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Knowledge translation in an era of reform

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Abstract

Knowledge translation can be difficult, particularly during volatile and unstable healthcare reform. This can have significant implications. The aim of this paper is to determine what works when facilitating knowledge translation. General Practitioners (n=214) were surveyed about their awareness, their use, the perceived impact, and the factors that hindered the use of four resources to promote sexual healthcare - a placard, online training, face-to-face training, and an educational booklet. All four resources were perceived to improve clinical ability. However, the placard appeared to have greatest reach and use. Relatively inexpensive tools that provide instructive guidance may therefore be an effective and efficient way to facilitate knowledge translation, despite the volatility and instability of the Australian healthcare system.

Keywords

reform, era, translation, knowledge

Disciplines

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Knowledge Translation in an Era of Reform

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Knowledge Translation in General Practice During an Era of Healthcare Reform

ABSTRACT

Knowledge translation can be difficult, particularly during volatile and unstable healthcare reform. This can have significant implications. The aim of this paper is to determine what works when facilitating knowledge translation. General Practitioners (n=214) were surveyed about their awareness, their use, the perceived impact, and the factors that hindered the use of four resources to promote sexual healthcare – a placard, online training, face-to-face training, and an educational booklet. All four resources were perceived to improve clinical ability. However, the placard appeared to have greatest reach and use. Relatively inexpensive tools that provide instructive guidance may therefore be an effective and efficient way to facilitate knowledge translation, despite the volatility and instability of the Australian healthcare system.

Keywords: Education, Health professions, Healthcare, Healthcare quality, Professional identities

INTRODUCTION

Government-initiated healthcare reform pervades many nations (Skinner et al., 2009, Willcox et al., 2011, Leggat et al., 2011, Gauld, 2011, Maarse and Paulus, 2011). In the wake of contemporary challenges – like ‘an ageing population, increased rates of chronic and preventable disease, new treatments becoming available and rising health care costs’ (DHA, 2010a: para. 1) – governments are vying for different ways to improve the organisation, management, and delivery of healthcare (Geyman, 2003). Given its rate of recurrence, it might be argued that reform is now routine (Brunsson, 2009).

As an exercise in change – euphemisms for which include reorganisation, rationalisation, and restructuring (Brunsson, 2009) – healthcare reform is likely to be associated with volatility and instability (Kaissi, 2010, Brodie et al., 2010). This includes uncertainty (Hamilton et al., 2007, Kelly and Kennedy, 2000, Davis and Robinson, 2010), diminished morale (van Eyk et al., 2001, Darzi, 2009), and staff turnover (Davidson et al., 1997). Furthermore, such an environment can be cause for distraction from core business (Green et al., 2007, Wallace and Taylor-Gooby, 2010, Sprinks, 2012) – this includes the delivery of quality healthcare through the use of evidence-based practices.

Optimising clinician use of evidence-based practice represents a significant challenge within healthcare services (Davis et al., 2003) – this includes primary care. One of the key issues within primary care is to effectively and efficiently translate evidence from empirical research into patient care (Harrison et al., 2010, Johnston and White, 2010, Kostopoulou, 2010, O'Donnell, 2004).

Although research focused solely on primary care is limited, research suggests that clinician use of evidence-based practice is problematic (Bhattacharyya et al., 2006, Timmins et al., 2012). For instance, thirty to forty percent of patients do not receive treatment in accordance with research evidence and twenty percent receive treatment that may be harmful (Grol, 2001, Schuster et al., 1998). There are a myriad of reasons that contribute to this (Baker et al., 2010, Straus et al., 2009) – these include doctor-related, patient-related, and organisational factors. For instance, following a cluster randomised controlled trial on chlamydia screening in general practice, Bowden and colleagues (2008) concluded that limited time, limited clinician understanding of associated benefits, and clinician concern about broaching sexual health with patients hindered clinician capacity to deliver evidence-based sexual healthcare.

The limited use of evidence-based practice has significant consequences for patients, their communities, and the public purse (Straus et al., 2009). This is largely because evidence-based practice is said to enhance quality patient care and optimise the allocation of limited resources (DiClemente et al., 2005, Dadich, 2010a, Dadich, 2010b). This might partly explain current government and academic interest in knowledge translation (Greenhalgh and Wieringa, 2011).

