Evidence Reviews: What works in Training, Behaviour Change and Implementing Guidance?

NPIA Research, Analysis and Information (RAI) Unit

Authors

Levin Wheller and Julia Morris

October 2010

Contents

Overview of report

This document outlines findings from three rapid evidence assessments on what works (a) in training, (b) to change professionals' behaviour, and (c) to implement guidance and research into practice. The reviews were undertaken by the National Policing Improvement Agency (NPIA), Research Analysis and Information Unit (RAI) in October 2010. The evidence reviews have been peer reviewed to ensure they use appropriate methodologies, and meet required standards of quality and completeness.

1. What works in training? A rapid evidence assessment

1.1. Introduction

This paper presents the findings of a rapid evidence assessment designed to explore the evidence base on effective training practice. The evidence assessment has been conducted within a three week period, following systematic principles, but is not exhaustive and may be biased towards published sources rather than grey literature. The time constraints have resulted in a tightly restricted scope, limited to published evidence for which electronic abstracts were available and contained within databases held by the National Police Library[1]. In addition, strict inclusion criteria have been applied so that only the strongest available evidence is included[2]; hence the focus of the searching was on systematic reviews, with the minimum requirement for inclusion of any individual studies being a pre-post test with comparison (level three on the Maryland Scale). From just over 1,000 references identified by the initial searches, only 22 papers met the inclusion criteria. In addition, 12 papers which were not received from the National Police Library or British Library by 1st October 2010 could not be included. Ten papers were finally included in this review, nine of which are full systematic reviews.

1.2. An overview of the available training evidence

On the basis of this targeted review, the evidence base on effective training practice is very limited across all sectors. No systematic reviews in the policing context were found, neither were any studies found on the impact of police training which met the minimum criteria of a pre-post test design although individual studies were not the main focus[3]. There is very limited robust evidence on which particular training approaches are more effective and/or efficient than others in any sector. Most of the research reviewed is inconclusive and where promising evidence exists, it is mainly in a healthcare setting. The extent to which these findings can be generalised to a police context is open to debate. However, four systematic reviews provide strong evidence for the effectiveness of two particular approaches, whilst a fifth systematic review contains evidence as to approaches that appear promising. The different training approaches are described below, followed by an assessment of what works, what's promising, what doesn't work and what's unknown,

1.3. Approaches to training identified in the papers reviewed[4]

A variety of approaches to training and continual education are described in the papers. They can be understood as sitting at different points on a spectrum ranging from traditional training programmes delivered in the classroom to more individually focussed approaches based on experiential learning including continuous professional development, portfolio learning, integrated teaching and reflective practice. These approaches are outlined below:

---

[1] Staff at the National Police Library searched the following databases:
Emerald; PsychInfo; PBS; IBSS; CJA; ERIC; EconLit; ASSIA; PubMed; ETOC; Web of Knowledge.
Results from Google Scholar were not included as this search method does not provide full abstracts.

[2] Full details of the search strategy including databases searched and inclusion/exclusion criteria are set out in Annex A.

[3] The only policing study identified in the searches, which were focused mainly on systematic reviews, did not meet the minimum criteria for pre-post test and is described in Annex B.

[4] Comments from the peer reviewer suggest one important approach to training is missed in the papers identified for the review. This is the reviewer's comment: "One major area which is not addressed is that of coaching which is increasingly being used in many organisations. Coaching might be included within 'integrated teaching' but this is not explicitly stated".

1. **Traditional classroom based teaching**
2. **Problem based learning (PBL):** Most instances of PBL involve a variation on case based learning, with students working in small groups under the direction of a tutor/facilitator, with access to resources. Groups then develop approaches to solving the problem identified by the case study.
3. **Simulation techniques:** Techniques varied, ranging from computer simulation and virtual reality learning to the use of manikins and peer to peer learning
4. **Learning technologies and virtual learning:** This approach is largely driven by technology (web-based learning, virtual learning) and approaches may vary in how experiential or didactic they are on a course by course basis.
5. **Portfolio learning and continuing professional development (CPD):** Portfolio learning is used to provide evidence of CPD approaches and to encourage professional learning. It is student-led through the documentation of achievements, consideration of problems, and reflections on practice and critical incidents. Continuing professional development has been further categorised into two distinct types: collaborative CPD and individually oriented CPD. Collaborative CPD refers to programmes where there are specific plans to encourage and enable shared learning and support between *at least two* colleagues on a sustained basis. Individually oriented CPD refers to programmes where there are no explicit plans for the use of collaboration.
6. **Integrated teaching:** This approach integrates teaching and learning into routine practice. The examples included in this review come from a clinical setting. Knowledge and skills are learnt while solving real clinical problems. Opportunities for integrated teaching include ward rounds, case conferences and journal clubs.
7. **Reflective practice and continuing education:** This approach is presented as a learning framework based on Kolb's stages of experiential learning[5] which run through (a) concrete experience; (b) reflective observation (on experience); (c) abstract thinking based on reflection; (d) active experimentation (theory testing); leading to (e) further concrete experience. It should be stressed that at this time reflective practice is still very much a theoretical framework. In healthcare, reflective practice has been seen as part of a process of change towards learning through practice rather than having to learn theory before engaging with practice[6].

1.4. What works?

There is strong evidence in a health context that training that is integrated into routine practice is more effective at changing individual's attitudes and behaviour than traditional classroom based approaches[7]. Systematic review evidence looking at the most effective way to develop critical appraisal skills and encourage the practice of evidence based medicine found that 'clinically integrated' teaching, where teaching and learning is integrated into routine practice, is more effective than standalone courses delivered in the classroom. In 'clinically integrated' teaching, individuals learn new knowledge and skills while solving real clinical problems and reinforce this learning through practice. Teaching can form part of real time ward rounds or case discussions. Systematic review evidence (including findings of a randomised controlled trial) show that while traditional standalone courses do lead to improvements in an individual's

[5] Kolb D A (1983). *Experiential Learning*. Englewood Cliffs, CA, Prentice Hall.
[6] Boud D (1999). Avoiding the traps: Seeking good practice in the use of self-assessment and reflection in professional courses. *Social Work Education* **18**, 121-132.
[7] Coomarasamy A and Khan K S (2004). What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *British Medical Journal* **(329)**.

knowledge, 'clinically integrated' teaching leads to improvements in knowledge and skills, as well as changes in attitudes and behaviour, both key to achieving sustained change in practice.

