who were discharged from the ED within four hours across both periods for each of the NED project sites.

Table 18 Patients in the target group discharged within four hours – baseline and implementation

Site	Baseline ^a		Implementation ^b	
	#	%	#	%
NED1	994	27.6	2,312	32.6
NED2	277	24.1	346	34.1
NED3	1,905	41.3	1,921	47.1
NED4	17,232	42.8	25,609	55.9
NED5	16,913	70.5	11,960	83.5
NED6	6,713	95.9	8,335	96.6
NED7	8,453	69.3	9,192	73.9
NED8	5,406	61.1	5,816	62.7
Total	57,893	57.0	65,491	63.8

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

A total of 0.5% of records in the baseline period and 12.2% in the implementation period are excluded due to missing/invalid data.

All sites showed an improvement in performance from the baseline period to the implementation period for this KPI. However, they had very different starting points and scope for improvement and there was considerable variation in the numbers of patients seen at each site. This can be seen more clearly in Figure 9. Although NED4 showed a large improvement of around 13%, its starting point was low and performance remained relatively poor overall. In contrast, NED6 showed little improvement but this may be due to a ceiling effect because that site was already

discharging almost 96% of patients within the NEAT. NED5 also showed an improvement of around 13% from a baseline of 70.5% discharged within four hours. Caution is needed when comparing performance across sites as the target groups of patients are very different. In particular, mental health patients present with complex and often chronic complaints that will take more time to resolve than, say, suturing of a wound. Consistent with this, the mental health project sites all had baselines of less than 50% of these patients discharged within four hours. Nevertheless, all showed improvements, ranging from around 5% at NED1 to around 10% at NED2.

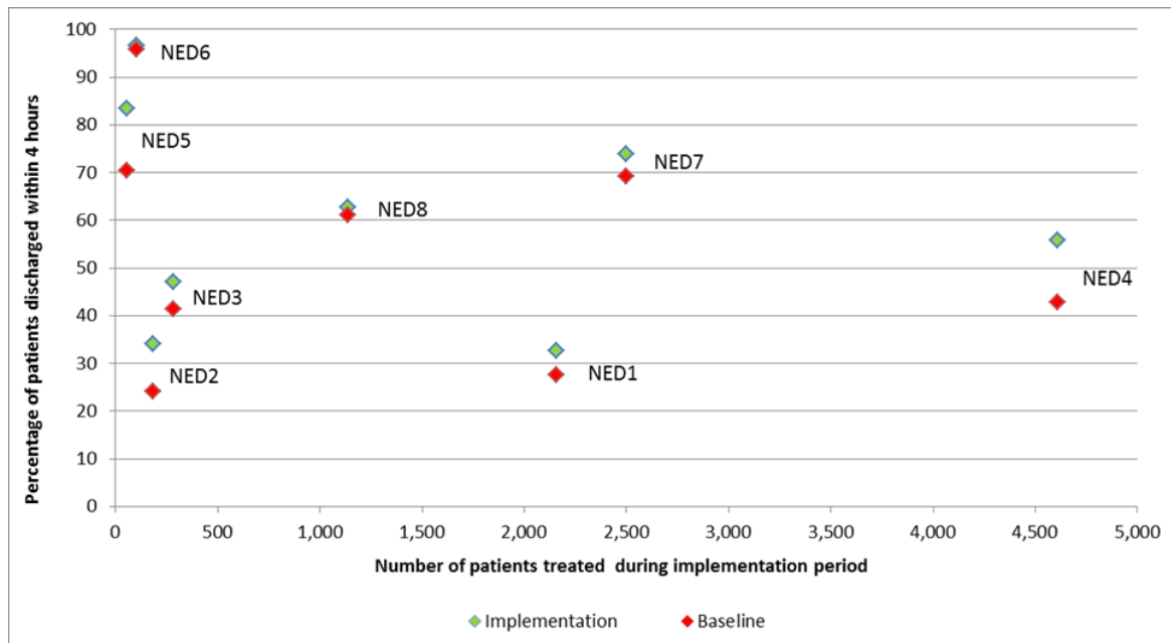


Figure 9 Patients in the target group discharged within four hours – baseline and implementation

Across all sites, 73.5% of patients seen by ESOP nurses were discharged within the four-hour target period, compared with 62.8% of similar patients seen by other practitioners (Table 19). At all sites except NED1, performance on this KPI was better for ESOP nurses than for other health care providers. Again, caution is required when comparing across sites, given the differences in the types of patients seen under different models of care, and the fact that the proportion of patients eligible for ESOP also varied widely among sites (refer to Table 17).

Table 19 Patients in the target group discharged within four hours by primary practitioner – implementation period ^a

Site	Treated by ESOP nurse		Treated by other practitioner	
	#	%	#	%
NED1	622	28.8	1,690	34.3
NED2	54	39.4	292	33.3
NED3	149	59.1	1,772	46.3
NED4	3,016	89.9	22,593	53.2
NED5	53	96.4	11,907	83.4
NED6	97	98.0	8,238	96.6
NED7	2,324	93.0	6,868	69.1
NED8	813	71.6	5,003	61.4
Total	7,128	73.5	58,363	62.8

^a Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

A total of 12.1% of ESOP nurse records and 12.2% of 'other practitioner' records in the implementation period are excluded due to missing/invalid data.

4.5.3 Safety and quality indicators

KPI 1.9 Consistent or improved unit safety outcomes pre and post introduction of the ESOP-NED initiative e.g. number of re-presentations of consumers treated for the same health care problem within 96 hours/within 28 days; number of adverse events; number of consumer complaints; number of consumers who 'Did not wait', number of consumers that left against medical advice.

An important quality indicator is the number of patients who re-present to ED for the same condition within 96 hours (Table 20). Only two of the NED sites provided this information for both periods. Both showed consistent performance across the two periods.

Three sites provided this information for the implementation period and at each one there were fewer re-presentations by patients who had been seen by an ESOP nurse compared with other practitioners. This is to be expected as the ESOP nurses treated a small proportion of all ED presentations (refer to Table 17 above).

Table 20 Patients in the target group who re-presented within 96 hours for the same health care problem by practitioner – baseline and implementation

Site	Baseline ^a	Implementation ^b		
	All (%)	All (%)	Treated by ESOP nurse	Treated by other practitioner (n)
NED1	-	97 (1.8) ^c	37	60
NED2	-	-	-	-
NED3	70 (1.5)	68 (1.7)	3	87
NED4	-	-	-	-
NED5	-	-	-	-
NED6	-	-	-	-
NED7	-	-	-	-
NED8	361 (4.1)	365 (3.9)	51	314
Total	431	530	91	461

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

*Reported patients who represented within 48 hours rather than 96 hours.

- This data item was not provided.

^c This data item was missing/invalid for 25% of all patients in the target group during the implementation period. These cases are excluded from the percentage calculation.

A related safety and quality indicator is the number of re-presentations to ED for the same health care condition within 28 days (Table 21). This indicator was compared across baseline and implementation periods for the two sites that provided relevant data. Both NED2 and NED8 showed a small increase in re-presentations.

Table 21 Patients in the target group who were re-presented within 28 days – baseline and implementation

Site	Baseline ^a	Implementation ^b
	N (%)	N (%)
NED1	-	-
NED2	-	-
NED3	148 (3.2)	137 (3.4)
NED4	-	-
NED5	-	-
NED6	-	-
NED7	-	-
NED8	695 (7.9)	760 (8.2)
Total	843 (6.3)	897 (6.7)

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

- This data item was not provided.

Table 22 shows the number of patients in the target group who died within 28 days following admission from the ED for both periods across all NED project sites. Three of the eight NED project sites did not provide this information and NED2 only provided this information for the baseline period.

Table 22 Patients in the target group who died following admission from the ED within 28 days – baseline and implementation

Site	Baseline ^a	Implementation ^b
	N (%)	N (%)
NED1	-	-
NED2	5 (0.4)	-
NED3	2 (0.1) ^c	1 (0.0)
NED4	-	-
NED5	43 (0.2)	8 (0.1) ^d
NED6	-	-
NED7	0 (0.0)	0 (0.0)
NED8	2 (0.0)	1 (0.0)
Total	52 (0.1)	10 (0.0)

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

- This data item was not provided for this site.

^c This data item was missing/invalid for 58% of all patients in the target group during the baseline period. These cases are excluded from the percentage calculation.

^d This data item was missing/invalid for 35% of all patients in the target group during the implementation period. These cases are excluded from the percentage calculation.

For the four sites that provided this information for both periods, there was little change identified in the proportion of unexpected deaths from the baseline to the implementation period.

For reasons of safety, hospitals strive to minimise the number of patients who do not wait for treatment, or who leave against medical advice. As most of the NED sites aimed to reduce waiting and treatment times for specific patient groups, these indicators were examined for any potential impact of the ESOP activities. Table 23 presents the number of patients in the target group who did not wait to be treated for both periods across all sites, comparing ESOP nurses with other practitioners.

Table 23 Patients in the target group who ‘did not wait’ – baseline and implementation

Site	Baseline ^a	Implementation ^b		
	All (%)	Treated by ESOP nurse	Treated by other practitioner	All (%)
NED1	24 (0.7)	8	23	31 (0.5) ^c
NED2	14 (1.2)	1	34	35 (2.3) ^d
NED3	0 (0.0)	4	0	4 (0.1)
NED4	1,570 (3.9)	6	1,340	1,346 (2.3)
NED5	1 (0.0)	0	15	15 (0.1)
NED6	35 (0.5)	0	0	0 (0.0)
NED7	1,115 (9.1)	13	1,105	1,118 (9.0)
NED8	0 (0.0)	0	0	0 (0.0)
Total	2,759 (2.7)	32	2,517	2,549 (2.2)

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

^c This data item was missing/invalid for 2.1% of all patients in the target group during the implementation period. These cases are excluded from the percentage calculation.

^d This data item was missing/invalid for 1.5% of all patients in the target group during the implementation period. These cases are excluded from the percentage calculation.

Across all sites, only 32 patients seen by ESOP nurses did not wait for treatment. Of these, 13 were at the NED7 paediatric site, six at NED4, eight at NED1, four at NED3 and one at NED2. NED8 reported no ‘did not wait’ patients in either time period. Of the remaining sites, there was little difference from the baseline to the implementation period.

Table 24 presents the number of patients in the target group who ‘left against medical advice’ for both periods across all of the NED project sites and by practitioner.

Table 24 Patients in the target group who ‘left against medical advice’ – baseline and implementation

Site	Baseline ^a	Implementation ^b		
	All (%)	Treated by ESOP nurse	Treated by other practitioner	All (%)
NED1	380 (10.6)	260 ^c	434 ^d	694 (10.0)
NED2	32 (2.8)	9	99	108 (7.1)
NED3	130 (2.8)	4	106	110 (2.7)
NED4	2,285 (5.7)	93	2,565	2,658 (4.5)
NED5	66 (0.3)	0	51	51 (0.4)
NED6	2 (0.0)	0	10	10 (0.1)
NED7	221 (1.8)	0	6	6 (0.1)
NED8	7 (0.1)	0	7	7 (0.1)
Total	3,123 (3.1)	366	3,278	3,644 (3.1)

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

^c This data item was missing/invalid for 3.2% of all patients in the target group during the implementation period who were treated by the ESOP nurse. These cases are excluded from the percentage calculation.

^d This data item was missing/invalid for 1.7% of all patients in the target group during the implementation period who were treated by a practitioner other than an ESOP nurse. These cases are excluded from the percentage calculation.

There was an increase in the number of patients who ‘left against medical advice’ for NED2, from 2.8% in the baseline period to 7.1% during the implementation period. It is unlikely that this increase can be attributable to the project as only nine of the 108 were treated by the ESOP nurse. The number of ‘left against medical advice’ did not change across the two periods for NED8 and all other sites had a slight decrease.

There were more patients who 'left against medical advice' that were treated by a practitioner other than an ESOP nurse for each site. However this is to be expected as the ESOP nurses treated a small proportion of all ED presentations (refer to Table 17 above). There were no ESOP-patients who 'left against medical advice' at the rural or paediatric sites.

The ESOP models of care at NED3, NED4 and NED8 allowed trained nurses to discharge certain patients according to clinical guidelines and protocols. Table 25 presents the number of patients in the target group discharged from the ED by ESOP nurses at two of these sites. Hospital admissions and referrals are not included as formal discharges. At all other sites, medical staff took responsibility for discharging patients who had been seen by ESOP nurses.

Table 25 Patients in the target group seen by the ESOP nurses who were discharged – implementation period ^a

Site [*]	All patients discharged from the ED		Patients discharged by the ESOP nurse	
	#	%	#	%
NED3	168	59.0	80	47.6
NED4	4,263	92.5	2,838	91.6 ^b
Total	4,431	90.6	2,918	89.8

^a Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

^b This data item was missing/invalid for 27% of all patients in the target group seen by the ESOP nurse who were formally discharged during the implementation period. These cases are excluded from the percentage calculation.

*ESOP discharges only apply to NED3, NED4 and NED8. NED8 data has been excluded from this table due to a data quality issue.

There was minimal difference in the discharge rates for the ESOP nurses compared to the entire ED for the target group.

A quality indicator for mental health patients was unexpected death within 14 days of discharge from the ED. None of the three mental health sites provided the relevant data to address this indicator.

Although expanded scope referrals were relevant for NED3, NED6, NED4, NED7 and NED2, only NED2 provided data on referrals. Referral information was only provided for around 50% of patients; 91 patients required a referral and all of these had their referral provided by the ESOP nurses.

Seven sites provided information on patient refusals to be seen by the ESOP nurses. No refusals were reported at any of those sites during the implementation period.

4.6 Unintended consequences

Interviews with key stakeholders and ESOP nurses highlighted some unanticipated effects of the sub-project. These included improvements in work practices not directly related to the ESOP nurse role but spurred by the additional scrutiny that came with the role. The most common example provided was improved patient record keeping but interviewees also noted that the project had led to greater effort in ensuring continuity of care and providing handover to medical staff. Several project teams felt that the overall standard or quality of care had improved in the ED as a result of the ESOP initiative.

"We do have to document very well here and I think that has improved since the ESOP project ...and we're doing the assessments so we've learnt to document, document and document really to save our butts..." (ESOP nurse)

"I'm seeing a better handover of patients to the other teams." (Stakeholder-Medical)

"I think it's just raised the bar and raised the level..." (Stakeholder-Nurse)

The ESOP nursing role was seen as adding value to the ED in various ways: creating an educational resource for other nursing staff and junior medical officers; improving communication within teams; and enhancing inter-professional collaboration. ESOP nurses took advantage of informal teaching opportunities when they arose, particularly when other staff raised questions about the handling of a particular case or asked for help with specific skills. They played a role in mentoring other staff and were seen as role models by some interviewees. The ESOP role also allowed greater time and scope for providing education and information to patients.

“So we’ve become really quite a resource for a lot of them and, I think, for people – for some of the ones who are a bit shy of, maybe, escalating something through – up through the system, they will come to us as well.” (ESOP nurse)

“So you’d often have people coming after an event, something’s happened or they’ll come back and ask you, “What happened with that patient?” And you’ll talk a bit about it.... But there’s a lot of informal education as well.” (ESOP nurse)

“...because one of the residents, a few of the residents, they rotate like every four months, and because we’ve been in this role for the last 12 months we have that knowledge in regards to fractures, so they would often ask for our help in terms of how to do back slabs or how to do a sling, a proper sling, or as in a splint, and put properly fitted crutches as well, so they would approach us in regards to that...” (ESOP nurse)

“... I think it really fostered some really good working relationships between the nursing staff who were involved and myself. But it was also actually a really good educational tool for the rest of the department as well...there was a really good amount of sharing of skills and knowledge and education as well that was happening. And I think all of the nursing staff really benefited from their expertise that they had. Since its implementation and actually subsequently since it’s finished up now I actually think the relationships have really been fostered beautifully between both the resident medical staff who were only sort of really here for say 10 to 12 weeks at a time and the nursing staff. I just think the whole communication is a lot better and that we are much better at working together as a team ...” (Stakeholder-Medical)

One site managed to secure time as part of a visit by the Minister of Health to their area which increased the standing of their project amongst several stakeholders. It was apparent from the interviews that, in general, ESOP nurses were well respected by other ED staff.