The translation of evidence-based practice into clinical care is a complex, dynamic, and an evolving process (Greenhalgh et al., 2004). To facilitate this process effectively and efficiently, international scholars have called for broad approaches (Greenhalgh and Wieringa, 2011) and innovative methods (Flodgren et al., 2010), lessons for which might be garnered from extant research. For instance, a comprehensive review of extant literature suggests that most methods to help clinicians and practitioners to adopt evidence-based practices have the capacity to effect change – however, robust evidence of their effectiveness (and methods of action) is lacking (Dadich, 2010a). Although the evidence for effective methods remains inconclusive, it does not suggest that particular methods be discontinued (Parkes et al., 2001). Rather, there are ‘no “magic bullets” for improving the quality of health care’ (Oxman et al., 1995: 1423). Bridging the divide between evidence-based practice and patient care appears to require a multimodal approach. As Grol and Grimshaw (2003) concluded, ‘Different types of changes seem to need discrete types of interventions... research so far shows that

none of the approaches is superior for all changes in all situations; we probably need them all' (1227-1229). Therefore, different methods are likely to be required for different purposes (including the target audience of the intervention).

To better understand what works when facilitating knowledge translation – particularly during time of considerable healthcare reform (AIHW, 2009, DHA, 2011c, NHHRC, 2009) – this study presents findings from a recent survey of general practitioners (GPs) in Australia about their awareness, their use, the perceived impact, and the factors that hindered the use of four resources to promote sexual healthcare. Sexual healthcare in the Australian primary care sector constitutes an appropriate context for three key reasons. First, despite the prevalence of sexually transmissible infections (STIs) (HPA, 2010, DHA, 2009, PHAC, 2010, CDCP, 2010), the provision of sexual healthcare is limited, particularly within primary care (Skelton and Mathews, 2001, Burd et al., 2006, Gott et al., 2004, Stokes and Mears, 2000). This can have serious implications as some STIs remain asymptomatic and have long-term effects if left untreated (Tilson et al., 2004, Skinner and Hickey, 2003). Second, the Australian primary care sector is experiencing significant reform, the aim of which is to 'shift the centre of gravity of the health system from hospitals to primary health care' (DHA, 2011a: 1). Third, primary care clinicians are being called to alleviate the strain on public sexual health clinics (DHA, 2010b). As stated in a government sexual health strategy, 'The size of some priority population groups is such that a strategic objective for specialist clinics and Area-based sexual health programs must be to work with general practice to reduce barriers to access' (NSW Health, 2006: 2). These three reasons lend sexual healthcare in the Australian primary care sector as an appropriate context for this study.

The GP Project

The New South Wales (NSW) Sexually Transmissible Infections Programs Unit (STIPU) developed and deployed the GP Project (in collaboration with key stakeholders) to enhance evidence-based sexual healthcare within general practice in NSW. More specifically, its objectives were to increase GP access to STI information, education, and resources; promote their understanding of contact tracing; and clarify referral pathways. To meet these objectives, seven resources were developed for

GPs, which were informed by clinical guidelines (ACSHM, 2004). Given their similarities as educational aides (particularly in content), this paper reports only on findings pertaining to four of these resources – namely, the STI Testing Tool, the Online STI Testing Tool GP Training, the Active Learning Module, and the Check Booklet.

The STI Testing Tool is a double-sided A4 placard that guides sexual health consultations (see Figure 1). This includes the identification of at-risk patients; appropriate screening tests and the specimens required; appropriate ways to initiate and manage a sexual health consultation; a guide to documenting a brief sexual history; appropriate ways to broach contact tracing; as well as referral information. Following its development, the STI Testing Tool was promoted and disseminated via key professional bodies that support NSW GPs and promote general practice, and distributed to NSW GPs.

Developed and distributed by an independent provider of online education to GPs and other healthcare providers, the aim of the Online STI Testing Tool GP Training is to improve GP confidence in STI testing (see Figure 2). The interactive course, which takes approximately sixty minutes to complete, includes seven clinical cases offering participants an opportunity to apply their skills and knowledge. These abilities are tested through the completion of questions after each clinical case, answers for which are also provided. Following its development, the Online STI Testing Tool GP Training was promoted electronically to GPs via website postings and email. It was delivered online by the independent provider as part of its training program (Fyfe, 2010).

The Active Learning Module is a face-to-face programme to increase clinician confidence in sexual health consultations (see Figure 3). This was addressed by assembling three interactive educational modules to improve knowledge of, and clinical skills in STI management. Each two-hour module has a particular focus and builds on the preceding module. Although participants are awarded four continuing professional development (CPD) points for completing one module, forty CPD points are awarded following the completion of all three modules. Following its development, the Active Learning Module was promoted via key stakeholders, including NSW Divisions of GP, and – at time of study – it was offered on six occasions in NSW.