There is strong evidence from three systematic reviews of educational research that *collaborative* continuous professional development is effective in improving pupil outcomes (learning and behaviour) and the practice, attitudes and beliefs of teachers[8] [9] [10]. These reviews also find weak evidence of the ability of *individually oriented* CPD to influence teacher or pupil change. Key factors contributing to the successful implementation of collaborative CPD include: (a) the use of external expertise; (b) observation; (c) reflection and experimentation; (d) an emphasis on peer support; (e) scope for participants to identify their own CPD focus; (f) processes to encourage, extend and structure professional dialogue (g) processes for sustaining the CPD over time[11].

What's promising?

There is some evidence that simulation-based training may have some advantage over more traditional classroom methods. A systematic review of simulation training in a clinical context found that in six of the twelve studies included, simulation training achieved *additional* gains in knowledge, critical thinking ability, satisfaction or confidence over and above those achieved using traditional training styles[12].

What doesn't seem to work?

There is systematic review evidence that classroom-based training alone is not necessarily an effective way to improve practitioner's skills or to change their behaviour[13]. Robust evaluations of training designed to improve clinicians' interpersonal skills found limited effects. Six of the seven trials found no significant differences between the trial and control groups and in one study, the control group actually showed greater improvements that the trial group.

What's unknown?

With the exception of clinically integrated research in a health context, the majority of the research evidence identified in this review is inconclusive. There is a lack of robust evidence on the different training approaches outlined. The approaches that remain untested and what is known about them are set out below.

---

[8] Cordingley P, Bell M, Rundell B, Evans D (2003). The impact of collaborative CPD on classroom teaching and learning. In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

[9] Cordingley P, Bell M, Thomason S, Firth A (2005). The impact of collaborative continuing professional development (CPD) on classroom teaching and learning. Review: How do collaborative and sustained CPD and sustained but not collaborative CPD affect teaching and learning? In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

[10] Cordingley P, Bell M, Evans D, Firth A (2005) The impact of collaborative CPD on classroom teaching and learning. Review: What do teacher impact data tell us about collaborative CPD? In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

[11] Cordingley P, Bell M, Evans D, Firth A (2005) The impact of collaborative CPD on classroom teaching and learning. Review: What do teacher impact data tell us about collaborative CPD? In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

[12] Cant R P and Cooper S J (2010). Simulation-based learning in nurse education: systematic review. *Journal of Advance Nursing* **66**(1), 3-15.

[13] Charaghi-Sohi S and Bower P (2008). Can the feedback of patient assessments, brief training, or their combination, improve the interpersonal skills of primary care physicians? A systematic review. *BMC Health Services Research* **8**: 179.

Reflective practice
A systematic review to evaluate the existing evidence on reflective practice in healthcare found no evidence of the impact of reflection on clinical practice or clinical outcomes[14]. The authors note that the literature on reflective practice is early in its development and that the very nature of reflective practice makes its quantification challenging. There is a clear need for more rigorously designed studies to evaluate the impact of reflective practice. However, it can be argued that the 'concrete experience' element of reflective practice has strong parallels with the 'integrated teaching' approach cited above. Both approaches can be described as training through routine practice. There is strong evidence that integrated teaching is effective and so there is arguably evidence for at least one element of reflective practice. Reflection is also a central element of collaborative CPD approaches, which are effective in improving practice, attitudes and beliefs (see 'what works?' above).

Portfolio learning
There is limited evidence from healthcare that portfolio learning is not universally popular, does not suit all learning styles and is considered time consuming.[15,16]

Problem based learning
A review of controlled evaluation studies in a health setting found no consistent evidence that problem based learning was superior to other training approaches in increasing doctors' knowledge and performance however there were very few relevant studies to include and they were of varying quality so further research is required before a clear understanding of the effectiveness of such an approach can be understood[17].

Learning technologies and virtual learning
No evidence was identified in this area.

[14] Mann K, Gordon J, MacLeod A (2009). Reflection and reflective practice in health professions education: a systematic review. *Advances in Health Science Education* **14**, 595-621.
[15] Pearson D and Heywood P (2004). Portfolio use in general practice vocational training: A survey of GP registrars. *Medical Education* **38**, 87-95.
[16] Urquhart C, et al (2002). Evaluation of distance learning delivery of health information management and health informatics programmes: a UK perspective. *Health Information and Libraries Journal,* **19**, pp146-157
[17] Smits P B A, Verbeek J H A M, de Buisonjé C D (2002). Learning in practice: Problem based learning in continuing medical education: a review of controlled evaluation studies. *BMJ, Vol 324*

2. What works to change professionals' behaviour and what works to implement guidance and research into practice? Two rapid evidence assessments

2.1. Introduction

This paper presents the findings of a two rapid evidence assessments designed to explore the evidence base on interventions to change individual's behaviour and to encourage the implementation of guidance and research. The evidence assessment has been conducted within a three week period, following systematic principles, but is not exhaustive and may be biased towards published sources. The time constraints have resulted in a tightly restricted scope, limited to published evidence for which electronic abstracts were available and contained within databases held by the National Police Library[18]. Strict inclusion criteria have been applied so that only the strongest available evidence is included[19]; hence the focus of the searching was on systematic reviews, with the minimum requirement for inclusion of any individual studies being a pre-post test with a control group.