“It certainly drives a closer collaboration between the medical and nursing staff I think, that if you as a treating doctor treated a patient you want to put them on this pathway, it then kind of forces a degree of communication that you have with the nurse ...So I think it has driven a bit more communication.” (Stakeholder-Medical)

“I had a great experience with one of the nurses who is a participant, and because I’d met her before and she came over with a very unwell cardiac patient that she’d been looking after by herself. Obviously it wasn’t a project patient but she arrived with the ambulance officers, they’d been doing CPR and a lot of other big interventions with this patient. It was just her and two ambos. She walked into our department; there were four doctors and four nurses standing around waiting for this patient. She just went ‘Oh my goodness, it’s just been me!’ and yeah it has just been you and you’ve kept this patient alive to get to us. I think, no one else realised that she’d been doing this by herself for three hours before the ambos got there. So I spent a little bit of time debriefing with her. So ...I think I’m more in tune with these people...” (Stakeholder-Nurse)

One risk of having ESOP nurses in specialised roles is that other members of the health care team may be “de-skilled” in managing that patient group. This was especially the case for the mental health sites. The nurses in those roles were aware of this possibility and were proactive in trying to promote awareness of mental health issues and develop the skills and confidence of other staff to deal with these issues in their own practice.

At some sites, ESOP nurses worked in relative isolation and the increased responsibility of the role could be stressful. Although they were highly experienced and trained in advanced clinical reasoning and decision making skills, the availability of “back-up” and collegial relationships with their fellow ESOP nurses were essential to avoid professional isolation.

“And it’s quite stressful. We’re working on our own. We have the backup by phone or something. But you’re making those decisions, you’re deciding that people are going home when they’re okay, they’re safe, whatever... Some days you go in and you just think, oh, it’s just – we are so stressed. And it’s probably been one of the most stressful jobs we’ve had. We’re lucky that the group that we’ve got, we tend to be very supportive of each other.” (ESOP nurse)

“...in the evolution of advanced nursing roles, one of the isolating factors is if you’re in a solo role, in an ED and you haven’t got any colleagues...it can be quite isolating. Even though, you know, the ED is a team environment... I think that can potentially be challenging.” (ESOP nurse)

“Not just the expanded scope of practice, it’s been communication, identification of roles, reassuring that we are doing an okay job as it is. We’ve been able to communicate with each other and ED staff who are in the general side get to understand the pressure that we’re under. We are only one clinician a shift.” (ESOP nurse)

“There’s two elements of it, it’s about their support clinically, so they’re embraced as part of the team; they’re not seen as a, you know, a wart on a nose and I am the only ESOP nurse here and then there is also the professional governance...I guess to break down some of those barriers that are sitting there when you are in a solo role, when you lead the charge...” (Stakeholder-Nurse Manager)

At several implementation sites the ESOP nurse received increased remuneration for the duration of the project. There was concern that this could generate some minor jealousy amongst other members of the team who perceived they had equivalent skills but had not been selected for the ESOP role.

“I think one of the main disadvantages is that the organisation may not feel the money is justified to finance the project and also there may be some rivalry between nursing staff and the ESOP nurse with the expectations that, the ESOP nurse, it’s really not part of their role anymore to be doing that. So there could be a problem of rivalry, I guess, or dare I say the word jealousy between one set of nursing staff and the ESOP nurse. But I haven’t seen that happen but I think it’s a potential that could happen.” (Stakeholder-Medical)

Finally, there was also a risk of disappointment and disillusionment for those who started in the ESOP role but were unable to continue for various reasons. One project team decided that if the ESOP nurse could not complete all components of the training pathway they would not be able to continue in the role. Subsequently because of various circumstances none of the ESOP nurses that continued with the program were able to complete this component either and this generated some discontent within the workplace.

“I really am disappointed that I didn’t finish it, because I wanted to do that for years...” (ESOP nurse)

5 Economic evaluation

5.1 Introduction

The ESOP-NED sub-project is characterised by diversity. HWA deliberately funded a range of ESOP models of care in the clinical areas of mental health, paediatrics, rural health and emergency patient review (referred to as a 'fourth door' initiative).

The eight implementation organisations introduced ESOP models unique to their local context and health care delivery needs. For example, while three mental health projects were funded, one established a new role for mental health liaison nurses in an inner metropolitan ED; another based a mental health nurse practitioner in two different outer metropolitan EDs and the third utilised existing mental health Clinical Nurse Consultants already operating with a regional ED.

Another complicating factor to assessing incremental effects of ESOP models relative to usual care is what is commonly referred to in health research as the 'dose-response' impacts with limited exposure to interventions. With any health intervention it is difficult to measure the extent of implementation and the quantity and quality of activities relevant to the intervention (Legrand et al., 2012). A smaller effect is expected with lower exposure (dose, duration, and adherence); this is referred to as a "dose-response" impact (Owen et al., 2010). The ESOP-NED projects were small in scale and received funding for an 18-month implementation period. As the majority of these projects included a training component, in reality the ESOP model of care only operated at its full capacity for between six and 12 months at the various sites. The number of nurses implementing the ESOP model of care was limited with the majority of sites training fewer than six nurses. Most project teams were unable to implement the ESOP model of care on all shifts or all days of the week.

Consequently, high diversity of ESOP programs and limited exposure to programs prevented a comparative analysis of incremental costs and consequences of ESOP programs; this was beyond the scope of the ESOP program evaluation (Drummond et al., 1997). The approach adopted for the ESOP-NED initiative is to use the available data to:

- quantify the return on investment for the expended HWA funds
- assess the potential impact or contribution of the ESOP-NED projects to their ED's NEAT
- determine the acceptability of the ESOP model of care for ESOP practitioners, consumers and other members of the health care team
- establish best bets for future investment.

5.2 Return on investment of HWA funds

The primary intention of this analysis is to quantify the return on investment from the HWA funding allocation, that is: "What did HWA get for its money?" Table 26 shows the funding received from HWA.

Table 26 HWA funding received

Recipient	Execution date	Completion date	Total HWA funding (GST incl.)	Salary and wage related items (GST incl.)	Salary and wage related items as a % of total funding
NED1	12/06/2012	31/12/2013	\$343,455	\$312,496	91.0
NED2	12/06/2012	31/12/2013	\$265,681	\$230,000	86.6
NED3	25/05/2012	31/12/2013	\$310,362	\$251,762	81.1
NED4	23/05/2012	31/12/2013	\$325,000	\$313,168	96.4
NED5	23/05/2012	31/12/2013	\$255,380	\$199,680	78.2
NED6	12/06/2012	31/12/2013	\$101,645	\$74,205	73.0
NED7	23/05/2012	31/12/2013	\$350,000	\$330,000	94.3
NED8	6/06/2012	31/12/2013	\$119,000	\$90,000	75.6
Total			\$2,070,523	\$1,801,311	87.0

Definitions of patient target groups for each of the different NED models are provided above in Section 4. Table 27 shows the patients in the target group in baseline and implementation period, both as total patients and as percentage of total ED activity. For the implementation period, the number of patients in the target group that were treated by ESOP-NEDs is also shown. (Note that this figure of 11,032 includes only patients defined as part of the target groups and is therefore slightly lower than the total of 11,615 patients reported in Section 4.) The percentage in the last column refers to the proportion of target group patients seen by an ESOP nurse.

Table 27 Patients in the target group in baseline and implementation period

Site	Baseline ^a		Implementation ^b			
	Total		Total		Treated by ESOP-NED	
	#	%	#	%	#	%
NED1	3,595	6.0	7,088	7.6	2,159	30.5
NED2	1,147	2.4	1,557	3.7	184	11.8
NED3	4,612	4.8	4,110	5.1	285	6.9
NED4	40,230	93.0	59,466	92.8	4,610	7.8
NED5	24,514	55.2	14,326	58.9	55	0.4
NED6	6,999	84.4	8,631	86.0	104	1.2
NED7	12,196	19.3	12,436	20.0	2,499	20.1
NED8	8,850	13.9	9,281	15.1	1,136	12.2
Total	102,143	24.0	116,895	26.7	11,032	9.4

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

Presentations that could not be allocated to the target groups due to missing information (e.g. Triage Category, diagnosis or age) are excluded from percentage calculations. As a result across all sites there were a total of 31,089 (3.4%) presentations excluded from the baseline period and 22,120 (2.4%) from the implementation period.

Table 28 puts the ESOP-NED activity in the defined target group into perspective. The first column shows the investment per patient seen. Across activities this averaged \$188 per patient. The second column shows the number of patients seen by ESOP-NED per \$1,000 spent. This is on average 5.3 patients.

This calculation is simplified to the extent that it makes no attempt to incorporate additional direct and indirect costs borne by the implementation site and does not allow for the development and implementation costs of the training component.

Table 28 Patients treated by ESOP-NED in implementation period in relation to investment by HWA

Site	Investment per ESOP-NED patient	Patients treated by ESOP-NED per \$1,000 spent
NED1	\$159	6.3
NED2	\$1,444	0.7
NED3	\$1,089	0.9
NED4	\$70	14.2
NED5	\$4,643	0.2
NED6	\$977	1.0
NED7	\$140	7.1
NED8	\$105	9.5
Total	\$188	5.3

5.3 Returns – potential contribution towards ED performance and NEAT

In this analysis, the primary return considered is the sub-project's potential contribution towards NEAT performance at participating sites. Table 29 shows the total numbers and percentage of patients in target group who were discharged within the four-hour NEAT. Across all sites the NEAT was met for 57% of episodes in the baseline period. This figure increased to 63.8% in the implementation period. As discussed above (Section 4), all sites improved on this KPI, ranging from less than 1% improvement at NED6 (which was already performing extremely well at baseline) to a 13% improvement at NED5 and NED4.

However, the patient cohorts and resources change over time. Hence, a component of the observed NEAT performance improvement is not directly attributable to the ESOP-NED initiative but has resulted from other concurrent changes not measured in this evaluation. In light of the multiple factors potentially influencing the overall NEAT performance, the relevant questions are whether, and to which extent, the ESOP intervention made a noticeable contribution to the observed result (Mayne, 2012). If so, how did the intervention make that contribution?

The Centers for Disease Control and Prevention (1999) suggested that a more realistic approach to measuring program effectiveness would be to measure the extent to which a program has made a 'contribution' towards achieving long term goals. Here, the aim of the assessment is to make an informed and evidence-based judgement about the overall contribution of a program or project to a long-term objective. In this context, the aim becomes to ensure that the evaluation framework, the performance indicators and the related data collection provide a sufficient picture of the achievements of a project to make an informed judgement. If data are collected in accordance with an agreed protocol, and the subsequent analysis indicates that a project has met its performance indicators, it becomes reasonable to conclude that the project has made a 'contribution' to achieving the program's overall aims and objectives. The ESOP program fits within a model where it is reasonable to measure 'contribution' rather than 'attribution'.

Table 29 Patients in the target group that met NEAT (left within 4 hours) in baseline and implementation period

Site	Baseline ^a		Implementation ^b					
	Total		Total		Treated by ESOP-NED		Treated by other practitioner	
	#	%	#	%	#	%	#	%
NED1	994	27.6	2,312	32.6	622	28.8	1,690	34.3
NED2	277	24.1	346	34.1	54	39.4	292	33.3
NED3	1,905	41.3	1,921	47.1	149	59.1	1,772	46.3
NED4	17,232	42.8	25,609	55.9	3,016	89.9	22,593	53.2
NED5	16,913	70.5	11,960	83.5	53	96.4	11,907	83.4
NED6	6,713	95.9	8,335	96.6	97	98.0	8,238	96.6
NED7	8,453	69.3	9,192	73.9	2,324	93.0	6,868	69.1
NED8	5,406	61.1	5,816	62.7	813	71.6	5,003	61.4
Total	57,893	57.0	65,491	63.8	7,128	73.5	58,363	62.8

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

A total of 0.5% of records in the baseline period and 12.2% in the implementation period are excluded due to missing/invalid data.

A proportion of the increase on overall NEAT performance resulted from the contribution by the ESOP nurses. This contribution can be measured as the difference in NEAT performance overall compared with the performance for patients treated by 'other practitioners'.

Table 30 shows this difference. It is important to note that ESOP nurses contributed a varying but small proportion of target group activity and generally had higher NEAT performance. At all

sites except NED1 the ESOP nurses were able to positively contribute towards NEAT performance. (Interestingly the evidence for NED1 does not align with stakeholders' perceptions of the impact of the ESOP nurses on workflow within the ED.)

In total, the ESOP nurses increased the NEAT performance by 1.0 percentage point. That is, in total 1,889 more patients were treated within the four-hour target.

Table 30 Contribution to NEAT performance and corresponding number of patients

Site	Contribution to NEAT performance %	Corresponding number of patients
NED1	-1.7	-121
NED2	0.8	8
NED3	0.8	33
NED4	2.7	1,237
NED5	0.1	14
NED6	0.0	0
NED7	4.8	597
NED8	1.3	121

A similar indicator of performance which may be more relevant for mental health sites is the proportion of presentations recorded as being resolved without the need for admission or referral. Higher proportions would indicate more positive outcomes. Recent national statistics indicate that over half (59.1%) of mental health-related ED occasions of service in 2010–11 were recorded as completed, indicating service resolution within the ED without admission or referral to another hospital (<https://mhsa.aihw.gov.au/services/emergency-departments/>). Table 31 summarises this information for the three mental health sites for both baseline and implementation periods.

Table 31 Mental health presentations recorded as being resolved without the need for admission or referral – baseline and implementation

Site	Baseline ^a		Implementation ^b					
			All		Treated by ESOP nurse		Treated by other practitioner	
	#	%	#	%	#	%	#	%
NED1	1,933	53.8	3,686	53.1	1,135	54.3	2,551	52.6
NED2	563	49.1	747	48.7	62	38.8	685	49.9
NED3	2,880	62.5	2,511	61.6	168	66.7	2,343	61.3
Total	5,376	57.5	6,944	55.3	1,365	54.6	5,579	55.5

^a Baseline (Data Submission 1), the period 1 October 2011 – 30 September 2012 (please refer to Table 14 for variations).

^b Implementation (Data Submission 2 and 3), the period 1 October 2012 – 31 December 2013 (please refer to Table 14 for variations).

At baseline, NED3 was performing slightly better than the national average with 62.5% of mental health cases resolved in the ED. Implementation period figures show that ESOP mental health nurses at NED3 achieved somewhat better performance on this indicator than other practitioners at that site. The other two sites had relatively poor performance compared with the national figures. The ESOP nurses at NED1 had higher resolution rates than other practitioners.

Averaged across all sites, there were small differences between baseline and implementation, and between the nurses working in the ESOP models and other practitioners, on this indicator. The total rate of mental health presentations being resolved without admission or referral fell from 57.5% at baseline to 55.3% during implementation of ESOP and was lower at each of the sites. However, it is hard to say whether this is attributable to ESOP nurses or impacts on other practitioners. There is a potential for selection of patient populations, which may have differed between ESOP nurses and other practitioners and between sites.

5.4 Acceptability of the ESOP model of care

A range of quantitative and qualitative data sources were triangulated to generate an evaluative judgement about the acceptability of the ESOP model of care. Details about the methods of data collection and analysis are included in Appendix 2. This judgement came from the findings about acceptability of the role to the ESOP nurses, the acceptability of the role for consumers, their carers and families and the acceptability of the role by other members of the health care team. Synthesising this information with findings from the training evaluation (Section 3) and other quantitative data sources presented in Section 4 has resulted in a view about which projects have the potential for wider replication.

5.5 Best bets for future investment

An overarching goal of the HWA ESOP program evaluation was to investigate the extent to which new workforce roles and models of care could be scaled up and applied nationally. This can only be determined by careful consideration of the context of implementation. Inevitably decisions about future investment need to incorporate a detailed understanding of 'What works for whom in what circumstances and in what respects, and how?' (Pawson and Tilley, 2004).

A synthesis of the data and information, lessons learned and understanding of the conditions for sustainability have generated a view about the ESOP-NED projects that exhibit potential for wider implementation, based on their brief implementation period and the limits of this economic assessment. This does not imply that other ESOP-NED models are not worthy of further investment, however longer periods of implementation and evaluation would improve the capacity to make robust recommendations.

The projects that appear to represent best bets with potential for wider implementation include:

- NED1 (a mental health clinical nurse specialist model)
- NED4 (an ED review clinic staffed by clinical nurse consultants)
- NED8 (criteria-led discharge pathways for common paediatric presentations).

6 Sustaining innovation

Innovative models expanding the scope of practice of nurses in the ED have been implemented in eight organisations at diverse locations, using a variety of strategies for workforce innovation in the ED. 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 and effectiveness)
- 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 National Health Service Sustainability Model (Maher, Gustafson and Evans, 2006). This categorisation provides a way of organising the major evaluative findings for the NED sub-project. It is illustrated in Figure 10. Only factors that were relevant to the NED sub-project were addressed in the following analysis.