The Check Booklet on STIs was developed in accordance with the Royal Australian College of General Practitioners Quality Improvement and Continuing Professional Development program (RACGP, 2010) (see Figure 4). Check is an independent learning program published monthly by the RACGP on different health topics. This particular issue aims to increase GP confidence in the delivery of sexual healthcare, with particular reference to taking a sexual history; STI testing; dealing with feelings of discomfort around sex; STI screening; contact tracing; and cultural sensitivities. The booklet includes seven clinical cases accompanied by questions and answers to enhance the learning experience. The booklet concludes with additional GP resources, including references to clinical resources and guidelines; patient information; and contact details for additional services. As part of the RACGP Check program (RACGP, 2012), the Check Booklet was promoted and delivered by the RACGP to GP members as part of their membership package.

Following the development and deployment of these four resources, this study was conducted to determine GP awareness, use, perceived impact on clinical practices, as well as factors that hindered use.

METHOD

Recruitment

Following clearance from the relevant university ethics committee, GPs practicing in NSW were recruited with the assistance of professional bodies that support GPs and promote general practice, as well as an independent provider of online education to GPs. These organisations included project information in its communications to GPs, which included email, facsimiles, website postings, and newsletters.

Measure

GPs were invited to complete an anonymous and a confidential online survey, comprised of closed and open-ended items. In addition to demographic information (about the respondent and their primary workplace), survey items pertained to all seven resources within the GP Project. The purpose of the survey was to determine degree of awareness; use of the resources; impact on clinical practice; perceived value of the resources; perceived capacity to promote sexual health; and preferred learning

styles. In recognition of their contribution to this project, respondents were offered hard copies of clinical guidelines. Data were collected for five months (August 2011 to January 2012).

Analysis

Data collected through the closed survey items were cleaned. Descriptive statistics were then calculated using only valid responses – this includes the calculation of percentages and means. Akin to first-level coding (Schreiber and Noerager Stern, 2001), responses to each open-ended item were initially reviewed to identify key elements and concepts. Following this, elements and concepts were distilled into constructed themes, akin to axial coding (Charmaz, 2006). Given the scope of this paper, only findings pertaining to awareness, use, perceived impact on clinical practices, and factors that hindered resource use are reported.

RESULTS

Participants

A total of 214 GPs practicing in NSW completed the online survey. Most respondents were female (54.1%) and most graduated in Australia (57.2%; see Table 1). The highest proportion of respondents was between 36 and 45 years of age (31.8%). On average, they had 15.4 years of GP experience ($SD=12.1$) and a considerable percentage of them consulted patients in a language other than English (40.1%). Close to ten percent worked within an Aboriginal Community Controlled Health Service (ACCHS) (8.9%). For most respondents, ten to fifty percent of their patients were under 25 years of age (77.5%); fewer than fifty percent of patients were from culturally and linguistically diverse (CALD) backgrounds (81.6%); and less than one percent of their patients were Indigenous (54.5%).

Given the profile of NSW GPs (Carne et al., 2011), the demographic characteristics suggest the respondents were not representative of this cohort. This is because NSW GPs are mostly male (63.1%); approximately one-third are over 55 years of age (31.6%); and very few practice within an ACCHS (1.2%). As such, there are no claims that the respondents are representative of NSW GPs.

Findings

STI Testing Tool

Most respondents were aware of the STI Testing Tool (61.7%, see Table 2) and a majority used it (71.7%). Of those who used it, most indicated that it assisted their clinical practice (85.6%); improved their ability to raise the topic of STIs with patients (68.5%); and/or enhanced their ability to order appropriate STI tests (80.0%). According to respondents who were aware of, but did not use this resource, this was largely due to a perceived lack of need, limited access to the resource, time constraints, and limited familiarity with the resource. Respondents who used this resource indicated that their ability to use it was hindered by limited access. More specifically, respondents could not readily locate the resource when required, and/or they failed to remember its availability. These (and other) factors were exacerbated by workload.

Online STI Testing Tool GP Training

Less than one-quarter of the respondents were aware of the Online STI Testing Tool GP Training (23.4%, see Table 2) and of these, less than one-third used it (28.3%). Most respondents who used this resource reported that it aided their clinical practice (83.3%); improved their ability to raise the topic of STIs with patients (81.8%); and/or enhanced their ability to order appropriate STI tests (83.3%). According to respondents who were aware of, but did not use this resource, key barriers were time constraints, workload, the increasing number of online training opportunities, and limited internet access, particularly in rural areas.