2.2. An overview of the available evidence on behaviour change

From around 450 references identified by the initial search, 20 papers met the inclusion criteria. Nine of these papers were not received from the National Police Library or the British Library by 1st October 2010 and could not be included. Subsequently, 11 papers were finally included in this review; all except one were full systematic reviews.

This targeted review suggests that there is a growing evidence base on behaviour change in the arena of healthcare, but concrete findings are currently limited across all sectors. No systematic reviews in the policing context were found, neither were any evaluative studies found on behavioural change in the police service which met the minimum criteria of a pre-post test design although individual studies were not the main focus. Eight separate systematic reviews provide **strong evidence that a *combination* of mechanisms which encourage active participation are a more effective way of changing behaviour than any single approach**. However, there is little robust evidence on which specific approaches to behaviour change are more effective and/or efficient than others and the evidence that does exist is from healthcare. The extent to which these findings can be generalised to a police context is open to debate. The different approaches to behaviour change are described below followed by an assessment of what works, what's promising, what doesn't work and what's unknown.

[18] Staff at the National Police Library searched the following databases for the search on behaviour change: Emerald; PsychInfo; PBS; IBSS; CJA; ERIC; EconLit; ASSIA; PubMed; ETOC; Web of Knowledge. Results from Google Scholar were not included as this search method does not provide full abstracts. The search on implementation looked at the following databases: Emerald; PsychInfo; PBS; IBSS; CJA; PubMed; ETOC; Web of Knowledge. CSA Illumina was used to search ASSIA, ERIC, EconLIT, PAIS, Social Services Abstracts; Sociological Abstracts for search 3 rather than independent searching ERIC, EconLIT and ASSIA due to computer problems at the library.

[19] Full details of the search strategy for both the behaviour change and implementation searches - including databases searched and inclusion/exclusion criteria - are set out in Annex C.

2.3. Approaches to changing behaviour identified in the papers reviewed[20]

A variety of different approaches to behavioural change are described in the papers and these are outlined below:

1. **Guidelines and educational materials** can be either *actively* or *passively* disseminated. *Active* dissemination uses educational sessions, conferences, or peer discussion to discuss and reinforce messages from guidelines and other materials. *Passive* dissemination refers to the publication and distribution of guidelines through unsupported mailings, etc.
2. **Educational sessions** such as conferences can similarly be *active* or *passive* in disseminating information to attendees.
3. **Reminders** are designed to prompt professionals to perform specific actions or record information. Notes can be manually attached to files, or integrated into computer systems to encourage compliance with guidelines or current best practice. Reminders can include approaches such as *computerised order entry systems* which provide *automatic decision support* on issues such as prescribing.
4. **Audit and feedback** in healthcare settings is largely based on the *retrospective* examination of patient/client records or overall physician performance over a specified period. The aim is for professionals to reflect on their performance, compare this to established guidelines, recognise shortfalls and change future practice. As well as *retrospective* audits, *audit with approval* can also be used to examine proposed behaviour before actions are taken.
5. **Outreach visits** in healthcare settings involve trained specialists meeting practitioners or care providers in their own practice settings to provide information and (sometimes) feedback on performance.
6. **Local opinion leaders** nominated by colleagues can be used to facilitate educational sessions, or to *actively disseminate* guidelines and educational materials.
7. **Local consensus processes** help mediate guidelines and educational material by gathering participating professionals together to discuss and agree that chosen clinical problems are important, and proposed interventions are appropriate.
8. **Peer-led small group education strategies** can combine elements of *local opinion leader* and *local consensus* approaches

The review also identified **multifaceted or multi-component interventions**. These approaches are likely to vary in each different intervention, but the principle is that they go beyond the use of a single implementation strategy. For example, active dissemination of guidelines can be multifaceted if the guidelines are supported with facilitated educational sessions.

What works?

There is strong evidence from eight separate systematic reviews that multifaceted approaches are likely to be more effective at securing behavioural change than the adoption of any one single approach[21] [22] [23] [24] [25] [26] [27] [28]. There is

[20] Comments from the peer reviewer raise an important point about other approaches to changing behaviour and implementing research or guidelines which have not been captured in the papers identified by the review. This is the reviewers' comment: "It is interesting to note that these approaches are generally 'soft' methods. There would appear to be no consideration given to 'direction', 'instruction' and 'operational protocols' which are required either by the system or by a senior manager. These approaches can effectively change behaviour although they are externally imposed".

[21] Oxman A D, Thomson M A, Davis D A, Haynes R B (1995). No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *CMAJ* **153**, 1423-1431.

also strong evidence that active (i.e. educational sessions, peer to peer discussion) approaches are more successful than passive dissemination of guidelines[29] [30].

Only one paper provided evidence to question this finding. A systematic review focussed on behavioural interventions to reduce the amount of blood transfused by physicians found no overall difference in the relative effectiveness of complex/ multifaceted interventions compared to simple interventions in altering behaviour. However the review set quite low standards of inclusion criteria with only two of the nineteen studies having comparable controls and the remainder being pre-post tests only[31].

Strong evidence from six separate randomised controlled trials[32] found that outreach visits (where a trained person meets with clinicians in their practice settings to provide information) were effective at changing behaviour in a number of different clinical contexts ranging from reducing inappropriate prescribing to increasing the delivery of preventative services.

What's promising?

There is evidence from a single quasi-experimental study that peer-led small group education can result in changes in practitioner behaviour which are sustained for up to 24 months before decaying with time[33]. This evidence comes from a clinical context where knowledge gaps were first identified by GPs themselves and the education intervention was subsequently led by GPs. Ownership of 'needs identification' as well as the intervention itself were identified as key components of the successful programme.