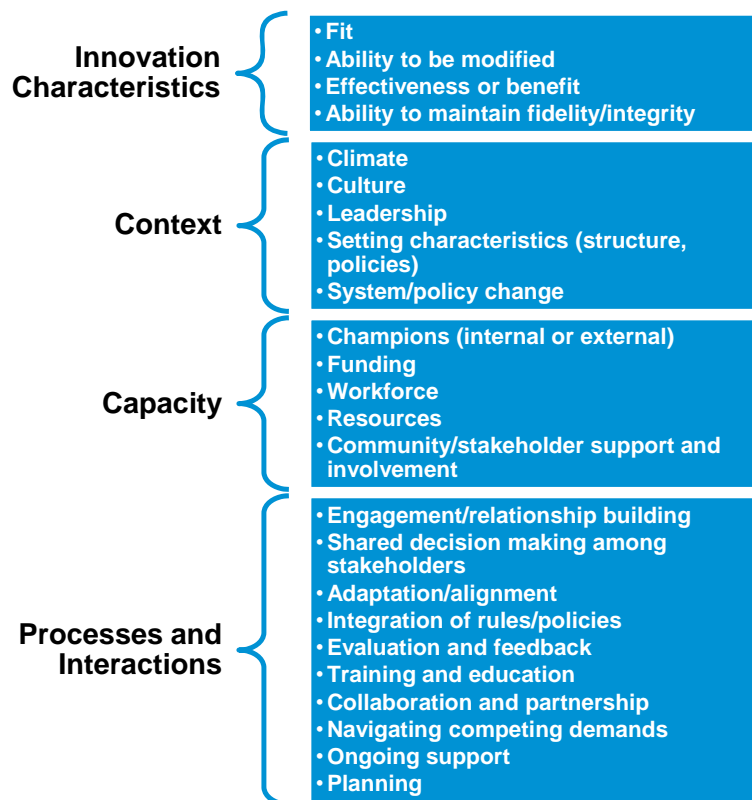


Figure 10 Influences on sustainability (adapted from Stirman et al. 2012)

This evaluation of sustainability needs to be understood within the context that most NED projects did not implement a truly expanded scope of practice role but rather encouraged nurses to work to their full scope of practice. As stated in Section 2, this does not mean that projects were not innovative for the organisation they were based within, however not all projects can be said to be genuinely innovative for the nursing profession. This sentiment was expressed in stakeholder interviews”

“I think it’s a pathway to allowing nurses to work to their full scope of practice – to a full, a broader scope of practice.” (Stakeholder-Nurse Manager)

6.1 Innovation characteristics

Innovation characteristics relevant to the sustainability of the ESOP nurse role include the fit of the initiative within the ED, 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 ESOP initiative appeared to have a good fit within most organisations. Organisations had identified a demand or service gap that the ESOP model of care could address. Specifically, the models of care were well-suited to potentially contribute to addressing the challenges of increased demand and stringent performance targets (as described in Section 1), which were of high import to most organisations.

Sustainability was more strongly promoted when the aims of the model were consistent with the organisation’s values and performance feedback was framed within these values.

6.1.2 Implementation fidelity

Consistent implementation of the model of care was reliant on adequate staffing, however, most implementation sites had limited capacity to backfill.

An adequate caseload was also needed to ensure implementation fidelity. While there was sufficient throughput at most sites, this did present a challenge to some. For instance, NED6 had difficulty generating enough cases for nurses to achieve competency. This reflected the importance of access to clinical supervisors for assessment. The availability of appropriately qualified staff or visiting medical officers was limited as they were not always on site at the time an appropriate patient was present for ESOP nurses to be supervised for competency attainment (particularly for the skill of suturing). This was a major issue for the project training model, and negatively impacted on implementation fidelity.

6.1.3 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. To garner support and demonstrate the viability of their model of care NED project teams used information related to a number of positive outcomes of the model including:

- safety
- patient satisfaction
- efficiency
- improved outcomes for consumers
- cost-effectiveness
- improved ED performance in relation to the national four-hour target, facilitating patient flow and reducing ED exit block.

The fact that the benefits of the model were obvious to key staff at many host organisations led them to value the ESOP nurses and the impact the initiative had on the ED. For projects in smaller communities, regular engagement with stakeholders and an understanding of how the 'bush telegraph' or informal communication methods worked was important.

The importance of 'evidence of benefit' to sustainability is clear, but demonstrating early wins is difficult and usually requires sustained implementation, as recognised by a number of key stakeholders.

"I think it depends on how 'in your face' the benefit of that change is. That's one of the challenges for this, as we spoke about before, in terms of really trying to have some key outcomes in terms of how much time does it save medical staff. It's really hard to define that. So changes that have been instituted that are obvious they've helped things, generally, people buy in very rapidly and they move along."
(Stakeholder-Medical)

"I would say really look at your sustainability and think more about sustainability up front and look at how you're going to roll that out over a longer period. It's not something you're going to get immediate results from, to be honest. It's going to take some time to bed it down because you are going to have some opposition."
(Stakeholder-Nurse Manager)

"It's around the sustainability. I mean, I think we need funding to drive it. I don't think we need funding to make it work. Do you know what I mean? I know that sounds a little bit funny, but I think we are making it work; it's just that we don't have that money to actually put behind someone for a three year – if we had it for a three year period I think we could actually make it self-sustainable after that..." (Stakeholder-Nurse Manager)

6.2 Context

The key contextual factors that have impacted sustainability of the ERP projects have included: the organisational climate and culture, leadership and the characteristics of the localities in which the projects were based.

6.2.1 Organisational climate and culture

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.

The receptive culture within EDs and other affected clinical departments assisted implementation and was a positive sign that the models could be sustained. For mental health projects (NED1, NED2, NED3) regular support was also received from team members outside the ED, including professional staff such as psychiatrists, social workers, other mental health nurses and clinical psychologists.

Effective change management strategies need to be employed as implementing a new model of care is difficult; it can be threatening to individuals within an organisation, and more broadly may have to contest a culture traditionally resistant to change.

There's always going to be opposition to anything new especially when it's nurses appearing to tread on doctors' toes." (Stakeholder-Nurse Manager)

"It was a bit of culture and I think that's why in the past we've had trouble extending stuff for nurses." (Stakeholder-Nurse Manager)

Having the ESOP nurses fitting into the ED and being seen as part of the ED team was an important way to foster acceptance for the role and gain support from other ED staff, diminishing perceived cultural barriers between organisational departments.

"For anybody starting in ED you've got to recognise that you're working in their territory and you've got to respect what they do and your job is to assist them, not to have them assist you. So I think it's a matter of - if you're going into somebody else's place you don't actually tell them how to do their job, you try and assist them. I think that - and I think that following on from that, being embedded within the place is always going to be better. Yeah, I think geography is incredibly important. If you've got an office across the way, well, you're not part of this place, are you?" (Stakeholder-Medical)

"A level of flexibility in people is important and again, I think it speaks well for the model that we have, because it's not rigid because it continually has to be renegotiated..." (Stakeholder-Medical)

In particular, it appears rural health nursing is yet to fully embrace change, with more needing to be done to increase acceptance of the ESOP nurse role in this setting, as reflected in the following quote:

"I actually think the concept is great, and I've worked in rural health a long time, and I love it. I stay in it, because I love the diversity and the many different things you do in a day; you aren't pigeonholed. And I think the concept is great, but I have to say I think the implementation was quite poor. And I think the consultation was poor." (Stakeholder-Nurse)

Nonetheless, ESOP nurses felt that they had achieved a level of acceptance within their rural communities, having received support from the patients.

“It’ll take some while, but I believe in time, and it’ll be patient driven.” (ESOP nurse)

“They go out, thank you very much. Thank you for your time. Nobody else has spent the time and they really appreciate what you’ve done...Everybody likes to hear that, but to hear it and knowing that I have actually done something, rather than I’ve just been a nice nurse.” (ESOP nurse)

Other stakeholders acknowledged factors required to create a receptive environment for change:

“So it’s providing an environment where we can train, support, and progress people, and develop this set of skills.” (Stakeholder-Medical)

6.2.2 Leadership

All NED project teams identified the need for leadership for their model of care. This leadership often came from the project team themselves; that is, project managers and ESOP nurses. In this respect it was especially important that the project manager had sound leadership skills. In addition, strong leadership from the Director of nursing and Director of ED (and potentially other medical officers in the ED) was also imperative to successful implementation of the model and achieving sustainability.

This senior leadership in the ED (both nursing and medical leadership) was vital. As illustrated in the following quotes, junior medical officers will adapt to the new model of care if they see their senior medical staff embracing the change.

“The nurses take a lead from their senior nurse. If I get everyone a cup of tea then it becomes a good idea to get everyone a cup of tea.” (Stakeholder-Medical)

“I guess for me it was important to clearly show my support for this project, but more generally about how we advance and reshape the workforce going forward. I think it’s important that there is strong executive support and leadership to then enable people to get on and do what they’ve got to do really, so that’s why I made time to go – assessed for myself – was able to see that it was all fine and things are cooking with gas.” (Stakeholder-Nurse Manager)

6.2.3 Setting characteristics

Each project used established clinical governance processes within their organisations to ensure that ESOP nurses had clear lines of professional accountability, understood policies and practices relating to clinical governance and could monitor incidents and adverse events. Most projects applied accepted frameworks or guidelines for ethical and responsible practice or appropriate practice guidelines.

The sustainability of the NED sub-project was dependent on selecting the right implementation locations. Setting was of particular importance to NED5 and NED6, as the rural locations created unique issues. At these implementation sites, the ESOP role had to be balanced with other demands in the ED or hospital, as staffing was often limited. As one ESOP nurse explained:

“So, whatever comes through that ED door is mine as well. So that’s like the unplanned part of my care for the day”. (ESOP nurse)

6.3 Capacity

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

6.3.1 Change champions

Most project teams had a change champion; this person could be external or internal to the organisation. Champions could be identified at any level of the organisation, and contributed to acceptance of change and the achievement of projects' vision. In all implementation sites, several ESOP nurses themselves acted as change champions, as did project managers. Their enthusiasm for the project and willingness to engage with their colleagues in ED and other hospital and primary care practitioners contributed to positive perceptions of the role.

Senior medical champions were a critical strategy and increased acceptance of the ESOP model of care amongst ED clinicians and primary care peers. Medical champions were essential to clarify the role for other medical colleagues, and thus foster acceptance.

6.3.2 Workforce characteristics

Highly experienced nurses were recruited. Many nurses 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. Several projects that opted to implement their project using their existing workforce (such as NED2, NED4, NED5, NED6 and NED7) used this as a deliberate strategy to build capacity in personnel that were likely to remain in the organisation. This approach was employed as many project teams recognised that their organisations had a relatively stable cohort of staff and although the project might end the staff would remain and retain the new skills they had gained. Furthermore, recruiting highly experienced personnel from the existing workforce improved the credibility of the ESOP nurse role in most participating organisations as it was associated with some of the most competent staff. The challenge for these sites was how to sustain newly trained staff and extend the ESOP training as appropriate.

The role itself was viewed positively by ESOP nurses themselves, indicating they may like to continue in the role and this may also potentially attract new recruits to the role. The role was seen as more rewarding and empowering, and for many ESOP nurses it has increased their confidence and they have found the experience stimulating. Several nurses described it as the 'pinnacle' of their career and something they had been working towards for many years. For many ESOP nurses their high level of satisfaction came from providing better quality and continuity of care and a sense that they were being more proactive in their nursing role. The following quotes are illustrative of this perspective:

"I'm very proud of my ESOP role. I really am, and I tell you that's not being over dramatic, I've been in the profession for 20 years, we're pretty - not jaded, but a bit cynical, and I can't find anything recently in my past nursing that's made me so excited. This really has, I have enjoyed it." (ESOP nurse)

"...professionally and personally it's a lot more rewarding." (ESOP nurse)

"For me just the expanse of what I do now and how I think - the big picture thinking... that thinking ability and I feel I can manage this total patient care and I'm pretty comfortable in it and the impression I get from the patients are that they're quite happy with it..." (ESOP nurse)

"Well I think it's been a fantastic opportunity, and I've loved doing it, and I think it's been really great for my confidence and for my enjoyment of doing the skills at work, and I definitely would recommend other places doing it..." (ESOP nurse)

"I have great pride each time I see a patient, I follow all my ESOP procedures...and go, 'And that's my patient. I made a difference.' So to me, it's beyond words. I love it." (ESOP nurse)

Staff retention is highly associated with sustainability. ESOP nurses want to continue in the role and the ESOP model of care is an effective retention strategy, it has provided an expanded clinical role that remains hands-on.

"I think it's a waste if it doesn't keep going and even if we have a small through-put of patients now, I mean, it's only going to get bigger, the community as I said, so now we're skilled we might as well use the skills." (ESOP nurse)

Further, the intention of the vast majority of ESOP nurses to continue in the role where possible was evident in results from analysis of the 'ESOP personnel survey' (Thompson et al., 2012b). Only 6 of 93 respondents indicated that they did not plan to stay on in their expanded role for the foreseeable future, pointing towards the sustainability of the ESOP nurse role. Furthermore, analysis of the 'Staff establishment profile' (Thompson et al., 2012b) provided another positive indication of sustainability of the role, demonstrating low turnover in this sub-project; two individuals from different project teams left to take up nurse practitioner positions during the course of the program. Several nurses withdrew from the ESOP training pathway at NED6 and NED5 and consequently the ESOP role but retained their employment with their organisation. Intentions of ESOP nurses to continue in the role was a significant factor in the sustainability of the projects.

Analysis of the 'ESOP personnel survey' (Thompson et al., 2012b) supported ESOP nurses' job satisfaction. Over 80% of respondents were satisfied with their expanded role and felt it enhanced their careers. At many project sites the ESOP nurse role provided further career pathways for the nursing workforce, which was essential to recruitment and retention strategies, as evidenced by the following quote:.

"I actually think in the long run for us it will actually be a bit of a recruitment and a retention bonus for us as well, because people have actually got something to look forward to that. My skills as a registered nurse are supported, my development is supported, and I can extend my role." (Stakeholder-Nurse Manager)

6.3.3 Funding

Business cases needed to align with the strategic agenda of the CEO. Most project teams worked to link the contribution of the ESOP role to key organisational performance metrics, in particular the NEAT.

While the availability of additional funding was an important determinant of sustainability for some sites, embedding the changes implemented by the service within the ED structure was critical for those using existing resources.

For services ongoing funding was found from internal reorganisation of resources and others from new budget allocations. When funding came from internal reorganisation the ESOP nurse had to work hard with colleagues to establish their value to the team, as illustrated in the following quotes:

"...those are the sorts of things I work very hard at to – you know, it wasn't just the clinical stuff as I said, the organisational kind of smarts and making it all happen, is something I worked very hard on." (ESOP nurse)

"The challenge is with the drive for activity based funding and everything's got a dollar on its head, how does this make care more efficient?" (Stakeholder-Nurse Manager)

The issue of funding was also prominent during key stakeholder interviews.

“...it has to be financially sustainable and provide a return on investment to the health service.” (Stakeholder-Manager)

“... is it cost-effective is probably the most important [element for sustainability], in other words, is the funding that’s provided properly accounted for...” (Stakeholder-Medical)

A number of stakeholders had strong views that ongoing funding should be made available to ensure continuity of the ESOP nurse role, but accepted that some challenges existed.

“There needs to be recognition that this is the way of the future; that we will need to have skilled nursing staff in the ED to help with the overload of patients that will continue to rise into most EDs. There needs to be blocks of money available to support and financially create jobs so that these skilled staff are available Monday through to Sunday...” (Stakeholder-Medical)

“Well, I think that is sustainable, and it just requires us to be committed and say, okay, and develop a program using the learnings from all this to actually be looking at who is the next person to do this with, and commit training and education funds to it. I don’t think it’s that huge really.” (Stakeholder-Nurse Manager)

“So I guess where we are now is thinking about how do we sustain the role because that’s the challenge, because when it’s a funded project it’s an additional resource on top of our staffing, so how do we use this now in our practice. And that’s one of the challenges we have is whether we use some of our budgeted FTE to continue the role in the way it is, or do we modify and look at how we use the training to use it for other staff.” (Stakeholder-Nurse Manager)

Without external funding many project teams would never have had the opportunity to pilot their workforce innovation.

“We would never have done this project without the Health Workforce Australia funding.” (Stakeholder-Manager)

6.3.4 Resources

Significant investment in project management resources assisted implementation of the initiative. A higher level of skill and experience in project management and investment in hours translated into better and more efficient project implementation and evaluation.

Prior to implementation all project resources should be developed and approved by the organisation, to facilitate a smoother implementation and to allow the project team time to manage contingencies. These resources should be developed in collaboration with relevant health professionals e.g. nursing, medical, allied health, clinical governance, managers and executives).