Active Learning Module

Just over ten percent of respondents were aware of the Active Learning Module (12.4%, see Table 2); of these, less than one-third completed all three modules (29.2%). All of those who completed the three modules indicated that the resource aided their clinical practice (100.0%). Most of these respondents suggested that it improved their ability to document a brief sexual history (83.3%); identify patients at-risk of STIs (83.3%); identify appropriate STI tests (83.3%); diagnose and treat common STIs (85.7%); and raise contact tracing with patients (100.0%). According to respondents who were aware of, but did not use this resource, time constraints were the key barrier.

Check Booklet

Approximately one-half of the respondents were aware of the Check Booklet (50.5%, see Table 2); of these, more than half read or completed it (53.5%). Most of these individuals advised that it aided clinical practice (86.8%); improved their ability to document a brief sexual history (88.5%); and/or improved their ability to diagnose and manage STIs (90.2%). According to respondents who were aware of, but did not use this resource, time constraints were the key barrier.

DISCUSSION

In this epoch of healthcare reform, which can distract from core clinical business (Green et al., 2007, Wallace and Taylor-Gooby, 2010, Sprinks, 2012), it is important to identify strategies that facilitate knowledge translation. Enabling clinicians to access timely, comprehensible information on evidence-based practice is likely to optimise its use, its influence on clinical decision-making and, as such, patient care (Bosch et al., 2012, Grimshaw et al., 2012, Lang and Johnson, 2012). This is because evidence-based practices – like clinical guidelines – meld clinical expertise with evidence borne from empirical research (Broughton and Rathbone, 2001).

This paper presents findings from a recent study in which the capacity of four resources to facilitate knowledge translation was examined. These include a placard titled, the STI Testing Tool; the Online STI Testing Tool GP training; an Active Learning Module; and the Check Booklet. A survey of NSW GPs reveals four key findings. First, most respondents were **aware** of the placard, likely to be due in part to its wide circulation, which included direct distribution to NSW GPs. Second, most respondents **used** this resource, which again is likely to be due in part to its wide circulation. Third, all four resources were perceived to **assist clinical practice** – particularly the Active Learning Module, which offers three face-to-face modules, each of which builds on its predecessor. And fourth, all four resources were perceived to **improve clinical ability** to deliver sexual healthcare – this includes the ability to broach sexual healthcare or contact tracing with patients; identify and/or order appropriate STI tests; document a brief sexual history; identify at-risk patients; and diagnose and/or treat common STIs.

The respondents reported several barriers that hindered their capacity to use the resources. Reflecting extant primary care research (Cabana et al., 1999, Bell et al., 2012, Nygaard and Aasland, 2011, Henke et al., 2008, Albers-Heitner et al., 2008), these include limited time – largely due to workload and competing professional development priorities; limited perceived need; limited access to the resource; and limited familiarity with the resource.

This study is important for three key reasons. First, it reinforces the potential value of a multi-modal approach to knowledge translation. In accordance with the literature (Dadich, 2010a, Parkes et al., 2001, Grol and Grimshaw, 2003, Oxman et al., 1995), primary care clinicians – like GPs – are likely to recognise value in different approaches that communicate evidence-based practices. Second, the study suggests that the wide dissemination of a relatively inexpensive resource – like the STI Testing Tool – might influence clinical practices. Although cost-benefit and/or cost-effectiveness analyses (Yates, 2005, Bleichrodt and Quiggin, 1999) were beyond the scope of this study, one might assume that the costs associated with the production and postage of a double-sided A4 placard are likely to be economical, relative to the costs associated with the development, maintenance, and delivery of online training or an Active Learning Module. It therefore appears that relatively inexpensive resources might be an effective and efficient way to facilitate knowledge translation. Third, with few exceptions (Young et al., 2002, Young and Ward, 1999, Young and Ward, 2001), there is limited research on the use of evidence-based practices among Australian GPs. Given the significance of current reforms in the Australian primary care sector (DHA, 2011a, 2011b), the associated ambiguities (Kidd, 2009), and the potential distraction they provide from quality patient care (McKenna et al., 2004, Sturmberg et al., 2009), this study is therefore timely.