There is systematic review evidence that reminders can also help to change practitioner behaviour. Reminders are most effective when they are (a) seamlessly blended into existing systems and procedures; (b) delivered automatically at clinically critical times; (c) require an obligatory response from the clinician[34]. *Automated decision support* provided through computerised order entry systems is another approach to providing reminders; the evidence suggests that automatic provision of decision support is strongly associated with

---

[22] Menon A et al (2009). Strategies for rehabilitation professionals to move evidence based knowledge into practice: a systematic review. *J Rehabil Med* **41**, 1024-1032.
[23] Grimshaw J M et al (2004). Effectiveness and efficiency of guideline dissemination and implementation strategies. Health Technol Assess **8**, iii–iv, 1–72
[24] Bero L A, Gritti R, Grimshaw J M, Harvey E, Oxman A D, Thomson M A (1998). Cochrane Effective Practice and Organisation of Care Review Group. Closing the gap between research and practice: an overview of systematic reviews of interventions to promote the implementation of research findings. *BMJ* **317**, 465-468
[25] Grimshaw J M et al (2001). Changing provider behavior: An overview of systematic reviews of interventions. *Med Care* **39** Supplement 2: II-2–II-45.
[26] van der Wees PJ et al (2008). Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review. *Australian Journal of Physiotherapy* **54**, 233-41.
[27] Medves J et al (2009). Clinical Practice Guideline Dissemination and Implementation Strategies for Healthcare Teams and Team-Based Practice: A Systematic Review. *Joanna Briggs Institute Library of Systematic Reviews*. JBL000197; **7**(12).
[28] Francke A L et al (2008). Factors influencing the implementation of clinical guidelines for health care professionals: a systematic meta-review. *BMC Medical Informatics and Decision Making* **8**, 38.
[29] Menon A et al (2009).
[30] van der Wees PJ et al (2008).
[31] Tinmouth A et al (2005). Reducing the amount of blood transfused: A systematic review of behavioural interventions to change physicians' transfusion practices. *Arch Intern Med* **165**, 845-852.
[32] Oxman, A D et al (1995).
[33] Richards D, Toop L, Graham P (2003). Do clinical practice education groups result in sustained change in GP prescribing? *Family Practice* **20**(2), 199-206.
[34] Bywood P T, Lunnay B, Roche A M (2008). Strategies for facilitating change in alcohol and other drugs (AOD) professional practice: a systematic review of the effectiveness of reminders and feedback. *Drug and Alcohol Review* **27**, 548-558.

improved clinical behaviour[35]. This finding can only be classified as promising, however as computerised prompts do not appear to change nurse behaviour[36], even though evidence suggests that this method is effective among physicians[37] [38] [39].

There is systematic review evidence that 'enhanced feedback', (feedback delivered in conjunction with other professional practice change strategies, e.g. educational material, support in auditing clients) can significantly improve professional practice, while 'standard feedback' (e.g. no implementation support or guidance, etc) shows no significant improvement. Feedback appears to be most effective when it is (a) personalised and (b) used with other practice change strategies[40]. This again suggests that multifaceted approaches are likely to be most successful.

What doesn't seem to work?

Evidence suggests that *passive dissemination* by publication and direct mailing of guidelines is the least successful approach to successful behaviour change implementation[41] [42]. There is consistent evidence that *passive dissemination* approaches fail to change professional behaviour or patient outcomes, with printed educational materials[43] and passively disseminated guidelines[44] showing no effect on professional behaviour. Similarly, dissemination-only conferences have no impact, while more comprehensive, facilitative approaches including practice rehearsal or practice reinforcement do effect change[45].

Educational interventions accrue additional benefits in disseminating guidelines when compared with passive dissemination approaches alone[46]. However, the review does not identify the most effective educational interventions.

What's unknown?

Local opinion leaders and local consensus processes

The available evidence on the effectiveness of *local opinion leaders* and *local consensus processes* is inconsistent. Such approaches have a variable impact which is largely dependant on local circumstances.

---

[35] Kawamoto K, Lobach D F (2003). AMIA 2003 Symposium Proceedings, 361-365.
[36] Thomas L H et al (1998). Effect of clinical guidelines in nursing, midwifery, and the therapies: a systematic review of evaluations. *Quality in Health Care* 1998: **7**: 183-191.
[37] McDonald C J, Wilson G A, McCabe G P (1980). Physician response to computer reminders. *JAMA* **244**, 1579–81.
[38] McDonald C J et al (1984). Reminders to physicians from an introspective computer medical record. *Ann Intern Med* **100**,130–8.
[39] Johnston M E et al (1994). Effects of computer-based clinical decision support systems on clinician performance and patient outcome: a critical appraisal of research. *Arch Intern Med* **120**, 135–42.
[40] Bywood P T, Lunnay B, Roche A M (2008).
[41] Lomas J (1991). Words without action: the production, dissemination and impact of consensus recommendations. *Annu Rev Public Health* **12**, 41–65.
[42] Grol R (1992). Implementing guidelines in general practice care. *Quality in Health Care* **1**, **184**–91.
[43] Oxman A D et al (1995).
[44] Lomas J et al (1991). Opinion leaders versus audit and feedback to implement practice guidelines. JAMA **265,** 2202-2207.
[45] Oxman A D et al (1995).
[46] Thomas L H et al (1998).

3. An overview of the available evidence on the implementation of guidelines and research

From around 800 references identified by the initial searches, 16 papers met the inclusion criteria. Eight of these papers were not received from the National Police Library or the British Library by 1st October 2010 and could not be included. Subsequently, eight papers were finally included in this review, all of which were full systematic reviews.

This brief overview also draws upon a prior systematic search on behaviour change, knowledge translation, and approaches to the implementation of guidelines and research, which informed the development of the NPIA Knowledge Strategy. Exploratory searches conducted to inform the NPIA response to *Policing in the 21st Century* were also used to supplement the findings of this rapid evidence assessment where appropriate[47].

Robust evidence from healthcare finds that issuing guidelines on their own does little to improve the behaviour of practitioners or patient outcomes[48]. Consequently, **the issuing of guidance needs to be highly selective to allow sufficient investment in multiple methods for knowledge sharing**[49].