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 ESOP nurses 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 NED 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. Most notably this included other ED staff, and depending on the project's priority area (mental health, rural and regional implementation or paediatrics) could include ED mental health staff members, triage managers and nurses, and other health professionals in the nursing, medical, radiology, paediatric and pharmacology fields. Project teams who engaged other personnel who were working in the ED but not the ESOP role reduced friction from other staff. ED ownership of the model of care was also developed through this engagement.

High level support was also critical for sustainability. For instance, the Mental Health Program's Director of Nursing and Associate Clinical Director played a vital role in the change management strategy at NED3, and their involvement promoted sustainability, advocating for the MHNPs in ED and throughout the service. The NED4 project manager reported regularly to the governance committee which ratified changes to the scope of the project, monitored risks and resolved issues where necessary. The project also had an "executive sponsor", who was the Director of Clinical Services. This role provided guidance to the project manager. Both rural sites recognised the importance of early stakeholder engagement for successful implementation and sustainability. NED5 had the support of three committees: a steering committee, a clinical advisory group; and a research group which included people with strong skills and interests in data analysis and research. Among the groups engaged by NED6 was the hospital's board of management. Both paediatric projects received strong support from paediatric specialists and hospital executives to implement their new models of care. At the NED7 Hospital, the paediatric emergency physicians and the paediatric emergency nurse practitioner were very enthusiastic and supportive. The NED8 Hospital project benefitted from a history of successful implementation of criteria-led discharge programs in other departments of the hospital, which helped the project gain strong support from the ED management and hospital executive. A working group established early in the project involved project staff, the nurse unit manager, clinical director, emergency consultants, nurse practitioner, clinical nurse specialists, associate unit managers and nurse educators in developing the clinical pathways and discharge letter templates. The project was also guided by a steering committee and sought input from nursing and medical staff. Any issues identified were directed to the working group for resolution.

Those groups with low influence and high involvement, including patients and the community more broadly, were also effectively engaged by a number of project teams. This engagement was more important in rural areas, but was attempted by most projects. For example, several project teams such as NED2 worked with consumer representatives to demonstrate that the ESOP model of care is better able to meet consumer needs. Consumer representatives were a key link to this important group of stakeholders. A member of the Consumer Health Forum was appointed as a representative on the NED Project Advisory Group.

Ongoing engagement of stakeholders over the life of the project supported implementation identifying risks and supporting implementation of management strategies. It was important to ensure the goal and measurable objectives were effectively communicated to all stakeholders. However, maintaining key stakeholders' involvement so they advocated for project sustainability was a challenge. Project teams who maintained their steering committees / clinical coordination committees had a forum where they were able to present information on their project over time.

The PAG 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.

6.4.2 Collaboration and partnership development

The opportunities presented by collaborative practice with other members of the health care team were valued by ESOP nurses. For many nurses the experience in the ESOP role stimulated their interest in post-graduate study.

"I hadn't known what nurse practitioners could do either. You read their position description, but they were just inspirational...I enjoyed it immensely. Actually I found it quite inspiring to find what nursing peers were doing and there was no reason I couldn't develop too." (ESOP nurse)

"I guess I do like that autonomy that comes with decision-making and liaison with the other teams and community teams." (ESOP nurse)

"I think it's a really good stepping stone to – if you want to get into nurse practitioner as well, because you're given that little bit more responsibility and you do gain a lot more knowledge..." (ESOP nurse)

NED7 in their final report, suggested exploring the potential for establishing a partnership between metropolitan paediatric tertiary centres may be of value, as collaboration between centres and departments like NED7 ED should improve outcomes for all parties involved through the sharing of useful and practical information.

6.4.3 Integration of policies and procedures

An important strategy used by NED8 to ensure the project was sustainable was ensuring all documents, policies and procedures were aligned with the organisation's existing initiatives. This cemented organisational involvement consistencies and support.

NED2 developed policies to support the initiative and the Local Health District is keen to spread these policies to the other EDs in the district.

Many projects developed a job description and role statement to incorporate the expanded role. This documentation can continue to be used in the organisations and may be adopted by other organisations looking to introduce an expanded scope of practice nurse role.

Most project teams leveraged off existing clinical governance frameworks within their hospital or health district to ensure safe practice.

6.4.4 Training and education

Training was a key element of several projects and was specific to each site (refer to Section 3 for details). The main issue in this area was the challenge of sustaining in-house competency based training programs reliant on clinical mentors or supervisors. This type of training model is very resource intensive. Sites that developed online resources and utilised existing education services are likely to be more sustainable going forward.

The availability of the training models developed provides important infrastructure that could be adapted and meet future training needs. Professional recognition for the investment ESOP nurses made in training and ongoing re-accreditation of the ESOP skills is an important issue, and having processes in place to ensure this occurs would promote sustainability. This issue was raised during interviews:

"I don't know whether I've got to be accredited every 12 months or not which, to me, I think would be – I suppose it depends on how many you do, see I've had quite a few, so for me to do reaccreditation every year...if that's what's got to happen, that's what's got to happen." (ESOP nurse)

The demands of some training programs could be burdensome at some project sites, resulting in some ESOP nurses not being able to complete training, and threatening sustainability of the project. In particular, the nurses at NED6 did not complete the six month online Certificate IV in Training and Assessment course and therefore could not provide ongoing assessment of competency for other registered nurses wishing to expand their scope of practice.

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 NED 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

Sites were asked to complete a sustainability tool (Thompson et al., 2012b) measuring 10 factors that have been shown to influence sustainability (Maher et al., 2006). The tool was completed twice, once at the beginning of implementation activities and again at the end of the program. Results indicated an increased likelihood of project activities being maintained over the course of the program. The mean score for four of the 10 factors remained constant at Time 1 and Time 2, but despite the lack of change in scores these factors were rated highly at both time points. For four other factors the average Time 2 score was marginally higher than the average Time 1 score and closer to the possible maximum, indicating a move in these areas towards greater sustainability by the end of the project. High total scores were reported by most sites at project commencement, suggesting that they were optimistic about achieving sustainability early on, and this positive outlook was maintained towards the conclusion of the project.

Two factors with the greatest potential for improvement by project end were 'Senior leadership engagement' and 'Fit with the organisation's strategic aims and culture'. These factors were rated slightly lower at Time 2 and represent the areas that some project sites had most difficulty improving; which can be viewed as the greatest risks to sustainability. Senior leadership engagement was the most significant problem; four of the eight sites (NED2, NED5, NED6 and NED7) perceived that either organisational leaders were taking limited responsibility for efforts to sustain the change process or that better two-way communication between staff and leaders was needed. Fit with the organisation's strategic aims and culture was the other factor that was seen to jeopardise sustainability towards the conclusion of the project for the same four sites (NED2, NED5, NED6 and NED7). For these sites, the history of successful sustainability of changes at their respective organisations was questioned, as was the compatibility and consistency of the improvement embodied by the project with the organisation's strategic aims. It seems the aforementioned risks were not effectively addressed by these sites, as the mean score for the two factors either remained low or decreased by the conclusion of the project. The infrastructure for sustainability was another factor that presented a threat for three sites (NED5, NED6 and NED8), where it was felt that not all infrastructure was in place to sustain the change (which may include appropriate staff, facilities and equipment, as well as job descriptions, policies, procedures and communication systems).

The data from the sustainability tool indicated some optimism about continuation of the NED initiative 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.

Refer to Table 32 for further details about the sustainability of NED projects.

Table 32 Sustainability prospects – NED sub-project

NED project site	Current status	Innovation sustained
NED1	Recurrent funding for this nurse practitioner-led extended hours mental health liaison nurse (MHLN) service based in the ED was secured early in the evaluation as a consequence of organisational commitment based on previous experience with the MHNP role in the ED.	Yes
NED2	The six clinical nurse consultants were employed previously in the ED prior to project commencement. Both the ED mental health clinical nurse consultants and the Local Health District Executive are committed to ensuring project outcomes are sustained. NED2 has developed policies to support the initiative continuing beyond the life of the project, and it has become “the regular way of working”.	Yes
NED3	The project had two FTE MHNPs and had achieved permanent funding for one at the time of this report through reorganisation of internal resources. The staff in the MHNP roles are well embedded and accepted by their peers in mental health triage and continued on in their roles post completion of the project.	Yes
NED4	Through negotiation with executive sponsors and nursing administration, an application to secure ongoing funding of the ED Review Clinic model of care at NED4 ED by realigning current ED nursing FTE was submitted and approved. Thus, the ED Review Clinic model has been maintained (continuing to be staffed by 1.4 FTE).	Yes
NED5	The project has successfully transitioned from a pilot to a standard to model of care. ESOP has now commenced Phase Two with the implementation of education and training in seven sites including six new sites, so far recruiting 21 new nurses for the program (existing positions that underwent the training). Ten hospitals across the Local Health District now have authorised ESOP registered nurses working in their ED.	Yes
NED6	The four registered nurses will remain working in their UCC roles, continuing to perform selected ESOP activity. For registered nurses who had not yet achieved competency in some of the clinical skills, opportunities to consolidate skills learned within the clinical setting in order to obtain clinical competency will be explored. None of the nurses completed the Certificate IV in Training and Assessment (which was aimed at them providing ongoing assessment of competency for other registered nurses wishing to expand their scope of practice). Ongoing funding was necessary to implement the model in its current structure, to support education and training to further expand the model for other registered nurses within the UCC. Unfortunately, the funds were unable to be sourced.	Partial
NED7	The four clinicians in the ESPPN role returned to their normal duties within the ED following the conclusion of the project, although they will continue to perform selected ESOP activity.	Partial
NED8	123 nurses were trained as a result of the project. This model of care was designed as a permanent change of practice and will continue to expand to include new nurses employed as well as additional diagnostic groups	Yes

NED project site	Current status	Innovation sustained
	<p>within NED8's ED past the completion of the project.</p> <p>Commitment to the development of a sustainable initiative was the focus from the onset of this project, as evidenced by the policies, education pathways, and development of CLD documents developed.</p>	

6.6 Dissemination

The evaluation framework for the HWA-ESOP program also sought to understand how project teams disseminated information relating to the NED project, in order to answer the plain-English evaluation question, "Who did you tell?" Disseminating information about the NED 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 nursing, health and ED-specific professions. 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 occurred during the early stages of the project and at the conclusion of the NED sub-project, indicating a concerted effort from sites to disseminate information early on and to communicate accomplishments towards the end. Sustaining the change effort requires ongoing communication and the fewer dissemination activities in the implementation phase of the project suggested project teams needed to invest more energy in regular dissemination activities throughout the life of the project. Dissemination of achievement towards the conclusion of the project by NED project teams was encouraging.

More than half of all activity was accounted for by presentations to staff within the organisation (e.g. discussion at a staff meeting) and presentations to individuals external to the organisation (e.g. discussion at an interagency meeting). Project managers most frequently conducted the dissemination, followed by project team members and other representatives of the organisation.

The purpose of almost two thirds 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 activities 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, however most dissemination occurred internally within the project team and respective hospital site or health service, potentially improving organisational engagement and assisting change management. Some activities did have a broader audience including the local community and state and national audiences. For instance, NED1 has submitted a journal article to a peer-reviewed emergency nursing journal and is presenting at the Eighth International Council of Nurses' International Nurse Practitioner / Advanced Practice Nursing Network Conference taking place in Helsinki, Finland, in August 2014. Similarly, NED4 has submitted a journal article and presented at the International Conference for Emergency Nurses as well as local research symposiums within New South Wales. NED5 has also widely disseminated the success of their initiative and its expansion in the Local Health District, through media releases and presentations. Print media, television and radio were also used by some project teams.

The 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.

Project officers rated the effectiveness of dissemination fairly neutrally, suggesting that strategies required further planning. The most effective dissemination method seemed to be presentations to staff within the organisation.

HWA also undertook some dissemination activities, promoting awareness of the NED sub-project and its achievements. For instance, the sub-project was featured in a progress report on the HWA's ESOP and Aged Care Workforce Reform programs (HWA, 2014).

6.7 Summary

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

- The good fit and consistency of values 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).
- Issues such as capacity to backfill, sufficient throughput and access to clinical supervisors for assessment impacted on implementation fidelity.
- Project teams that consistently communicated achievements were better able to sustain interest in their initiative. Presenting data aligned to organisational KPIs (including effectiveness, efficiency, patient satisfaction, improved ED performance in relation to the national four-hour target etc.) garnered support and demonstrated the viability of the model of care. If benefits of the model are evident to key staff the ESOP nurse role is more highly valued. Nonetheless, demonstrating early wins is difficult and usually requires sustained implementation.
- 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.
- There is a need for strong leadership for new models of care to achieve sustainability, from the project team themselves as well as the directors of nursing ED. Senior leadership in the ED (both nursing and medical leadership) was vital and fostered acceptance and adaptation in junior staff to the model. Medical and change champions also contributed to creating positive perceptions of the ESOP nurse role from other staff, achieving the project's vision and ultimately acceptance of the change.
- Each project used established clinical governance processes within their organisations to ensure that ESOP nurses had clear lines of professional accountability, understood policies and practices relating to clinical governance and could monitor incidents and adverse events. Most projects applied accepted frameworks or guidelines for ethical and responsible practice or appropriate practice guidelines.
- Sustainability was dependent on selecting the right implementation locations, particularly in rural locations as unique issues were faced in this setting, such as balancing the role with other ED or hospital demands due to limited staffing.
- Recruitment of highly experienced nurses appeared to assist with transition into the role and increase acceptance and credibility of the role among other ED staff. Projects that implemented their project using their existing workforce built capacity in personnel that were likely to remain in the organisation so although the project may end the staff would remain and retain the new skills.
- Staff retention is highly associated with sustainability. ESOP nurses largely wanted to continue in the role, reporting high levels of job satisfaction and viewing the role as rewarding, empowering and stimulating. The ESOP model of care appears to be an effective

retention strategy, as it provided an expanded clinical role and further career pathways for the nursing workforce.

- Business cases needed to align with the strategic agenda of the CEO. Most project teams worked to link the contribution of the ESOP role to key organisational performance metrics, in particular the NEAT.
- The availability of additional funding was an important determinant of sustainability for some sites; ongoing funding was found from internal reorganisation of resources or new budget allocations. For projects using existing resources, embedding the changes implemented by the service within the ED structure was critical.
- An organisation's history of successful implementation of similar programs helped projects gain strong support from management and executives. Patients and the community more broadly need to also be effectively engaged, especially in rural localities.
- The availability of the training models developed provide important infrastructure that could be adapted and meet future training needs. Professional recognition for the investment ESOP nurses made in training and ongoing re-accreditation of the ESOP skills is an important issue, and having processes in place to ensure this occurs would promote sustainability. Another key issue for training was the challenge of sustaining resource intensive in-house competency based training programs reliant on clinical mentors or supervisors. Developing online resources and utilising existing education services improves sustainability prospects.
- Disseminating information about the NED 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 majority of sites were successful in sustaining the NED initiative. Sites that used their existing workforce to implement a model of care achieved sustainability by embedding the change so that it became part of normal practice, whereas other sites sustained the initiative by securing further funding or reorganising internal resources. At sites where longer-term sustainability was less certain, ESOP nurses still continued working in the ED performing selected components of their expanded scope of practice.

7 Prospects for wider implementation

7.1 Suitability of the model

As was pointed out in Section 2, most of the NED projects did not implement a truly expanded scope of practice role but rather encouraged nurses to work to their full scope of practice. According to the Nursing and Midwifery Board of Australia, advanced nursing practice is seen as 'a level of practice and not a role' that is applicable to all types of regulated nurses (registered nurses, enrolled nurses, nurse practitioners). Advanced nursing practice:

'is a continuum along which nurses develop their professional knowledge, clinical reasoning and judgement, skills and behaviours to higher levels of capability (that is recognisable). Nurses practising at an advanced level incorporate professional leadership, education and research into their clinically based practice. Their practice is effective and safe. They work within a generalist or specialist context and they are responsible and accountable in managing people who have complex health care requirements.' (Nursing and Midwifery Board of Australia, 2013, p. 5)

Within the context of nursing in this country, the term 'extended practice' is typically reserved for nurse practitioners, although the most recent definition of nurse practitioners from the Nursing and Midwifery Board does not incorporate the term. Two of the NED projects involved nurse practitioners (including nurses working towards becoming nurse practitioners); the remaining six projects involved what is best described as advanced nursing practice whereby registered nurses were able to advance their practice within a framework of clinical guidelines, protocols and pathways (Table 33).