Despite the potential value of these findings, three methodological limitations deserve consideration. First, as noted, the survey respondents are not representative of all NSW GPs (Carne et al., 2011) – as such, it is unlikely that findings are generalisable within and beyond the NSW primary care sector. Second, as voluntary participants, it is possible that participants had a particular interest in sexual healthcare and were largely *au fait* with evidence-based practices, relative to their peers – as such, the

views here presented may be biased. Third, the cross-sectional nature of this study indicates that the respondents provided a snapshot of their views, which might alter over time.

Notwithstanding these limitations, this study contributes to the growing research on knowledge translation in the Australian primary care sector (Mills et al., 2011a, Mills et al., 2011b, Mills et al., 2009). In addition to the three aforesaid practical implications, it also provides a platform for future research to: (1) identify the factors that help and hinder knowledge translation during considerable reform; and (2) determine the potential strength of their influence on clinical practices, patient wellbeing, and public health.

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TABLES

Table 1: Survey Respondents ($n=214$)

Characteristic	Frequency	%	Characteristic	Frequency	%
Sex			Indigenous Patients		
Male	95	45.9	<1%	116	54.5
Female	112	54.1	1-5%	62	29.1
Age			5-20%	17	8.0
26-35 yrs	33	15.4	>20%	11	5.2
36-45 yrs	68	31.8	Unsure	7	3.3
46-55 yrs	63	29.4	CALD Patients		
Over 56 yrs	50	23.4	<10%	81	38.2
Country of Graduation			10-50%	92	43.4
Australia	119	57.2	>50%	32	15.1
Overseas	89	42.8	Unsure	7	3.3
Consultation Language			Patients < 25 years		
English only	125	59.0	<10%	25	11.7
English and a non-English language	87	40.1	10-50%	165	77.5
Work at ACCHS			>50%	16	7.5
Yes	19	8.9	Unsure	7	3.3
No	193	90.2			

Table 2: Awareness, Use, and Impact of the GP Project Resources (% , n=214)

	STI Testing Tool	Online STI Testing Tool GP Training	Active Learning Module	Check Booklet
Aware of resource	61.7	23.4	12.4	50.5
Used resource	71.7	28.3	29.2	53.5
Assists clinical practice	85.6	83.3	100.0	86.8
Improved ability to raise sexual healthcare / contact tracing with patients	68.5	81.8	100.0	
Improved ability to identify / order appropriate STI tests	80.0	83.3	83.3	
Improved knowledge				90.2
Improved ability to document brief sexual history			83.3	88.5
Improved ability to identify at-risk patients			83.3	
Improved ability to diagnose / treat common STIs			85.7	

FIGURES

Who? Is the patient?	Why? would you do an STI test?	Which? STI	How? WHAT specimen do you need?	How? WHAT test do you order?
A sexually active young person under 25 years	This population is at higher risk for Chlamydia	Chlamydia HBV	First pass urine OR Self-collected vaginal swab OR Endocervical swab Consider vaccination for HBV & HPV	NAAT
A sexually active Aboriginal young person under 25 years	This population is at higher risk for Chlamydia * Can also be conducted as part of the Aboriginal health check - Medicare item 710	Chlamydia Gonorrhoea HBV	First pass urine OR Self-collected vaginal swab OR Endocervical swab Blood Consider vaccination for HBV & HPV	NAAT HBC:Ab
An (asymptomatic) person of any age requesting "an STI checkup"	The patient has requested it, so may be at risk. Ideally, take a sexual history to ascertain: a) If they fall into one of the groups below b) Help you decide on sites for specimen collection	Chlamydia HIV Syphilis HBV	First pass urine OR Self-collected lower vaginal swab OR Endocervical swab Blood Consider vaccination for HBV	NAAT HIV Ab Syphilis EIA HBC:Ab
A man who has sex with men (MSM)	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HAV, HBV	Chlamydia Gonorrhoea HIV Syphilis HAV HBV	First pass urine & anal swab Throat swab Anal swab Blood Vaccinate for HAV & HBV	NAAT Gonorrhoea culture NAAT HIV Ab Syphilis EIA HAV Ab (total) HBC:Ab
A sex worker	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HBV See above for MSM sex workers	Chlamydia Gonorrhoea HIV Syphilis HBV	First pass urine OR Self-collected lower vaginal swab OR Endocervical swab Blood Vaccinate for HBV	NAAT HIV Ab Syphilis EIA HBC:Ab
A person who injects drugs	This population group is at higher risk for Chlamydia, Gonorrhoea, Syphilis, HIV, HBV and HCV * HCV is not an STI but is included due to risks associated with injecting drugs	Chlamydia Gonorrhoea HIV Syphilis HBV HCV	First pass urine OR Self-collected lower vaginal swab OR Endocervical swab Blood Vaccinate for HBV	NAAT HIV Ab Syphilis EIA HBC:Ab HCV:Ab