Four systematic reviews[50] [51] [52] [53] identify the following variables as impacting on the adoption of guidelines:

1. The quality of the guidelines (e.g. their complexity)
2. Characteristics of the professional receiving the guidelines (e.g. age, country of training)
3. Characteristics of the practice setting (e.g. habit, cultural norms)
4. Incentives (e.g. financial)
5. Regulation (professional bodies can aid uptake of guidelines)
6. Patient factors (e.g. attitudes)

The main lesson from included systematic reviews is that to be successfully implemented, guidelines must include strategies to facilitate0 their adoption. However academic literature infrequently examines organisational processes aimed at changing professional behaviours in sufficient detail. Subsequently, 'best practice' in implementation processes remains in a 'black box', providing limited tangible lessons for future use[54].

Despite this limitation, there is evidence from two systematic reviews of implementation strategies of some general factors that can aid successful guideline implementation. The following approaches are considered most effective[55] [56]:

---

[47] Response to consultation document: *Policing in the 21st Century*. NPIA (2010).
[48] Oxman A D et al (1995).
[49] Grimshaw, et al (2004).
[50] Davis A D, Taylor-Vaisey, A (1997). Translating guidelines into practice. A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Can Med Assoc J*. **157**, 408-416.
[51] Hemsley-Brown, J.V. (2004). Facilitating Research Utilisation: a cross sector review of the research evidence. *International Journal of Public Sector Management.* **17**(6), 534-553.
[52] van der Wees PJ et al (2008).
[53] Medves J et al (2009).
[54] Franx et al (2008). Organisational change to transfer knowledge and improve quality and outcomes of care for patients with severe mental illness: a systematic overview of reviews. *Canadian Journal of Psychiatry* **53**(5), 294-305.
[55] Hemsley-Brown, J.V. (2004).

- Tailored dissemination supported by conferences and workshops
- Interactive approaches that encourage networking and greater communication and links between researchers and practitioners
- Reminders to encourage research-based practice
- The promotion of research use;
- Facilitative approaches that offer potential research users technical, financial, organisational and emotional support.

The implications of this research for policing have been considered as part of NPIA's response to the Government's consultation document, *Policing in the 21st Century*. The NPIA response to this consultation is that guidelines for the police service would be best limited to core doctrine, with additional guidance only issued in exceptional circumstances and where there is demonstrable benefit[57]. These steps aim to foster a culture emphasising professional judgement rather than reliance on detailed guidelines.

The police service can avoid creating endless guidance by using innovative online resources (e.g. POLKA, the Police Online Knowledge Area[58]) to link and combine material, keeping it updated online and allowing users to access, according to need, a high level summary or all the detail required by a specialist. Moreover, much of the guidance for different aspects of policing, after being written up as guidance can be, and is, embedded in the systems and processes which are used in individual forces.

[56] Walter I, Nutley S M and Davies H T O (2005). What works to promote evidence-based practice? A cross-sector review. *Evidence & Policy.* **1**(3), 335-364.
[57] NPIA (2010).
[58] POLKA web address: https://polka.pnn.police.uk/

4. References

List of included papers: training, behaviour, and implementation reviews.

(a) Training review

Papers available for inclusion in report (10 of 22):

1. Cant R P, Cooper, S J (2010). Simulation-based learning in nurse education: systematic review. *Journal of Advanced Nursing* **66**(1), 3-15.

2. Cheraghi-Sohi S, Bower P (2008). Can the feedback of patient assessments, brief training, or their combination, improve the interpersonal skills of primary care physicians? A systematic review. *BMC Health Services Research* **8**(179).

3. Coomarasamy A, Taylor R, Khan K S (2003). A Systematic Review of Postgraduate Teaching in Evidence-Based Medicine and Critical Appraisal. *Medical Teacher* **25**(1), 77-81.

4. Cordingley P, Bell M, Rundell B, Evans D (2003). The impact of collaborative CPD on classroom teaching and learning. In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

5. Cordingley P, Bell M, Thomason S, Firth A (2005). The impact of collaborative continuing professional development (CPD) on classroom teaching and learning. Review: How do collaborative and sustained CPD and sustained but not collaborative CPD affect teaching and learning? In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

6. Cordingley P, Bell M, Evans D, Firth A (2005) The impact of collaborative CPD on classroom teaching and learning. Review: What do teacher impact data tell us about collaborative CPD? In: *Research Evidence in Education Library*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

7. Hoggett J, Stott C (2010). Crowd psychology, public order police training and the policing of football crowds. *Policing: An International Journal of Police Strategies & Management* **33**(2), 218-235.

8. Mann K, Gordon J, MacLeod A (2009). Reflection and reflective practice in health professions education: a systematic review. *Advances in Health Sciences Education* **14**(4), 595-621.

9. Smits P B A et al (2002). Problem based learning in continuing medical education: A review of controlled evaluation studies. *British Medical Journal* **324**(7330), 153-156.

10. Urquhart C et al (2002). Evaluation of distance learning delivery of health information management and health informatics programmes: a UK perspective. *Health Info Libr Journal* **19**(3), 146-157.

Papers not received in time for inclusion in report (12 of 22):

1. Byrne, Aidan J et al (2008). Review of comparative studies of clinical skills training. *Medical Teacher* **30**(8), 764-767.

2. Carroll C et al (2009). UK health-care professionals experience of on-line learning techniques: A systematic review of qualitative data. *Journal of Continuing Education in the Health Professions* **29**(4), 235-241.

3. Hill A G, Yu T C, Barrow M, Hattie J (2009). A systematic review of resident-as-teacher programmes. *Medical Education* **43**(12), 1129-1140.

4. Hobson A J, Sharp C (2005). Head to Head: A Systematic Review of the Research Evidence on Mentoring New Head Teachers. *School Leadership and Management* **25**(1), 25-42.