Table 33 **Advanced and extended nursing practice**

Site	Model
NED1	Nurses employed as clinical nurse specialists in a team led by a nurse practitioner.
NED2	Increasing the role of clinical nurse consultants within a framework of standing orders and policies.
NED3	Appointment of two nurse practitioners, with supervision by a consultant psychiatrist.
NED4	Clinical nurse consultants working towards endorsement as nurse practitioners under medical supervision and within a framework of medication standing orders and hospital protocols.
NED5	Increasing the skills and knowledge of registered nurses with the use of clinical pathways linked to medication standing orders.
NED6	Increasing the scope of practice of registered nurses already working in an Urgent Care Centre with a focus on clinical procedures for common presentations.
NED7	Registered nurses already working in the ED expanded their role with a focus on common illnesses and injuries working within a framework of clinical guidelines and pathways.
NED8	Nurses already working in an ED received training so that they could send home children with four common conditions according to pre-determined criteria.

Evidence from the literature, primarily from overseas, demonstrates that employment of nurse practitioners produces outcomes that are at least as good as those achieved by doctors. Nurse practitioners are well established in Australian EDs, comprising 25-30% of the total number of nurse practitioners currently working, primarily in fast track units and minor injury clinics. Unfortunately, there are no published economic evaluations of nurse practitioners in Australia (Masso and Thompson, 2014).

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., 2014; Rogers, 2003).

As indicated in Section 5, the diversity and limited exposure of the NED projects prevented a comparative analysis of incremental costs and consequences. Hence, the relative advantage and observability of the various NED models was not established. However, the other attributes do indicate suitability for adoption more widely i.e. the models are compatible with accepted ED practice, the changes are relatively simple and can be ‘tried out’, the models can be adapted for local use and the risk can be considered as low, as long as suitable clinical governance arrangements are established.

7.2 Requirements for success

Based on the final reports from each project and the results of the national evaluation, the three main requirements for success in the NED sub-project were as follows:

- A receptive context for change.
- Effective project management, including dedicated resources for project management and appropriate governance structures and processes.
- Staff with the necessary skills and enthusiasm for the role.

Underpinning all three of these requirements for success was the ‘people’ side of organisations i.e. the qualities of individuals, supported by the relationships, communication and teamwork between individuals, including the relationships between the project team and the rest of the organisation.

A receptive context for change has been described in various ways in the literature, but typically includes factors such as a need for change; managerial support; leadership; simplicity and clarity of goals and priorities; appropriate infrastructure and resources; and engagement of key stakeholders (Dopson et al., 2002; Greenhalgh et al., 2004; Pettigrew et al., 1992). The importance of engaging key stakeholders early in the process of implementation was emphasised by some projects. Appropriate infrastructure included clinical governance arrangements to support the nurses in their newly-adopted practice e.g. clinical supervision of nurse practitioners. Management support at multiple levels (e.g. ED managers and hospital executive) was considered important. The need for clear goals was identified by several projects.

7.3 National scalability

Stakeholders identified the need to review workforce roles in response to growing demand for ED services to ensure the best mix of personnel is available to provide safe, effective and efficient patient care. As these demand pressures have to be accommodated within existing resources this creates opportunities to consider the contribution of different nursing roles and how their scope of practice might be expanded. The development of ESOP roles remains piecemeal with organisations looking at niches or service gaps that might be addressed by expanded scope of practice nursing roles:

“For me, it’s then about saying, now let’s look at that pocket of advanced practice, what do our patients and our service need and where can we actually go with that one?” (Stakeholder-Nurse Manager)

It was also recognised that workforce planning is not just about looking at opportunities for expanding practice but it is also about identifying tasks that could be delegated to other members of the health care team, through workforce substitution:

“There’s the advance in practice and then there’s the substitution for tasks that don’t need that level of practice. So there’s both arms, to then be able to hone the workforce into hopefully using its full scope.” (Stakeholder-Nurse Manager)

Finding the best fit for ESOP roles in rural areas was seen as a particular challenge. Frequently the nurse practitioner role was seen as the solution; however the cost of this resource meant that it was difficult to establish a critical mass and to recruit to these roles when shift work was required:

“They were like lone rangers, and so there was no one else to discuss with and debrief with and talk with and handover to and fill in for you when you’re on leave. So that was one of my big concerns that I mentioned at the start of the whole project.” (Stakeholder-Nurse)

“So, we’re looking for grants and things like that to try and get a nurse practitioner or two. But no nurse practitioner is going to work at night. They will only want to work during the day. So, night duty is still the problem. ...is there any way that we can build our relationship with the [name deleted] Hospital because they’ve got registrars that work there?” (Stakeholder-Nurse Manager)

In smaller organisations there was a perception that the recruitment of nurse practitioners could bring the advantage of clinical leadership however might reduce the opportunities to explore advanced roles for other nurses:

“...if you bring a nurse practitioner in you might then block all these people who’ve been coming up...” (Stakeholder-Nurse)

Most sites found the real workforce planning challenge was to optimise the scope of practice of existing nursing staff and fully utilise their knowledge and skills:

“...I think as nurses we don’t give ourselves credibility for the skills that we do have and what we don’t do is actually work towards all that we’ve been taught or all that we’ve learnt and you only have to look at – people lose skills, they get rusty and they don’t practise those skills. Where I think we’re taught far more in the academic setting than we actually practice.” (Stakeholder-Nurse)

There were several observations that the capacity to implement the ESOP nurse role was dependent on the availability of appropriately experienced nursing staff. In the majority of NED implementation sites, the medical and nursing staff had well-established prior relationships and trust had already been established. Like most ESOP models of care, engagement with medical staff was pivotal to sustaining and scaling up ESOP roles. Again funding was raised as a factor in not only pilot testing a workforce innovation but in diffusing the innovation across the organisation, profession and broader health care sector. Several sites also raised the issue of whether the agenda for workforce reform is best driven nationally or at the state and territory level, ultimately advising that all jurisdictions needed to work together and in the same direction. The need for senior managers to show ‘courage’ and a willingness to implement workforce reform and for robust evaluation of innovations was also reported.

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 to adopt or not 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).

There are no major structural impediments to any of the NED models being widely adopted, a point recognised in several of the project final reports:

- 'This model of ED based mental health care is adaptable to a wide range of emergency settings' (NED1 final report).
- 'The model is transferable and applicable for uptake by EDs nationwide' (NED2 final report).
- 'The model of care has implications for wider implementation suitable to a myriad of emergency and specialist care settings' (NED4 final report).

As indicated in the earlier sections on 'requirements for success', the factors influencing adoption, other than characteristics of the actual models, are essentially local, particularly the 'receptivity' to change. Given the diversity of the NED projects a 'let it happen' approach is considered to be the most appropriate strategy. More directive approaches (either 'help it happen' or 'make it happen') are inappropriate, in part because of the relatively modest scale of each project, with ESOP nurses treating only 2.5% of ED presentations (ranging from 7.2% to less than 1% for each project).

With a 'let it happen' approach, the key strategy is one of wide dissemination of the results regarding each of the models. This represents a form of generalisability known as transferability or case-to-case translation, which occurs when an innovation in one setting is considered for adoption in another setting. Judgements about transferability are a joint enterprise between those who have undertaken and evaluated a project and those reading the results. The role of the reader is to 'evaluate the extent to which the findings apply to new situations. It is the readers and users of research who "transfer" the results' (Polit and Beck, 2010, p. 1452).

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 NED 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 and efficiency (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:

- Each of the 8 sites trialled a different model of ESOP nursing care in the ED. Three focused on patients presenting with mental health issues, aiming to deal with their specialised needs efficiently and effectively. The remaining five sites focused on improving ED flow and reducing waiting times for patients with non-life-threatening presentations. Strategies ranged from a review clinic staffed by highly experienced clinical nurse consultants to specific training designed to enhance nurses' skills and confidence in dealing with common presentations. Two sites were based in rural areas and an important goal was to prevent unnecessary transfers to larger, regional hospitals. Two targeted paediatric patients with the goal of facilitating faster assessment, treatment and discharge.
- ESOP nurses saw a total of 11,615 cases during the implementation period, representing 2.5% of all ED presentations at the participating hospitals. Of these, 11,032 cases involved patients in the ESOP target groups.

- The sites had varying degrees of success in identifying and serving patients in the ESOP target groups. The team at NED1 saw 2159 cases, which was more than 30% of mental health cases eligible for ESOP care at that hospital. NED2 picked up around 12% of target cases, and NED3 around 7%. NED4 saw the largest number of cases: 4610, or 7.8% of target patients. The two rural sites picked up only a small proportion of target cases: 55 (0.5%) and 104 (1.2%) for NED5 and NED6 respectively. The paediatric sites fared somewhat better, NED7 picking up around one in five and NED8 one in eight target cases.
- Averaged across all sites, 73.5% of patients seen by ESOP nurses were discharged from the ED within four hours. This compared to 62.8% of similar patients seen by other health professionals during the implementation period.
- The overall percentage of target patients discharged from ED within four hours rose from 57.0% at baseline to 63.8% in the post-implementation period.
- Only 32 patients seen by ESOP nurses did not wait for treatment. Across all sites, the number of patients who did not wait dropped slightly, although this is unlikely to be attributable to the sub-project because of the relatively small number of cases treated by ESOP nurses compared with those treated by other practitioners.
- Few sites were able to provide useful data for representations to ED and admission to hospital following ESOP care. The limited available information indicates similar safety and quality outcomes for ESOP compared with usual care.
- Structures and processes for ensuring safe, high quality care were in place at each site. Projects used established clinical governance processes within their organisations to ensure that ESOP nurses had clear lines of professional accountability; understood policies and practices relating to clinical governance and could monitor incidents and adverse events. Most projects applied accepted frameworks or guidelines for ethical and responsible practice or appropriate practice guidelines.
- In its final report, NED1 noted that mental health nurses had often seen patients previously and were able to provide valuable background information to staff treating those patients in the ED and expedite the passage of less acute patients through the system. The model enabled mental health patients to be seen promptly, alleviating their anxiety. ESOP nurses had time to listen, and the expertise to provide brief therapeutic intervention.
- Similarly, NED3 noted that patients experienced greater continuity of care and fewer handovers to different staff because they were primarily treated by mental health nurses. More patients were receiving comprehensive physical as well as mental health assessments, and there had been a reduction in occupational health and safety incidents involving mental health patients since the implementation of the ESOP model.
- NED8 reported that there was no increase in adverse events or representations to ED among patients treated and discharged by ESOP nurses using the Criteria-Led Discharge pathways developed for that project.
- Both rural sites noted an impact on the number of transfers to other hospitals as a result of the ESOP model. At NED5, the estimated cost saving from fewer ambulance transfers was around \$30,000. An estimated saving of \$8,000 in reduced visiting medical officer attendances at the ED was also attributed to the model at this site.
- The diversity of ESOP nursing models, combined with the low 'dose' of the intervention (that is, few ESOP nurses, seeing a small proportion of total ED presentations, at each site) precluded a formal economic analysis of the incremental costs and outcomes of the sub-project. Consequently, the economic evaluation focused on other relevant factors such as the return on investment for the expended HWA funds and the potential for these models to improve their hospitals' NEAT performance.
- The investment per patient seen by ESOP nurses averaged \$188, or 5.3 patients per \$1,000 spent by HWA. This calculation does not include the costs borne by the implementation sites or the costs of developing and implementing the training components of the model.
- There was wide variation in the investment per patient across the sites, with some highly cost-efficient (e.g. NED1, NED8) and others less so.

- Taking into account the effects of other practitioners on the improved NEAT performance seen at all sites, ESOP nurses increased the performance by 1.0 percentage point. In total, the sub-project resulted in nearly 1,900 additional patients being treated and discharged within the national four-hour target.
- Nurses believed their ESOP roles improved quality of care for specific groups of patients, improved access to emergency care and made the services where they worked more efficient. In their responses to an ESOP practitioner survey, around 90% of nurses at the NED8 and more than 75% of nurses at the other seven sites agreed or strongly agreed with these items. The vast majority also felt that patients were comfortable with the ESOP model.
- Careful selection of experienced nurses, supported by relevant training and clinical governance structures, were the key factors promoting safe and high quality care according to the nurses themselves. In their interviews at the close of the program, ESOP nurses described the characteristics of ED environments that supported their practice, including a 'risk averse' culture in which they had the capacity to decide that a patient was not within their scope and the ready availability of clinical review and mentoring. ESOP nurses took great care to educate patients and ensure they understood the next steps in resolving their health issues, which often involved referral to a GP or a return to the ED for review.
- Survey results confirmed that most consumers had positive experiences and reported high levels of satisfaction with ESOP nursing care. Of the 411 respondents across seven sites (NED1 excluded), more than 75% strongly agreed that the nurse listened carefully, understood what was wrong and their concerns and believed their problems were real. More than 80% strongly agreed that the nurse seemed comfortable dealing with their problems. Overall satisfaction was also very high, with seven in ten patients rating their ED experience as very good (9/10 or 10/10). The quality of emotional support and the effectiveness of the treatment provided by ED nurses were key predictors of overall satisfaction with the ED experience.
- A small group of respondents – about one in ten - would have preferred a more thorough examination, more tests and more information about the cause of the problem and the expected time to recovery, highlighting some areas for improvement.
- At the NED1 site, which ran its own survey, patients reported that they appreciated the mental health nurses' patience, willingness to listen and evident understanding of the patient's problems. Patients valued having ED procedures and processes explained to them, which made them feel calmer and reassured. They also acknowledged mental health nurses' knowledge of services specific to their needs.
- Key stakeholders were highly satisfied that the ESOP nursing models provided safe, high quality care. Difficulties in measuring impacts on efficiency and productivity were acknowledged; however, many stakeholders described less tangible benefits in terms of reduced pressure on medical staff, increased confidence that appropriate care was being provided, and anecdotal observations of improved patient flow through the ED.

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:

- Most NED sites tended to focus on enhancing the capacity and building the skills of existing staff members rather than recruiting new staff into specific ESOP roles. Project teams at NED2, NED5, NED6, NED7 and NED8 worked with current personnel, mainly registered nurses.
- Three sites used project funding to recruit additional positions. At NED1, five Mental Health Liaison Nurses (MHLNs) were appointed at the level of Clinical Nurse Specialist (CNS2) on a permanent basis. Two of the recruits had previously worked in the ED where the role was

based. All were qualified as registered nurses with between 5.5 and 30 years' experience, and four had post-graduate qualifications in mental health nursing.

- The NED3 site established two new nurse practitioner positions. One recruit left and was replaced in August 2013. All three had mental health nursing qualifications and extensive experience, although none had previously worked in an ESOP role.
- Three registered nurses (total of 1.4 FTE) were employed as clinical nurse consultants at NED4. All were internal candidates in the final stages of working towards endorsement as nurse practitioners. One left in June 2013 to work as a nurse practitioner in another hospital, and the position was covered by two additional members of the nursing staff. Each of the nurses in the ESOP roles had Masters-level qualifications and extensive experience, ranging from 9 to 24 years.
- Training was specific to each site. At NED1, NED3 and NED4 no formal training was required, as nurses were working towards endorsement or were already endorsed as nurse practitioners. The other NED sites tended to use competency-based adult education approaches.
- The mental health clinical nurse consultants at NED2 received targeted training including a two-day "Coaching for Performance" workshop, in-service sessions on mental health recovery, a university-delivered short course on brief interventions for personality disorder, and competency assessment in using medication and pathology standing orders.
- The two rural sites, NED5 and NED6, each provided practical skills training supplemented by online courses and supervised practice. At NED5, trainees undertook five modules over a six-month period. These focused on assessment and treatment of common, non-life-threatening presentations. The NED6 training involved three modules delivered by an external training provider, a 10-week online course for rural X-ray operators and the opportunity to complete a Certificate IV in Training and Assessment so that nurses could train and support other emergency nursing staff.
- Four registered nurses at NED7 completed a four-day Paediatric Foundations Program followed by a one-day, in-house course covering use of the pathways and the scope of practice. Practical training was also provided. All ED nurses at NED8 were given the opportunity to undertake three short, self-directed e-learning packages, followed by competency assessment and clinical mentoring by a paediatric emergency physician.
- By the end of December 2013, NED5 had successfully trained 14 nurses, four had not yet completed and six had withdrawn from the project. NED6 had two of the six trainees withdraw in February 2013 because they did not want to undertake the Certificate IV. In the end, none of the nurses completed this component. Two were assessed as competent in suturing, three in application of plaster casts, and three in ear, nose and throat examination. Although four nurses completed the radiology training, this was not implemented due to industrial issues and lack of local support.
- All four nurses at NED7 completed their training and commenced ESOP roles in October 2012. NED8 trained a total of 123 nurses (93% of eligible ED nurses) by the end of March 2013.
- Nurses at NED2, NED5, NED6 and NED7 were generally positive about their training experiences. Of the 23 trainees who returned surveys, more than 90% agreed or strongly agreed that the content was pitched at the right level and was delivered in a logical manner, that staff encouraged trainees to ask questions and seek assistance, and that they would recommend the training to others.
- Trainees identified aspects of the courses that were particularly useful, including: training on medication and pathology standing orders (NED2); practical sessions with instructors, which allowed for technique correction (NED5); individual competencies relevant to their model of care (NED6); and comprehensive coverage of the presentations that ESOP nurses were most likely to be directly responsible for (NED7). Suggestions for improvements ranged from requests for better access to written resources (NED5) to more placements, face-to-face teaching for the Certificate IV and dedicated study time (NED6).