HAV = Hepatitis A
 HBV = Hepatitis B
 HCV = Hepatitis C
 HPV = Human Papilloma Virus
 NAAT = Nucleic Acid Amplification Test (eg PCR)

Information on vaccination: www.immunise.health.gov.au
 Information on HIV Pre & post-test discussion: www.aahm.org.au/publications/STI_viral_test_Chapter_x.pdf

Figure 1: STI Testing Tool

The screenshot shows the ThinkGP website interface. At the top, there is a navigation menu with links for HOME, EDUCATION, VIDEO, NEWS, FORUMS, and CONTACT US. The main content area is titled "The key features in managing STIs - STI Testing Tool". Below the title, there is a paragraph explaining the purpose of the training. A list of learning objectives follows, including:

- Increase knowledge in current practice of STI management with an aim to increase STI testing in your practice
- Identify which of your patient populations are most at risk of an STI and are a priority for testing, eg those with recent partner change
- Identify at-risk young adults as needing STI testing as part of usual and ongoing health care
- Ability to communicate and negotiate STI testing and treatment, safe sex, and condom use in a time efficient approach
- Ensure patient safety by providing accurate and current information to support STI management and making the GP the primary provider of STI advice

 A small thumbnail of the STI Testing Tool table is visible on the right side of the page. At the bottom, there is a footer with copyright information and a disclaimer.

Figure 2: Online STI Testing Tool GP Training



ashm **STI Active Learning Module For General Practitioners**
Supporting the HIV, Viral Hepatitis and Sexual Health Workforce

Date: Saturday 25 June 2011
Venue: Novotel Wollongong Northbeach, 2-14 Cliff Road, Wollongong NSW 2500
Time: 8.30am - 4.30pm

The NSW STI Programs Unit (STIPU) in conjunction with HIV/AIDS and Related Programs (HARP) Unit, NSW Health Service - Southern are running an STI Active Learning Module (ALM) workshop titled Sex...Need a Hand.

The workshops consist of three modules:

- Module 1 - STI Testing, Treatment and Management.
- Module 2 - Working with Priority Populations.
- Module 3 - Contact Tracing.

Presenter:
A/PROF KATHERINE BROWN
Clinical Associate Professor UOW
Honorary Senior Lecturer Sydney
Clinical Director Population Health
Director, Illawarra Sexual Health Service

This is a FREE course morning tea, lunch and afternoon tea will be provided.

Register at:
www.ashm.org.au/courses
Registrations Close:
Friday 10 June 2011
For further details contact:
Amy Watson
T 02 8204 0715
E amy.watson@ashm.org.au

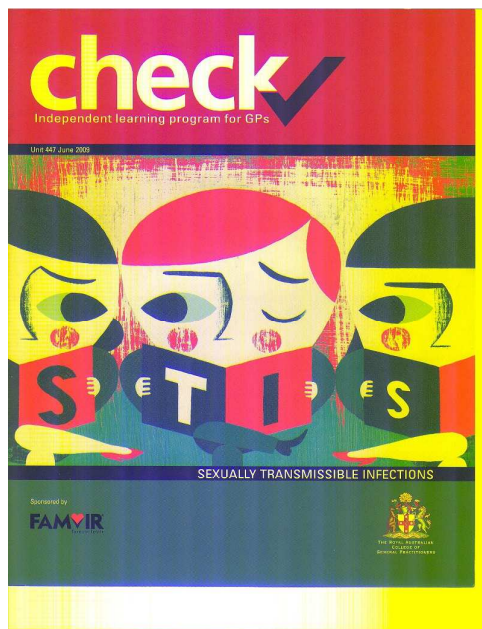
Approved by RACGP for 40 Category 1 QI&CPD Points

nswsti
Programs Unit
Funded by NSW Health

NSW Health
Illawarra Shoalhaven Local Health Network

www.ashm.org.au/courses

Figure 3: Active Learning Module



check ✓
Independent learning program for GPs

Unit 447 June 2009

SEXUALLY TRANSMISSIBLE INFECTIONS

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HEALTH DEPARTMENT

Figure 4: Check Booklet