5. Kuhne-Eversmann L, Eversmann T, Fischer M R (2008). Team- and case-based learning to activate participants and enhance knowledge: An evaluation of seminars in Germany. *Journal of Continuing Education in the Health Professions*, **28**(3).

6. Martin L G (1982). Innovative Educational Technologies: Assets to Adult Educators. *Lifelong Learning: The Adult Years* **5**(8), 18-20.

7. Natarajan P, Ranji S R, Auerbach A D, Hauer K E (2009). Effect of hospitalist attending physicians on trainee educational experiences: A systematic review. *Journal of Hospital Medicine* **4**(8), 490-498.

8. Parry, R et al (2008). Are interventions to enhance communication performance in allied health professionals effective, and how should they be delivered? Direct and indirect evidence. *Patient Education and Counseling* **73**(2), 186-195.

9. Stes A et al (2010). The impact of instructional development in higher education: The state-of-the-art of the research. *Educational Research Review* **5**(1), 25-49.

10. Thomas, David C et al (2006). Continuing Medical Education, Continuing Professional Development, and Knowledge Translation: Improving Care of Older Patients by Practicing Physicians. *Journal of the American Geriatrics Society* **54**(10), 1610-1618.

11. Tochel C et al (2009). The effectiveness of portfolios for post-graduate assessment and education: BEME Guide No 12. *Medical Teacher* **31**(4), 299-318.

12. Walters S et al (2005). Effectiveness of workshop training for psychosocial addiction treatments: A systematic review. *Journal of Substance Abuse* Treatment **29**(4), 283-293.

(b) Behaviour change review

Papers available for inclusion in report (11 of 20):

1. Bywood P et al (2008). Strategies for facilitating change in alcohol and other drugs (AOD) professional practice: a systematic review of the effectiveness of reminders and feedback. *Drug & Alcohol Review* **27**(5), 548-558.

2. Davies P, Walker A E, Grimshaw J (2010). A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous studies. *Implementation Science* **5:**14

3. Egan M et al (2009). Reviewing evidence on complex social interventions: appraising implementation in systematic reviews of the health effects of organisational-level workplace interventions. *Journal of Epidemiology and Community Health* **63**, 4-11.

4. Franx et al (2008). Organisational change to transfer knowledge and improve quality and outcomes of care for patients with severe mental illness: a systematic overview of reviews. *Canadian Journal of Psychiatry* **53**(5), 294-305.

5. Grimshaw J M et al (2001). Changing provider behavior: An overview of systematic reviews of interventions. *Med Care* **39** Supplement 2: II-2–II-45.

6. Kawamoto K, Lobach D F (2003). AMIA 2003 Symposium Proceedings, 361-365.

7. Menon A et al (2009). Strategies for rehabilitation professionals to move evidence based knowledge into practice: a systematic review. *J Rehabil Med* **41**, 1024-1032.

8. Oxman A D, Thomson M A, Davis D A, Haynes R B (1995). No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *CMAJ* **153**, 1423-1431.

9. Thomas L H et al (1998). Effect of clinical guidelines in nursing, midwifery, and the therapies: a systematic review of evaluations. *Quality in Health Care* 1998: **7**: 183-191.

10. Richards D, Toop L, Graham P (2003). Do clinical practice education groups result in sustained change in GP prescribing? *Family Practice* **20**(2), 199-206.

11. Tinmouth A et al (2005). Reducing the amount of blood transfused: A systematic review of behavioural interventions to change physicians' transfusion practices. *Arch Intern Med* **165**, 845-852.

Papers not received in time for inclusion in report (9 of 20):

1. Chaillet N et al (2006). Evidence-based strategies for implementing guidelines in obstetrics: a systematic review. *Obstet Gynecol* **108**(5), 1234-45.

2. Cochrane, L J et al (2007). Gaps between Knowing and Doing: Understanding and Assessing the Barriers to Optimal Health Care. *Journal of Continuing Education in the Health Professions* **27**(2), 94-102.

3. Cummings G G et al 2010. Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. *International Journal Of Nursing Studies* **47**(3), 363-385.

4. Gijbels H, O'Connell R, Dalton-O'Connor C, O'Donovan M (2010). A systematic review evaluating the impact of post-registration nursing and midwifery education on practice. *Nurse Education In Practice* **10**(2), 64-69.

5. Grimshaw J, Eccles M, Tetroe J (2004). Implementing Clinical Guidelines: Current Evidence and Future Implications. *Journal of Continuing Education in the Health* Professions **24**(1), 31-37.

6. van Lonkhuijzen L et al (2010). A systematic review of the effectiveness of training in emergency obstetric care in low-resource environments. *BJOG – OXFORD* **117**(7), 777-787.

7. Wagner J et al (2010). The relationship between structural empowerment and psychological empowerment for nurses: a systematic review. *Journal Of Nursing Management* **18**(4), 448-462.

8. Wong B M et al (2010). Teaching quality improvement and patient safety to trainees: a systematic review. *Acad Med* **85**(9), 1425-39.

9. Wong C A, Cummings G G (2007). The relationship between nursing leadership and patient outcomes: a systematic review. *J Nurs Manag* **15**(5), 508-21.

(c) Implementation review

Papers available for inclusion in report (8 of 16):

1. Barosi, G (2006). Strategies for dissemination and implementation of guidelines. *Neuro Science* **27:** Suppl 3:S231-4.

2. Davis D and Taylor-Vaisey A (1997). Translating guidelines into practice. A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical, practice guidelines. *Canadian Medical Association Journal* **157**, 408-416.

3. Francke A L et al (2008). Factors influencing the implementation of clinical guidelines for health care professionals: a systematic meta-review. BMC Medical Informatics and Decision Making **8**, 38.

4. Hemsley-Brown, J V (2004). 'Facilitating Research Utilisation: a cross sector review of the research evidence' International Journal of Public Sector Management 17, 6, pp. 534-553.