- Formal evaluation of the training programs delivered at these four sites was limited by the lack of documentation and data provided. Overall there were concerns about the level of the programs and whether they were suitable for expanded nursing practice; most appeared rather to enhance nurses' capacity to work within their existing scopes of practice. Nevertheless, all four sites implemented training that successfully contributed to staff professional development and facilitated improvements to local service delivery. Partnering with higher education providers could address some of the issues raised in the evaluation.
- Nurses at NED8 also expressed a high level of satisfaction with their training. As NED8 was a comparatively large group, their survey responses were analysed separately. Of the 51 nurses who returned surveys, more than 90% agreed or strongly agreed that the training met their expectations, the content was pitched at the right level and delivered logically, materials were appropriate, staff were knowledgeable and facilitated independent practice and decision making and assessments were relevant and clearly explained.
- Aspects of the NED8 course that trainees particularly appreciated included the workbooks, the sense that trainees and trainers were part of the same team, the accessibility and flexibility of self-directed learning and the availability of "champions" to provide support, advice and mentoring. Trainees suggested improving the guidance and support around assessment and having few assessors to ensure consistency.
- The training pathway for criteria-led discharge at NED8 was both innovative and effective. Although designed to meet this hospital's specific needs, it is a good example of an ESOP initiative with the potential for wider implementation. Strengths included the inclusion of ongoing quality measures to ensure safety; establishment of realistic timelines for completion for the 123 nurses trained, and strategies to ensure new staff have access to the training; mechanisms in place to ensure consistent expectations of the required competencies (e.g. model answer sheets for assessors); and a supportive learning environment with good rapport between staff and trainees.
- Although little additional training was required for the nurse practitioner models of care, some capacity building activities were undertaken. For example, at NED3 the mental health nurse practitioners delivered training to other ED nurses.
- Workplace practices have changed at all sites. The nature of these changes varied widely according to the specific models implemented, and have been documented in projects' final reports. For example, NED2 mapped the changes to workflow in detail, demonstrating that processes of assessment and referral had been streamlined. Standing orders for pathology and medication were generated by the project. This site also negotiated and implemented direct admission to mental health units after hours by the mental health nurses, with provision for prompt review by medical staff.
- Four sites – NED5, NED6, NED7 and NED8 – reported that nurses were now using clinical practice pathways (or similar) to assess and treat patients with specified conditions. An audit showed marked improvement in clinical documentation by ESOP nurses at NED5. At least two sites provided dedicated treatment areas within the ED for patients seen by ESOP nurses (NED4, NED7).
- The effectiveness of the model depends in part on whether issues of staffing capacity can be addressed. For example, a continuous service cannot be provided unless trained staff are available to backfill ESOP nurses absent for training or leave. Competency assessments cannot be completed unless there is sufficient throughput of suitable patients, coinciding with the availability of clinical supervisors to carry out the assessments. Limited staffing, particularly at rural sites, means that work within ESOP roles needs to be balanced with other ED and hospital demands with inevitable impacts on the effectiveness of the model.
- Nurses were generally very positive about their new roles. Of the 94 nurses who responded to an ESOP practitioner survey, 65 (69%) were from NED8 and their responses were analysed separately. Of the remaining 29 respondents, more than 90% agreed or strongly agreed that they felt confident in dealing with patients. There were high levels of confidence in their ability to provide patient information and appropriate care, and the vast majority were comfortable approaching other staff for advice.

- More than 80% said they were satisfied with the new role, felt it had enhanced their careers and were planning to stay on in the role for the foreseeable future. However, for each of these items a small proportion of respondents (around 7-8%) disagreed or strongly disagreed, indicating that the ESOP model did not suit all ED nursing staff. Similar patterns of results were found for the NED8 nurses.
- The ESOP model of care appears to be an effective retention strategy, as it provided an expanded clinical role and further career pathways for the nursing workforce. The intention of ESOP nurses to continue in the role was a significant factor in the sustainability of projects.

8.3 Leadership and sustainability (HWA Domain 3)

Objective:

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

Key points:

- Engaging with internal stakeholders – especially ED medical, nursing and mental health staff – was critical to the implementation of the ESOP nursing models. Successful strategies included involving ED staff in problem-solving exercises to address barriers to change, and asking clinical leaders to contribute to the development of guidelines. Steering committees and working groups provided opportunities for departmental representatives to be involved in the project through meetings and other regular contact.
- Two project teams from New South Wales used healthcare redesign methodology to assist with their project and found this greatly increased awareness of the many steps, processes, people, resources and depth of communication necessary to successfully achieve projects aims and objectives and ensure sustainability.
- Sites encountered a range of challenges related to their diverse models of care. Two of the mental health models required intensive negotiation. The model at NED1 was hampered by standardised documentation required by local mental health service policy. This resulted in duplication of some tasks between the mental health nurses and psychiatry staff. Discussion between the parties resulted in agreement and understanding of responsibility for documentation. At NED2, the project officer negotiated successfully with medical staff to gain approval for a proposal to allow the mental health nurses to admit patients after hours to a mental health unit.
- NED4 had less success in negotiations over inclusion of mental health patients requiring low-medical-risk clearance. This group was eventually excluded from the model of care.
- External stakeholders – particularly GPs, other primary care providers and local services offering imaging and X-rays – were especially relevant to the rural projects. Both NED5 and NED6 recognised the importance of developing positive relationships with these key stakeholders, but both encountered serious difficulties. NED5 enlisted the help of the hospital's Executive Director of Medical Services to engage GPs in the smaller rural towns where there was limited GP support for the project. A small number of GPs raised concerns about medical responsibility, accountability and liability. At NED6 project, difficulties expanding the scope of practice of nurses in the area of imaging and X-rays highlighted the importance of early and ongoing strategies for stakeholder engagement.
- Paediatric specialists and hospital executives strongly supported the projects at NED7 and NED8. At NED7, ED staff were invited to a series of six education sessions to inform them about all aspects of the project. At NED8, the project benefitted from a history of successful implementation of criteria-led discharge programs in other parts of the hospital. This helped gain high-level support from the hospital executive and ED management.
- Consumers were members of some steering committees and working parties, and information about the project was disseminated to the public via leaflets, posters and the media. One mental health project involved consumers in the evaluation process.

- On the whole, nurses, allied health staff and medical officers working alongside ESOP nurses accepted and understood the new roles. Of the 182 ED staff who responded to the survey, 90% agreed or strongly agreed that they felt comfortable in providing advice on patient management to the ESOP nurses.
- Almost half of the respondents did not understand the educational preparation required for the ESOP role. Nurses had a better understanding of the model than did medical and allied health staff. More comprehensive communication and training strategies could be introduced to support workforce change management in the ED.
- Other ED staff perceived that the ESOP nursing model improved throughput and eased workload pressures. Nurses with personal qualities such as reliability, competence and flexibility were highly valued.
- On the whole the models were implemented within a receptive culture, which is a positive indicator of sustainability. Key stakeholders at most sites were optimistic about the future of the ESOP models and committed to seeing them continue. They recognised the need to embed the changes in normal practice and to continue demonstrating and communicating benefits to stakeholders at all levels of the organisation.
- Initial scores on the National Health Service Sustainability Model averaged 86 out of 101. This indicates a high level of optimism, as all sites scored higher than the cut-off of 55. There was minimal change over time, although average scores did improve slightly for 4 of the 10 sustainability factors. Notably, by the end of the project there was more credible evidence of effectiveness and sites were better able to demonstrate benefits beyond helping patients.
- The factor with the greatest potential for improving sustainability was engagement of senior leadership. The average score for this factor fell over the course of the program, largely because of specific issues at four sites. These included the need for senior leaders to take greater responsibility for sustaining the change process, and for better two-way communication between leaders and staff. Three sites indicated that infrastructure was lacking, and the same three also identified poor fit with the organisation's strategic aims and culture as a potential problem for sustainability.
- The innovation has been sustained at six sites, and partially sustained at the remaining two. NED1 provided recurrent funding for the mental health liaison nurse model and one of the two mental health nurse practitioner positions at NED3 had also secured permanent funding via reorganisation of internal resources. The six clinical nurse consultants at NED2 are committed to continuing the initiative as "the regular way of working". The ED review clinic model at NED4 was funded and will continue to be staffed by 1.4 FTE ESOP nurses. The ESOP model of care at NED5 has been accepted as standard practice and will be expanded to new sites with additional staff. The six nurses at NED6 did not complete their ESOP training but will continue to work in the Urgent Care Centre and use skills and competencies they gained. Similarly, the four nurses who undertook ESOP roles at NED7 will return to normal duties while continuing to perform selected ESOP activity. At NED8, 123 nurses were trained as a result of the project and training and implementation processes have been embedded as a permanent change of practice in the ED.

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:

- ESOP nursing models can only be implemented where appropriately experienced nurses are available. Building capacity in the existing workforce rather than recruiting new staff was a successful strategy to ensure sustainability. Engagement with medical staff is essential to

sustaining and scaling up these roles. At most sites, the medical and nursing staff had well-established prior relationships and trust had already been established.

- Implementation of innovative ESOP nursing models is dependent on the support of senior managers and their willingness to embrace the need for further, rigorous evaluation at the local level.

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:

- Further funding will be required to diffuse these innovative models across organisations and the broader health sector.
- Cooperation among jurisdictions, including national and state/territory levels of government, is likely to promote wider adoption of ESOP nursing models. Nevertheless, local leadership is essential in order to achieve the level of stakeholder engagement required.
- Diffusion of ESOP nursing roles has broader funding implications for jurisdictions as personnel who are working in an expanded role frequently expect this to be recognised with enhanced remuneration.

8.6 Conclusion

On the whole the ESOP nursing models were implemented within a receptive culture, which is a positive indicator of sustainability. Key stakeholders at most sites were optimistic about the future of the ESOP models and committed to seeing them continue. They recognised the need to embed the changes in normal practice and to continue demonstrating and communicating benefits to stakeholders at all levels of the organisation. The innovation was sustained at six sites, and partially sustained at the remaining two.

Effectiveness and efficiency depend in part on staffing capacity – the ‘dose-response’ impact – and at most sites the number of ESOP nurses was small. This reduced the ability of organisations to provide a continuous service, and in smaller EDs the ESOP nurses had to balance their roles with other demands. At some sites implementation was delayed because competency-based training relied on the availability of clinical supervisors to carry out assessments, as well as sufficient throughput of suitable cases. A longer implementation and evaluation period and a larger ‘dose’ of the innovation are required in order to judge the efficiency of many of these models. Nevertheless, the balance of evidence from this evaluation indicates that these nursing models can contribute to delivering timely and high quality care.

Most of the models were highly tailored to local contexts and needs. While this is desirable and necessary for stakeholder engagement and to maximise local impacts, it limits the extent to which the models can be generalised to other settings. Based on the evidence of impact, acceptability and cost efficiency, three ‘best bets’ for wider implementation were identified: NED1 (mental health clinical nurse specialists); NED4 (an ED review clinic staffed by clinical nurse consultants); and NED8 (criteria-led discharge pathways for common paediatric presentations).

References

- AIHW (2013) *Australian hospital statistics 2012-13: emergency department care*. Health services series 52. Cat. no. HSE 142. Canberra: Australian Institute of Health and Welfare.
- Australian Health Workforce Advisory Committee, Australian Medical Workforce Advisory Committee and Australian Health Workforce Officials' Committee (2005) *A Models of Care Approach to Workforce Planning - Information Paper, Health Workforce Information Paper 1*, Sydney.
- Bartos S (2003) *Creating and Sustaining Innovation*. Australian Journal of Public Administration, 62 (1): 9-14.
- Bloom B, Hastings J and Madaus G (1971) *Handbook on Formative and Summative Evaluation of Student Learning*. McGraw-Hill, New York.
- Centers for Disease Control and Prevention (1999) *Framework for program evaluation in public health*. Morbidity and Mortality Weekly Report 48 (No. RR-11): 1-40.
- Cherkin D, Deyo RA and Berg AO (1991) *Evaluation of a physician education intervention to improve primary care for low-back pain II: Impact on patients*. Spine, 16 (10): 1173-1178.
- Considine J and Martin R (2005) *Development, reliability and validity of an instrument measuring the attitudes and knowledge of Emergency Department staff regarding the Emergency Nurse Practitioner role*. Accident and Emergency Nursing, 13 (1): 36 – 43.
- Dopson S, FitzGerald L, Ferlie E, Gabbay J and Locock L (2002) *No magic targets! Changing clinical practice to become more evidence based*. Health Care Management Review, 27 (3): 35-47.
- Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ and Stoddart GL (1997) *Methods for the economic evaluation of health care programmes*. Oxford: Oxford University Press.
- Galpin T (1995) *Pruning the Grapevine*. Training and Development, 49 (4): 28-33.
- Greenhalgh T, Robert G, Macfarlane F, Bate P and Kyriakidou O (2004) *Diffusion of innovations in service organizations: systematic review and recommendations*. Milbank Quarterly, 82 (4): 581-629.
- Hawe P, Degeling D and Hall J (1990) *Evaluating health promotion: A Health Worker's Guide*. Sydney, MacLennan and Petty Ltd.
- Health Workforce Australia (2011) *National Health Workforce Innovation and Reform Strategic Framework for Action 2011–2015*. HWA: Adelaide, South Australia.
- Health Workforce Australia (2014) *Expanded Scope of Practice and Aged Care Workforce Reform: Progress Report*. HWA, Adelaide. Available at: <https://www.hwa.gov.au/sites/uploads/Expanded0Scope-Practice-and-Aged-Care-Workforce-Reform-Progress-Repo-201403.pdf>, accessed 11 June 2014.
- Kapulski N and Bogomolova S (2011) *Council of Ambulance Authorities Patient Satisfaction Survey*. Ehrenberg-Bass Institute, University of South Australia.
- Legrand K, Bonsergent E, Latarche C, Empereur F, Collin JF, Lecomte E, Aptel E, Thilly N and Briançon S (2012) *Intervention dose estimation in health promotion programmes: a framework*

and a tool. *Application to the diet and physical activity promotion PRALIMAP trial*. BMC Medical Research Methodology, 12: 146-160.

Maher L, Gustafson DH, et al. (2006) NHS Sustainability Model.
http://www.institute.nhs.uk/index.php?option=com_joomcart&Itemid=194&main_page=document_product_info&cPath=67&products_id=290.

Masso M and Thompson C (2014) *Nurse practitioners in NSW 'Gaining Momentum': rapid review of the nurse practitioner literature*. Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong.

Mayne J (2012) *Contribution analysis: Coming of age?* Evaluation, 18: 270-280.

National Health Service (2012) *Accident and Emergency (A&E) Department Questionnaire*. Picker Institute Europe, downloaded from www.nhssurveys.org.

Nursing and Midwifery Board of Australia (2013) *Nurse practitioner standards for practice*. Nursing and Midwifery Board of Australia, Canberra.

Owens DK, Lohr KN, Atkins D, Treadwell JR, Reston JT, Bass EB, Chang S and Helfand M (2010) *AHRQ Series Paper 5: Grading the strength of a body of evidence when comparing medical interventions- Agency for Healthcare Research and Quality and the Effective Health-Care Program*. Journal of Clinical Epidemiology, 63 (5): 513-523.

Pawson R and Tilley N (2004) *Realist Evaluation*. Sage Publications Ltd, London. Available at: http://www.communitymatters.com.au/RE_chapter.pdf, accessed 23 July 2014.

Pettigrew AM, Ferlie E and McKee L (1992) *Shaping strategic change*. SAGE Publications, London.

Polit DF and Beck CT (2010) *Generalization in quantitative and qualitative research: Myths and strategies*. International Journal of Nursing Studies, 47: 1451-1458.

Rogers EM (2003) *Diffusion of innovations, 5th edition*. Free Press, New York.

Srivastava A and Thomson SB (2009) *Framework Analysis: A Qualitative Methodology for Applied Policy Research*. Journal of Administration & Governance, 4 (2): 72-79.