5. Medves J et al (2009). Clinical Practice Guideline Dissemination and Implementation Strategies for Healthcare Teams and Team-Based Practice: A Systematic Review. *Joanna Briggs Institute Library of Systematic Reviews*. JBL000197; **7**(12).

6. van der Wees P J et al (2008). Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review. *Australian Journal of Physiotherapy* **54**, 233-41.

7. Walter I, Nutley S M and Davies H T O (2005). 'What works to promote evidence-based practice? A cross-sector review' *Evidence & Policy* **1**(3):335-364

8. Werb S B and Matear D W (2004). Implementing evidence-based practice in undergraduate teaching clinics: a systematic review and recommendations. *Journal of Dental Education* **68**(9), 995-1003.

Papers not received in time for inclusion in report (8 of 16):

1. Bero L A et al (1998). Getting research findings into practice: an overview of systematic reviews of interventions to promote the implementation of research findings. *British Medical Journal* **317**(7156), 465-8.

2. Gross P A and Pujat D (2001). Implementing practice guidelines for appropriate antimicrobial usage - A systematic review. *Medical Care* **39**(8), II55-II69.

3. Hiller J E et al (2003). Evidence-based practice in rural and remote clinical practice: where is the evidence? *Australian Journal of Rural Health* **11**(5), 242-248.

4. Lovarini M and McCluskey A. No implementation strategy can yet be recommended to improve clinical guideline implementation by allied health professionals. *Australian Occupational Therapy Journal* **56**(5), 361-362.

5. Milner M, Estabrooks C A, Myrick F (2006). Research utilization and clinical nurse educators: A systematic review. *Journal of Evaluation in Clinical Practice* **12**(6), 639-655.

6. Prior M, Guerin M, Grimmer-Somers K (2008). The effectiveness of clinical guideline implementation strategies - A synthesis of systematic review findings. *Journal of Evaluation in Clinical Practice* **14**(5), 888-897.

7. Rabin B A et al (2010). Dissemination and Implementation Research on Community-Based Cancer Prevention: A Systematic Review. *American Journal of Preventive Medicine* **38**(4), 443-456.

8. Roen K et al (2006). Extending Systematic Reviews to Include Evidence on Implementation: Methodological Work on a Review of Community-Based Initiatives to Prevent Injuries. *Social Science & Medicine* **63**(4), 1060-1071.

ANNEX A

Details of the searching and sifting criteria: What works in training?

Systematic searches were carried out to identify experimental studies of training across all sectors. Relevant databases held by the National Police Library were searched as well as systematic review specialist organisations including the EPPI centre and Campbell collaboration libraries[59]. The search criteria were designed to identify evaluative studies of training approaches including any systematic reviews. There were no date limits on the searches. The search criteria and a summary of the initial search results are set out below.

Search terms

training OR learning OR development
AND evaluat* OR assess* OR what works OR impact
AND systematic review

Table 1: Search results

Database/website	Total references	Included after first sift
Emerald	79	6
PsychInfo	101	7
PBS	30	1
IBSS	55	0
Criminal Justice	44	2
ERIC	143	6
EconLit	43	2
ASSIA	164	6
PubMed	100	0
ETOC	200	5
Web of Knowledge	50	3
Campbell collaboration website	6	0
EPPI centre website	5	3
TOTAL	**1015**	**41**

Sifting

Duplicates were removed and remaining abstracts were sifted for relevance using the criteria set out below. Following a brief review of the results a second sift of included abstracts was required to exclude papers that focussed on inappropriate populations (e.g. young people, people suffering from particular types of illnesses). From just over 1,000 references initially identified by the searching, only 24 papers were included in the final review (see Table 3 below). Papers which were not available through the National Police Library, or the British Library, were not included. Papers which were not received from the National Police Library or the British Library by 1st October 2010 could not be included in the review.

[59] Staff at the National Police Library searched the following databases:
Emerald; PsychInfo; PBS; IBSS; CJA; ERIC; EconLit; ASSIA; PubMed; ETOC; Web of Knowledge.
Results from Google Scholar were not included as this search method does not provide full abstracts

Table 2: Sift criteria

Note: The aim of sifting is to identify reviews of effective training methods, or learning and developmental programmes for adults. If there are a limited number of reviews available, we may also need to identify high quality evaluations instead. We are interested in papers from a variety of areas, not just policing.

	QUESTION	ANS.	ACTION
Q1	Is the study about adult training, learning, or development?	No	Exclude
		Yes	Go to Q2
		Unclear	Exclude
Q2	Is the study: An evaluation (at least pre & post level) OR a systematic review?	No	Exclude
		Yes	Include
		Unclear	Cannot exclude
If paper is included then:			
Tag whether:	Systematic Review OR Evaluation AND Training OR Learning OR Development		
Key Findings: (from abstract)			

Notes:
Exclude protocols for systematic reviews
Exclude papers on the development of tools/ guidelines/ interventions, etc.

Table 3: Results of sifting

Original Refs	First Sift	Less Duplicates *within* searches	Less Duplicates *across* searches	Second Sift
1015	38	32	32	22

Twelve of the 22 papers included after the second sift were not received from the British Library in time for inclusion in the review.

ANNEX B

Police training study – a description

Only one paper related to police training was identified in the searches. This paper did not meet the minimum criteria as it is non experimental study. The paper focuses on police understanding of crowd psychology, and the subsequent design of public order training and the policing of football crowds.

The paper finds that although ACPO/NPIA guidance on public order training[60] has adapted to more nuanced and modern understandings of crowd psychology[61], public order training has in practice institutionalised classic theoretical models of crowd behaviour[62] focussed on the likelihood of irrational behaviour within crowds. The authors argue that this has resulted in the potentially counter productive reliance on the undifferentiated use of force when policing crowds. Although this is a very specific criticism of police training design in a particular context the authors speculate this may be because of the general **lack of emphasis given to theory and research evidence** in policing[63].