Stirman SW, Kimberly J, Cook N, Calloway A, Castro F and Charns M. (2012) *The Sustainability of New Programs and Innovations: A Review of the Empirical Literature and Recommendations for Future Research*. Implementation Science, 7:17, 1-19.

Thompson et al. (2014) *Health Workforce Australia Expanded Scopes of Practice Program Evaluation: National Synthesis*. Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong.

Thompson C, Quinsey K, Gordon R, Williams K, Eckermann S, Andersen P, Snoek M and Eagar K (2012a) *Health Workforce Australia Expanded Scopes of Practice Program: Evaluation Framework*. Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong. Available at: <http://ahsri.uow.edu.au/content/groups/public/@web/@chsd/documents/doc/uow164425.pdf>, accessed 11 June 2014.

Thompson C, Quinsey K, Morris D, Gordon R, Williams K, Andersen P, Snoek M, Eckermann S and Eagar K (2012b) *Health Workforce Australia Expanded Scopes of Practice Program – Compendium of Data Requirements and Evaluation Tools*. Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong.

Available at:

<http://ahsri.uow.edu.au/content/groups/public/@web/@chsd/documents/doc/uow164426.pdf>,
accessed 11 June 2014.

Standing Council on Federal Financial Relations. National Partnership Agreement on Improving Public Hospital Services, Schedule C. Standing Council on Federal Financial Relations, Canberra. Available at:

http://www.federalfinancialrelations.gov.au/content/npa/health_reform/national-workforce-reform/national_partnership.pdf, viewed 17 June 2014.

Ward D, Furber C, Tierney S and Swallow V (2013) *Using Framework Analysis in nursing research: a worked example*. Journal of Advanced Nursing, 69 (11): 2423 – 2431.

Appendix 1 Funding allocation by project

Recipient	Execution date	Completion date	Total HWA funding (GST incl.)
NED1	12/06/2012	31/12/2013	\$343,455
NED2	12/06/2012	31/12/2013	\$265,681
NED3	25/05/2012	31/12/2013	\$310,362
NED4	23/05/2012	31/12/2013	\$325,000
NED5	23/05/2012	31/12/2013	\$255,380
NED6	12/06/2012	31/12/2013	\$101,645
NED7	23/05/2012	31/12/2013	\$350,000
NED8	6/06/2012	31/12/2013	\$119,000
Total			\$2,070,523

Appendix 2 Methods of the national evaluation, HWA-NED

This appendix provides essential background information on the methods of the national evaluation for the NED 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 NED sub-project.

Evaluation Framework

The HWA-ESOP program evaluation was based on a broad evaluation framework developed by CHSD and used in several previous national program evaluations (Thompson et al., 2012a). This framework recognises that Programs such as the ESOP 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 11). 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.

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 11 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

Here we are asking the question ‘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. increased 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

Boost productivity is one of three HWA strategic objectives to address the increasing demand for health services. To contribute to this objective HWA funded the Expanded Scopes of Practice Program. This involves 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 services³. The work of HWA is

³ Available at: <https://www.hwa.gov.au/our-work/hwa-strategic-plan-and-work-plan> accessed 11 June 2014.

guided by five domains of action which are described in the *National Health Workforce Innovation and Reform Strategic Framework for Action 2011-2015*. The domains are:

Health workforce reform for more effective, efficient and accessible service delivery
Health workforce capacity and skills development
Leadership for the sustainability of the health system
Health workforce planning
Health workforce policy, funding and regulation⁴

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 PAG. 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*, along with the proposed timing and frequency of data collection⁵.

Table 34 shows the KPIs, mapped to HWA Domains of Inquiry and the Evaluation Framework Levels. Methods and, where appropriate, specific evaluation tools are listed for each KPI.

Table 34 HWA Domains and corresponding KPIs, evaluation methods and tools used in the NED sub-project evaluation

CHSD Evaluation Framework Level	HWA Domain of Inquiry	KPI	Method	Evaluation Tool
Level 1	Domain 1: Effectiveness and efficiency	1.6 High level of consumer satisfaction/experience with ESOP-NED	Consumer survey	ET9c
			Patient journey analysis pre and post implementation	ET13*
Level 1, 2 & 3	Domain 1: Effectiveness and efficiency	1.9 Consistent or improved unit safety outcomes pre and post introduction of the ESOP-NED initiative e.g. number of re-presentations of consumers treated for the same health care problem within 96 hours/within 28 days; number of adverse events; number of consumer complaints; number of consumers who 'Did not wait', number of consumers who left against medical advice	Administrative &/or unit routine data sets	ET4
Level 2	Domain 1: Effectiveness and efficiency	1.4 Evidence of practice changes made due to the project intervention	Documentary records; logbooks	ET6
			Administrative	ET4

⁴ Available at: <https://www.hwa.gov.au/sites/default/files/hwa-wir-strategic-framework-for-action-201110.pdf> accessed 11 June 2014.

⁵ Available at: https://www.hwa.gov.au/sites/uploads/HWA%20Extended%20Scopes%20of%20Practice%20Project_Evaluation%20Tools%20Compendium_Oct%202013.pdf accessed 11 June 2014.

CHSD Evaluation Framework Level	HWA Domain of Inquiry	KPI	Method	Evaluation Tool
			datasets	
Levels 2 & 3	Domain 1: Effectiveness and efficiency	2.0 Increased capacity of medical staff for the management of more complex ED consumers in a more timely fashion	Administrative &/or unit routine data sets Semi-structured interviews with other members of the ESOP-NED health care team to ascertain their perceptions of any changes in workflow	ET4 ET12
Levels 2 & 3	Domain 1: Effectiveness and efficiency	2.1 Increased number of consumers managed through the ESOP-NED in each of the implementation sites	Administrative &/or department routine data sets	ET4
Level 3	Domain 1: Effectiveness and efficiency	1.5 Increased number of Triage Category 3, 4 and 5 consumers seen by ESOP-NED discharged within 4 hours (as appropriate)	Administrative datasets	ET4
Level 2	Domain 2: Workforce capacity and skills development	1.1 Number of structured learning sessions/modules that were provided as part of the ESOP- NED project to health care professionals working within the ED. 1.2 Attendance records of ESOP related personnel at required training activities and summative assessment of competence. 1.3 Turnover rate of recruited ESOP nurses during the funded period of the expanded scope of practice project.	Project records Professional portfolio or log book records of ESOP related nurses. Record of staff employment for the duration of the project.	ET1 ET1 ET1
Level 2	Domain 3: Leadership and sustainability	1.7 High level of staff satisfaction and acceptance of the ESOP nurse role; staff experience of the impact of the expanded scope of practice role 1.8 Perceptions of the impact of the expanded scope of practice role on key stakeholders	Staff survey (other members of the health care team) ESOP practitioner survey ESOP practitioner interviews Key stakeholder interviews	ET8c ET10 ET11 ET12
Levels 2 & 3	Domain 3: Leadership and sustainability	2.2 Conditions for sustained implementation in place	Semi-structured interviews with senior managers to ascertain their perceptions of project sustainability	ET12

CHSD Evaluation Framework Level	HWA Domain of Inquiry	KPI	Method	Evaluation Tool
			Semi-structured interviews with ESOP-NED personnel	ET11

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 35 and Table 36 show the data submitted by each HWA-NED site. Brief information about each tool, including dates of submission, changes and omissions is outlined below.

Table 35 National evaluation tools completed by NED sub-project⁶

Site	ET1 Staff profile	ET4 Data spec	ET6 Log book (ESOP data items)	ET8c Staff survey	ET9c Patient survey	ET18 Sustainability tool	ET19 Issues/ Lessons Log	ET20 Dissemination Log
NED1	✓	✓	✗	✓	✗	✓	✓	✓
NED2	✓	✓	✓	✓	✓	✓	✓	✓
NED3	✓	✓	✗	✓	✓	✓	✓	✓
NED4	✓	✓	✗	✓	✓	✓	✓	✓
NED5	✓	✓	✗	✓	✓	✓	✓	✓
NED6	✓	✓	✗	✓	✓	✓	✓	✓
NED7	✓	✓	✗	✓	✓	✓	✓	✓
NED8	✓	✓	✗	✓	✓	✓	✓	✓

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. Due to

⁶ Optional evaluation tools included ET7 Patient Interview and ET13 Patient Journey Mapping (ET2, 3, 5 and 15 were not relevant to the NED sub-project).

the large number of nurses (100+) who took part in the project at NED8, ET1 was modified and the log book (ET6) was not used.

During the initial site visit the proposed data specification (**ET4**) was reviewed with project teams to ensure it that the data items were appropriate and available from existing information systems. In addition to the administrative data items specified in ET4, NED3 established a database of de-identified data on all patients assessed by the Mental Health Nurse Practitioners (MHNP) including triage category on arrival, arrival and departure times, outcomes of assessment, referrals made, and whether the assessment was conducted jointly with a medical staff member. At NED4 data from ESOP nurse activity logs (designed specifically for this site) were used to supplement the information supplied through ET4.

There were three data extracts for ET4. 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. NED 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). NED 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. No sites took up this option.

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.

Several sites initially planned to use **ET6** throughout the program to record clinical training and activities of the ESOP nurses. In the end, only NED2 used this tool.

All sites except NED6 received ethics approval for their evaluation activities 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 surveys, 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 **ET8c**. ET8c 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). Data collection for ET8c took place in late 2013, extending into early 2014 for some sites.

ET9c 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). NED1 used its own, custom-designed patient satisfaction

survey in place of ET9c. Many of the other sites modified ET9c to suit their local contexts. This was necessary because of the variations in target populations and models of care among NED sites. The timing and method of conducting the patient surveys also varied from site to site. NED2 and NED3 conducted telephone interviews, as did NED5. NED4, NED6, NED7 and NED8 all issued paper surveys. The vast majority of respondents at the two paediatric sites were parents or carers rather than patients.

At NED1, telephone interviews were conducted with a random sample of ED patients seen by the MHLN during a designated three-month period. Patients were contacted by telephone within 72 hours of discharge and asked whether they were willing to participate. If so, they were interviewed by a research assistant within the next four weeks. At NED4, patients who left before beginning or completing treatment were interviewed by telephone the following day. The ESOP Nurse on duty conducted the interviews using an interview script which also assessed risk and mitigation strategies in order to ensure patient safety.

The sustainability questionnaire (**ET18**) was completed twice: projects were asked to submit this tool in early 2013, however most questionnaires 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 ET19 were received by the national evaluation team from October 2013 to January 2014. The final submission for ET20 was due in December 2013 but three sites provided the data earlier in 2013.

Table 36 Additional evaluation tools, HWA-NED⁷

Site	ET10 ESOP Practitioner survey	ET11 ESOP Practitioner Interviews	ET12 Key Stakeholder Interviews	ET16 Training program quality report	ET17 Trainee experience survey
NED1	✓	✓	✓	✗	✗
NED2	✓	✓	✓	✗	✓
NED3	✓	✓	✓	✗	✗
NED4	✓	✓	✓	✗	✗
NED5	✓	✓	✓	✓	✓
NED6	✓	✓	✓	✓	✓
NED7	✓	✓	✓	✓	✓
NED8	✓	✓	✓	✓	✓

Note. ET refers to the Evaluation Tool in the Compendium of Data Requirements and Evaluation Tools (Thompson et al., 2012).

ET10 was a 20-item survey used to elicit the experiences of personnel 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 nurses from October 2013 and collection was closed for the final site on 20 December 2013. There was a response rate of 61% (94 out of 154) ESOP nurses across all NED sites. Of these, 65 were from NED8, where the target of the program was the entire ED nursing workforce rather than a few selected staff. **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.

⁷ ET11 and 12 were completed at the final site visits which were scheduled in October/November 2013.

NED3, NED4 and NED8 used the optional Patient Journey Analysis Tool (**ET13**). NED3 collected data in November 2012 and submitted it to the national evaluation team in December 2012. NED4 originally intended to use the tool before and after implementation but the pre-implementation measure did not take place due to delays in ethics approval. A map of the patient journey was included in their “Model of Care” document in September 2012 and a modified flow chart version demonstrating changes in patient journeys following implementation was submitted by the site in November 2013. NED8 provided pre- and post-implementation patient journey analysis in November 2013.

ET16 and **ET17** were used to inform the training evaluation – see details below.

Some sites conducted local evaluation activities, including the additional training evaluations at NED5 and NED8 (see the ‘Training evaluation’ section below). NED1 conducted a mixed-methods evaluation, collecting both qualitative and quantitative data to provide a full picture of the project’s effectiveness and contributing factors to its success. De-identified patient data included: presenting circumstances/diagnoses; time of presentation (day, hour), waiting time from triage to Mental Health Liaison Nurse (MHLN) assessment and intervention; referrals made by the MHLN; total time spent in ED; discharge/outcome; follow-up; and any adverse events. These were complemented by telephone interviews, as described above. Additional qualitative data came from interviews with stakeholders late in the project evaluation period. The ESOP nurses were interviewed in the early stages of the project and towards the end of the evaluation period to record their observations, challenges, educational needs and changes in knowledge and confidence. At NED4, three group interviews were conducted with staff across the life of the project. They were asked about their experiences of working alongside the ESOP nurse role, what effect the role and review clinic had had on sub-acute patient care, and ways in which the ESOP nurse role could be developed further. An independent researcher conducted the semi-structured group interviews, which were then transcribed into NVivo for analysis.

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. 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 (ET8c, ET9c, ET10, ET17 and 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 survey, 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 NED sites submitted four progress reports: September 2012, December 2012, March 2013 and June 2013. Interim reports were submitted in September/October 2013. Final reports were due at the end of December 2013 but the submission date was delayed at several sites until January or February 2014. These reports have provided a useful source of qualitative and quantitative data for the national evaluation.

Each progress report included a survey 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 late 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 NED practitioners and with 64 key stakeholders. Dates and numbers of interviews by site are shown in Table 37.

Table 37 Interviews with ESOP practitioners and key stakeholders, HWA-NED

Site	ESOP practitioner	Key stakeholder	Total	Dates(s)
NED1	2	10	12	09 & 10/12/2013
NED2	5	9	14	06/12/2013; 12, 13 & 14/12/2013
NED3	1	9	10	18/11/2013 & 04/12/2013
NED4	2	5	7	23 & 24/10/2013
NED5	3	9	12	02 & 03/12/2013
NED6	4	6	10	17 & 18/10/2013
NED7	2	8	10	19/11/2013
NED8	4	8	12	30/10/2013
Total	23	64	87	

Key stakeholders included ED nurses, medical staff, managers and allied health professionals associated with the sites. Table 38 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 38 Professional roles of key stakeholders by site, HWA-NED

Site	Manager	Doctor	Nurse	Other	Total key stakeholders
NED1	2	5	3	0	10
NED2	3	3	1	2	9
NED3	2	2	5	0	9
NED4	1	2	2	0	5
NED5	4	1	3	1	9
NED6	1	2	3	0	6
NED7	3	4	1	0	8
NED8	2	4	2	0	8
Total	18	23	20	3	64

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 programme design that impact on overall quality. The structure of these evaluation tools reflects the tertiary education standards endorsed by the Australian Tertiary Education Quality and Standards Agency.

These tools were not relevant to NED1, NED3 or NED4 as staff recruited to the ESOP positions came with the training and experience required. ET16 was completed by four sites where new training programs were designed and implemented. ET17 was used only at NED2, NED5, NED6, NED7 and NED8. It was completed by 74 out of 146 ESOP nurses (51%) at those five sites in late 2013. Of those 74 respondents, 51 were from NED8. ET15 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 personnel survey (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.

The NED5 project team collected additional local data on their training processes and outcomes. These included: documentation of completion and competency attainment; number of education modules developed and clinical pathways ratified; and number of clinical competencies developed. Administrative databases were interrogated for information on time to be seen and length of stay in ED as well as transfers to large referral centres.

NED8 also evaluated the effectiveness of its training program. Nurses eligible for the training were asked to complete a questionnaire before and after taking part. The surveys assessed knowledge of respiratory and hydration assessment and management of patients with respiratory and gastrointestinal diagnoses (i.e, the content of the training) as well as experience and satisfaction with education packages and competency assessment. Returned surveys were recorded and late responders followed up to maximise the response rate. This project used ET17 in the post-training survey.

Economic evaluation

There were several sources of data for the economic evaluation. First, information on estimated project expenditure was available from the original bids submitted by sites to HWA. This was supplemented by the regular financial statements included in the sites' progress, interim and final reports. For some sites, these statements provided valuable information on the costs associated with salaries, consumables and other project expenses. In addition, a financial reporting template was created and sites were asked to provide further details on costs, to help link expenditure to different periods of the program. Three types of cost data were collected: setup costs, initial training costs and costs associated with the period after the initial training.

Approximately half the sites across the HWA-ESOP program used the financial reporting template, and data were of variable quality and completeness due to local constraints such as the nature of sites' financial systems, the training and experience of the project staff, and available time.

External data sources were used primarily to estimate the cost of usual care and, where necessary, supplemented the information received from sites. These data sources included government reports, enterprise agreements, academic journal articles and consultancy reports. These alternative data sources were used as a best estimate of certain parameters required for the economic modelling.

Cost information from these sources was combined with activity data used for the analysis of the KPIs (see the 'Data analysis' section above) to build economic models, tailored specifically for each sub-project, predicting likely cost implications given various levels of the key parameters. These sub-project specific models were used to model number of different scenarios exploring the conditions under which the models of care were likely to be most cost effective, reflecting the variety of sites and organisations involved in the HWA-ESOP program and their particular constraints.

Appendix 3 Identifying patients in the target group

Table 39 **Diagnosis codes for NED1 – patients treated by an ESOP nurse during the implementation period**

Included in the patient cohort		Excluded from the patient cohort	
SNOMED code provided	Description	SNOMED code provided	Description
2073000	Delusions (finding)	3135009	Otitis externa (disorder)
2776000	Delirium (disorder)	8420001	Abrasion (procedure)
6471006	Suicidal thoughts (finding)	8510008	Reduced mobility (finding)
7011001	Hallucinations (finding)	9014002	Psoriasis (disorder)
7052005	Alcohol hallucinosis (disorder)	11092001	Sinus tachycardia (finding)
7895008	Poisoning by drug AND/OR medicinal substance (disorder)	12063002	Rectal haemorrhage (disorder)
11387009	Psychoactive substance-induced organic mental disorder (disorder)	13791008	Asthenia (finding)
13746004	Bipolar disorder (disorder)	13802001	Abscess of axilla (disorder)
15167005	Alcohol abuse (disorder)	14094001	Excessive vomiting in pregnancy (disorder)
17226007	Adjustment disorder (disorder)	14760008	Constipation (disorder)
17383000	Toxic effect of carbon monoxide (disorder)	16001004	Otalgia (finding)
21647008	Amphetamine dependence (disorder)	16932000	Nausea and vomiting (disorder)
21897009	Generalized anxiety disorder (disorder)	21522001	Abdominal pain (finding)
24199005	Feeling agitated (finding)	22253000	Pain (finding)
25501002	Social phobia (disorder)	23056005	Sciatica (disorder)
25702006	Alcohol intoxication (disorder)	25374005	Gastroenteritis (disorder)
25786006	Abnormal behavior (finding)	29857009	Chest pain (finding)
26665006	Antisocial personality disorder (disorder)	30989003	Knee pain (finding)
26677001	Sleep pattern disturbance (finding)	32834005	Brief loss of consciousness (finding)
28368009	Psychoactive substance-induced organic hallucinosis (disorder)	33334006	Foreign body in digestive tract (disorder)
32911000	Homeless (finding)	34014006	Viral disease (disorder)
32937002	Crisis (finding)	34095006	Dehydration (disorder)
33449004	Personality disorder (disorder)	34486009	Hyperthyroidism (disorder)
35489007	Depressive disorder (disorder)	35919005	Pervasive developmental disorder (disorder)
39898005	Sleep disorder (disorder)	37796009	Migraine (disorder)
41501003	Threatening suicide (finding)	38341003	Hypertensive disorder, systemic arterial (disorder)
45150006	Auditory hallucinations (finding)	40917007	Clouded consciousness (finding)
45775001	Poisoning by amphetamine (disorder)	40930008	Hypothyroidism (disorder)
46206005	Mood disorder (disorder)	42343007	Congestive heart failure (disorder)
47372000	Adjustment disorder with anxious mood (disorder)	47933007	Foot pain (finding)
47505003	Posttraumatic stress disorder (disorder)	49049000	Parkinson's disease (disorder)
48500005	Delusional disorder (disorder)	49436004	Atrial fibrillation (disorder)
48694002	Anxiety (finding)	49650001	Dysuria (finding)
55680006	Drug overdose (disorder)	49727002	Cough (finding)
56882008	Anorexia nervosa (disorder)	50417007	Lower respiratory tract infection (disorder)
56890008	Victim of sexual aggression (finding)	52448006	Dementia (disorder)
58214004	Schizophrenia (disorder)	55874001	Fracture of neck of metacarpal bone (disorder)
59274003	Intentional drug overdose (disorder)	62014003	Adverse reaction to drug (disorder)
61372001	Aggressive behaviour (finding)	62315008	Diarrhoea (finding)
64905009	Paranoid schizophrenia (disorder)	62837005	Cellulitis of hand (disorder)
66214007	Substance abuse (disorder)	63480004	Chronic bronchitis (disorder)
66590003	Alcohol dependence (disorder)	64531003	Nasal discharge (disorder)

	Included in the patient cohort		Excluded from the patient cohort
SNOMED code provided	Description	SNOMED code provided	Description
67195008	Acute stress disorder (disorder)	65710008	Acute respiratory failure (disorder)
67698009	Obsessional thoughts (finding)	68566005	Urinary tract infectious disease (disorder)
68890003	Schizoaffective disorder (disorder)	70153002	Haemorrhoids (disorder)
69322001	Psychotic disorder (disorder)	73820008	Disorder of endocrine testis (disorder)
70273001	Poisoning by acetaminophen (disorder)	73862001	Complication of catheter (disorder)
72366004	Eating disorder (disorder)	77386006	Patient currently pregnant (finding)
74506000	Bereavement due to life event (finding)	79922009	Epigastric pain (finding)
74732009	Mental disorder (disorder)	80394007	Hyperglycaemia (disorder)
75478009	Poisoning (disorder)	80593000	Ingestion of foreign material (finding)
75544000	Opioid dependence (disorder)	81576005	Closed fracture of phalanx of foot (disorder)
78004001	Bulimia nervosa (disorder)	81680005	Neck pain (finding)
78667006	Dysthymia (disorder)	82271004	Injury of head (disorder)
79890006	Loss of appetite (finding)	82423001	Chronic pain (finding)
80583007	Severe anxiety (panic) (finding)	82991003	Generalized aches and pains (finding)
81914009	Poisoning by benzodiazepine-based tranquilizer (disorder)	84229001	Fatigue (finding)
82276009	Poisoning by antidepressant (disorder)	89627008	Hyponatremia (disorder)
85005007	Cannabis dependence (disorder)	91175000	Seizure (finding)
87132004	Opioid withdrawal (disorder)	91861009	Acute myeloid leukaemia, disease (disorder)
90774003	Victim of physical assault (finding)	95324001	Skin lesion (disorder)
102911000	Thoughts of self harm (finding)	102589003	Atypical chest pain (finding)
112082005	Inappropriate behavior (finding)	111640008	Closed fracture of radius (disorder)
128293007	Chronic mental disorder (disorder)	118940003	Disorder of nervous system (disorder)
161152002	Social problem (finding)	125593007	Injury of face (disorder)
162218007	Stress-related problem (disorder)	125599006	Injury of hand (disorder)
191480000	Alcohol withdrawal syndrome (disorder)	125663008	Open wound of foot (disorder)
191483003	Drug-induced psychosis (disorder)	125666000	Burn (disorder)
191485005	Drug-induced paranoid state (disorder)	125667009	Contusion (disorder)
191531007	Acute exacerbation of chronic schizophrenia (disorder)	125670008	Foreign body (disorder)
191542003	Catatonic schizophrenia (disorder)	128276007	Cellulitis of foot (disorder)
191616006	Recurrent depression (disorder)	161051006	At risk violence in the home (finding)
191629006	Bipolar affective disorder, currently depressed, mild (disorder)	161891005	Backache (finding)
191802004	Acute alcoholic intoxication in alcoholism (disorder)	161898004	Falls (finding)
191816009	Drug dependence (disorder)	162299003	Generalized headache (finding)
192041001	Acute situational disturbance (disorder)	182832007	Procedure related to management of drug administration (procedure)
192083006	Aggressive outburst (finding)	182838006	Change of medication (procedure)
193462001	Insomnia (disorder)	191714002	Dissociative convulsions (disorder)
197480006	Anxiety disorder (disorder)	194290005	Acute bilateral otitis media (disorder)
214264003	Lethargy (finding)	208393000	Fracture of metacarpal bone (disorder)
224977004	Feeling upset (finding)	211616004	Foreign body in orifice (disorder)
225049000	Hanging self (finding)	211649008	Foreign body in bladder (disorder)
225444004	At risk for suicide (finding)	213257006	Generally unwell (finding)
225624000	Panic attack (finding)	235595009	Gastroesophageal reflux disease (disorder)
228326007	Drinking binge (finding)	238402004	238402004 is an unknown concept
228366006	Finding relating to drug misuse behaviour (finding)	246545002	Generalized seizure (finding)
231466009	Acute drug intoxication (disorder)	247325003	Altered sensation of skin (finding)
231473004	Benzodiazepine dependence (disorder)	247355005	Flank pain (finding)
231477003	Heroin dependence (disorder)	262541004	Superficial laceration (disorder)
231494001	Mania (disorder)	262560006	Penetrating wound (disorder)

	Included in the patient cohort		Excluded from the patient cohort
SNOMED code provided	Description	SNOMED code provided	Description
231496004	Hypomania (disorder)	267036007	Dyspnea (finding)
231504006	Mixed anxiety and depressive disorder (disorder)	271189004	Traumatic blister of toe (disorder)
242824002	Intentional paracetamol overdose (disorder)	271594007	Syncope (disorder)
242832005	Intentional benzodiazepine overdose (disorder)	271807003	Eruption of skin (disorder)
247808006	Anxiety about body function or health (finding)	274668005	Non-cardiac chest pain (finding)
248004009	Physical aggression (finding)	279043006	Pain in buttock (finding)
248061004	Self-harm (finding)	281900007	No abnormality detected (finding)
248062006	Self-injurious behaviour (finding)	283366003	Laceration of upper limb (disorder)
267073005	Suicidal (finding)	283371005	Laceration of forearm (disorder)
268622001	Chronic paranoid psychosis (disorder)	283372003	Laceration of wrist (disorder)
271952001	Stress and adjustment reaction (disorder)	283385000	Laceration of thigh (disorder)
277843001	Problem behaviour (finding)	283387008	Laceration of lower leg (disorder)
280427006	Psychotic symptom present (finding)	287045000	Pain in left arm (finding)
284513006	Manic behaviour (finding)	296128004	Accidental overdose of benzodiazepine (disorder)
284614009	Threatening behaviour (finding)	297217002	Rib pain (finding)
287185009	Attempted suicide - cut/stab (event)	299709002	Dental abscess (disorder)
290802009	Lithium poisoning (disorder)	300471006	Finding of frequency of urination (finding)
291241005	Intentional amphetamine poisoning (disorder)	301717006	Right upper quadrant pain (finding)
295124009	Acetaminophen overdose (disorder)	309585006	Syncope and collapse (disorder)
295252006	Intentional ibuprofen overdose (disorder)	310455000	Medical report requested (finding)
295497000	Nitrous oxide overdose (disorder)	312608009	Laceration - injury (disorder)
297201008	Intentional overdose of tricyclic antidepressant (disorder)	312887003	Attending clinic (finding)
304594002	Suicidal intent (finding)	314984005	Lost prescription (finding)
308273005	Follow-up status (finding)	398117008	Falling injury (disorder)
309838005	Emotional upset (finding)	400061001	Abrasion (morphologic abnormality)
361055000	Misuses drugs (finding)	409780002	Acute osteomyelitis (disorder)
363101005	Drug withdrawal (disorder)	416381005	Prescription collected (finding)
367391008	Malaise (finding)	418925002	Immune hypersensitivity reaction (disorder)
370143000	Major depressive disorder (disorder)	422400008	Vomiting (disorder)
391281002	Mental health assessment (procedure)	422587007	Nausea (finding)
401206008	At risk for deliberate self harm (finding)	427746000	Mass of shoulder region (finding)
404189009	Domestic violence (event)	429040005	Ulcer (disorder)
405049007	Level of depression (observable entity)		
410223002	Mental health care assessment (procedure)		
413307004	Mental health problem (finding)		
417233008	Paranoid ideation (finding)		
417284009	Current drug user (finding)		
419284004	Altered mental status (finding)		
422608009	Sexual assault (finding)		
440144004	Injury due to suicide attempt (disorder)		

Table 40 **Diagnosis codes for NED2 – patients treated by an ESOP nurse during the implementation period**

Included in the patient cohort – SNOMED codes provided	Excluded from the patient cohort – SNOMED codes provided
AA - Alcohol abuse	Abdominal pain - cause unknown
Acute intoxication	Laceration of abdomen
Acute reaction to stress	Local infection of wound
Adjustment disorder	UTI - Urinary tract infection
Alcoholic psychosis	
Antisocial behaviour	
Anxiety	
Anxiety depression	
Anxiety reaction	
Bipolar affective disorder, current episode hypomanic	
Bipolar disorder	
Confusion	
Deliberate self-harm	
Delusions	
Depressed	
Depression	
Drug overdose	
Drug seeking behaviour	
Drug-induced psychosis	
Intentional drug overdose	
Intentional paracetamol overdose	
Major depression	
Mania	
Manic	
Manic behaviour	
Mental health assessment	
Mental health disorder	
Mental health problem	
Mental illness	
OD - Overdose of drug	
Panic attack	
Paracetamol poisoning	
Paranoid psychosis	
Personality disorder	
Psychosis	
Psychotic	
Psychotic depression	
Schizoaffective disorder	
Schizophrenia	
Self-harm	
Social problem	
Substance abuse	
Suicidal	
Suicidal intent	
Suicidal thoughts	
Thoughts of deliberate self harm	
Toxic effect of ethanol	
Transient situational disturbance	
Visual hallucinations	

Table 41 **Diagnosis codes for NED3 – patients treated by an ESOP nurse during the implementation period**

Included in the patient cohort		Excluded from the patient cohort	
ICD code provided	Description	ICD code provided	Description
F103	Mental and behavioural disorders due to alcohol, withdrawal state	F059	Delirium, unspecified
F104	Mental and behavioural disorders due to alcohol, withdrawal state with delirium	I48	atrial fibrillation and flutter
F109	Mental and behavioural disorders due to alcohol, unspecified mental and behavioural disorder	J22	unspecified acute lower respiratory infection
F1309	other specified sedative or hypnotic	R104	Other and unspecified abdominal pain
F1502	methylenedioxy methamphetamine	R69	unknown and unspecified causes of morbidity
F199	Code DNE in manual!!	R73	elevated blood glucose level
F209	Schizophrenia, unspecified	S519	open wound of forearm, part unspecified
F2390	Acute and transient psychotic disorder, unspecified	T189	foreign body in alimentary tract, part unspecified
F309	Manic episode, unspecified	T659	toxic effect of unspecified substance
F319	Bipolar affective disorder, unspecified	T887	unspecified adverse effect of drug or medicament
F3290	Depressive episode, unspecified	Z027	issue of medical certificate
F419	Anxiety disorder, unspecified	Z590	Homelessness
F432	Adjustment disorders	Z658	problem related to unspecified psychosocial circumstances
F439	Reaction to severe stress, unspecified	Z760	issue of repeat prescription
F459	Somatoform disorder, unspecified		
F6031	Borderline type		
F609	personality disorder, unspecified		
F799	unspecified mental retardation		
F919	conduct disorder, unspecified		
F938	other childhood emotional disorders		
F99	mental disorder, NOS		
G479	sleep disorder, unspecified		
R455	Hostility		
R4581	Suicidal ideation		
T391	poisoning by aminophenol derivatives		
T402	poisoning by other opioids		
T406	poisoning by other and unspecified narcotics		
T424	poisoning by benzodiazepines		
T427	poisoning by antiepileptic and sedative-hypnotic drugs, unspecified		
T439	poisoning by psychotropic drug, unspecified		
Z046	general psychiatric examination, requested by authority		
Z915	personal history of self harm		

Table 42 **Diagnosis codes included in the patient cohort for NED8 – paediatric patients treated by an ESOP nurse during the implementation period**

ICD code provided	Description
A090	Other gastroenteritis and colitis of infectious origin
A099	Gastroenteritis and colitis of unspecified origin
J050	Acute obstructive laryngitis [croup] and epiglottitis
J210	Acute bronchiolitis due to respiratory syncytial virus
J211	Acute bronchiolitis due to human metapneumovirus
J218	Acute bronchiolitis due to other specified organisms
J219	Acute bronchiolitis unspecified
J450	Predominantly allergic asthma
J451	Non allergic asthma
J458	Mixed asthma
J459	Asthma, unspecified