[60] ACPO (2003). *Manual of Guidance for Keeping the Peace*, ACPO, London.
[61] Drury J and Reicher S et al (2000). Collective action and psychological change: the emergence of new social identities. *British Journal of Social Psychology* **45**, 175-196.
[62] Le Bon G (1895). The Crowd: A Study of the Popular Mind, Ernest Benn, London.
[63] The authors cite: White D (2006) A conceptual analysis of the hidden curriculum of police training in England and Wales. *Policing and Society* **14**(4), 1-24.

ANNEX C

Details of the searching and sifting criteria: behaviour change and implementation reviews

Systematic searches were carried out to identify experimental studies of behavioural change and implementation strategies across all sectors. Relevant databases held by the National Police Library were searched as well as systematic review specialist organisations including the EPPI centre and Campbell collaboration libraries[64]. The search criteria were designed to identify evaluative studies of approaches to behaviour change and the implementation of guidance or research in practice including any systematic reviews. There were no date limits on the searches. The search criteria and a summary of the initial search results are set out below.

Behaviour change search terms

behaviour* chang* OR behaviour* modification OR organisation* chang* OR organisation* cultur* change; organisation* behaviour;
AND evaluat* OR assess* OR what works OR practice chang*
AND systematic review

Table 1: Behaviour change search results

Database	Total references	Included after first sift
Emerald	2	1
PsychInfo	50	14
PBS	27	0
IBSS	7	0
Criminal Justice	10	0
ERIC	5	2
EconLit	12	3
ASSIA	51	19
PubMed	218	13
ETOC	40	4
Web of Knowledge	24	4
TOTAL	**446**	60

Implementation search terms

Search terms:
implement* AND research OR guidelines OR guidance OR policy OR policies OR doctrine OR evidence
AND systematic review

Table 2: Implementation search results

Database	Total references	Included after first sift
Emerald	64	2
PsychInfo	182	5
PBS	66	4
IBSS	30	1
Criminal Justice	27	1
CSA Illumina	208	18
PubMed	110	5
ETOC	9	3
Web of Knowledge	92	5
TOTAL	**788**	**44**

[64] Staff at the National Police Library searched the following databases for the search on behaviour change: Emerald; PsychInfo; PBS; IBSS; CJA; ERIC; EconLit; ASSIA; PubMed; ETOC; Web of Knowledge. Results from Google Scholar were not included as this search method does not provide full abstracts. The search on implementation looked at the following databases: Emerald; PsychInfo; PBS; IBSS; CJA; PubMed; ETOC; Web of Knowledge. CSA Illumina was used to search ASSIA, ERIC, EconLIT, PAIS, Social Services Abstracts; Sociological Abstracts for the implementation search rather than independent searching ERIC, EconLIT and ASSIA due to computer problems at the library.

*CSA Illumina covers ASSIA, ERIC, EconLIT, PAIS, Social Services Abstracts; Sociological Abstracts. This was used for search 3 rather than searching ERIC, EconLIT and ASSIA due to computer problems at the library.

Sifting

Duplicates were removed and remaining abstracts were sifted for relevance using the criteria set out below. Following a brief review of the results a second sift of included abstracts was required to exclude papers that focussed on inappropriate populations (e.g. young people, people suffering from particular types of illnesses). From just over 1,000 references initially identified by the searching, 24 papers were included in the final review (see Table 3 below). Papers which were not available through the National Police Library, or the British Library, were not included. Papers which were not received from the National Police Library or the British Library by 1st October 2010 could not be included in the review.

Table 3: Behaviour change sift criteria

The aim of sifting is to identify reviews of what is effective in changing behaviour, or how organisations/ organisational culture can be changed successfully. If there are a limited number of reviews available, we may also need to identify high quality evaluations instead. We are interested in papers from a variety of areas, not just policing.

	QUESTION	ANS.	ACTION
Q1	Is the study about behaviour change/ behaviour modification in adults OR organisational change/ cultural change/ organisational behaviour/ practice change	No	Exclude
		Yes	Go to Q2
		Unclear	Exclude
Q2	Is the study: An evaluation (at least pre & post level) OR a systematic review?	No	Exclude
		Yes	Include
		Unclear	Cannot exclude
If paper is included then:			
Tag whether:	Systematic Review OR Evaluation AND Behaviour change OR Organisational change OR Cultural change		
Key Findings: (from abstract)			

Notes: Exclude protocols for systematic reviews

Table 4: Implementation sift criteria

*The aim of sifting is to identify reviews effective ways of implementing research, policy or procedures. For this search **we only want to identify systematic reviews**. We are interested in papers from a variety of areas, not just policing.*

	QUESTION	ANS.	ACTION
Q1	Is the study about the IMPLEMENTATION of research, policies, or procedures	No	Exclude
		Yes	Go to Q2
		Unclear	Exclude
Q2	Is the study a systematic review?	No	Exclude
		Yes	Go to Q3
Q3	Does the study have significant* findings (either positive or negative)?	No	Exclude
		Yes	Include
If paper is included then:			
Tag whether:	IMPLEMENTATION of: Research, Policy, Procedures, (Guidelines if especially interesting)		
Key Findings: (from abstract)			

*Note: *By 'significant' we mean 'meaningful', rather than statistically significant. From scanning the abstract, establish whether the paper help us understand what is effective in implementing research/ policy/procedures? If a review is unable to help in this way with meaningful findings, it should be excluded. If it can say something about the implementation of research/ policy then it should be included.*

Results of sifting

Table 5: Summary of sifting results

	Behavioural change	Implementation
Original References	446	788
Included references after first sift	60	44
Less Duplicates	43	31
Included references after second sift	20	16
Included references available for use in the review*	11	8

* Not all papers were provided by the British Library in time for inclusion in the review.