



Alliance for  
Useful Evidence

# Bodies of Evidence

How professional organisations  
in health, education and policing  
champion the use of research

Jonathan Breckon, Helen Mthiyane and Jonathan Shepherd  
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## Abstract

Following the signing of the 2017 [Evidence Declaration](#), this report examines the role of the royal colleges, faculties and other professional bodies in mobilising evidence. With a wealth of examples provided by the declaration signatories themselves, we offer nine practical recommendations for getting research used in practice.

## About the Alliance for Useful Evidence

The Alliance for Useful Evidence is a network, hosted by the innovation foundation Nesta. We champion the smarter use of evidence in social policy and practice through advocacy, convening events, sharing ideas and resources, and supporting individuals and organisations through advice and training. We promote our work through our network of more than 4,600 individuals from across government, universities, charities, businesses, and local authorities in the UK and internationally. Anyone can join the Alliance network, at no cost.

To sign up please visit: [www.alliance4usefulevidence.org/join](http://www.alliance4usefulevidence.org/join)

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The Royal College of Paediatrics and Child Health

The Royal College of Physicians of Edinburgh

The Royal College of Physicians of London

The Royal College of Radiologists

The Royal College of Surgeons in Ireland

The Royal College of Surgeons of England

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# Foreword

## By Professor Jonathan Shepherd

Such was its powerful influence on my surgical training and practice, when I was 30, I thought that the Royal College of Surgeons of England was part of national government. Passing the College's challenging fellowship exams was, and continues to be, essential to career progression. Senior surgeons I revered and wanted to work with were elected members of the College Council and assessed training programmes. The College's post graduate courses were second to none – streets ahead of those available in my teaching hospital.

In the last few years, the model represented by the medical royal colleges and the engineering institutions has been applied for the first time in policing, teaching and probation. An important reason for this is that these institutions have found and sustained ways to advance standards based on reliable evidence. They mobilise evidence. They are a tried and tested means of improving practice and policy by responding to new evidence.

But we've learnt through thousands of careful trials that many seemingly great ideas don't actually work. Many innovations turn out to be wasteful, and to do more harm than good. We've learnt through much toil to accept this sobering reality. Successful action in policing and teaching, as much as in surgery, flows from knowing what doesn't work as well as what does.

How do national standard-setting institutions ensure that professional practice is based on the best evidence? First, they do this through continuously honed assessments which lead to career-advancing institutional membership and fellowship. Without demonstrating knowledge of relevant evidence and the skills to apply it in practice, success is unlikely. They also do this through publication of evidence-based policy statements and through institutional support of career-long professional development. Colleges' peer-reviewed journals, profession-leading education programmes and networks of advisers are further ways in which colleges promote evidence.

Importantly, our colleges also provide powerful incentives for professionals to excel – prestigious prizes and medals, eponymous honorary lectureships and professorships, and citations for national pay awards and honours. These are often awarded for excellence in evaluation and development and then, through personal example, for pioneering and promoting better practice based on this.

The declaration, dubbed rather grandly perhaps by one university as the evidence Magna Carta, also includes a commitment to support rigorous evaluation – in other words, to support the generation of new evidence. This too is not new. Professional bodies have a long history of awarding research fellowships, often co-funded by partner organisations, so trainees and others can take time out of busy service jobs to test new approaches – in and with universities.

These national institutions also provide welcoming professional homes – attractive environments in which professionals engage with the latest evidence and decide whether and how it should change their practice. These don't just exist behind hallowed portals in our capital cities. They can be just as conducive in the form of webinars, WhatsApp groups and local journal clubs in police stations, hospitals, general practices and schools.

As communities with a cause – that cause is continuous improvement – these institutions encourage and support evidence adoption by all these means.

# Introduction

This report outlines the pioneering evidence work of UK and Irish professional bodies in health, teaching and policing. They have been championing research and evaluation in the daily work of more than one million professionals – to improve the lives of patients, pupils and the wider public.

In November 2017, we brought together 27 professional bodies at the Royal Society to sign a 'Declaration on Evidence', written by Jonathan Shepherd. Ranging from the Royal College of Surgeons of England, which can trace its heritage back to the Company of Barber-Surgeons trade guild in 1540, to newer organisations such as the Chartered College of Teaching, which was given Privy Council approval just a few months before our event, these institutions made a public commitment that they expect their members to take full account of evidence in their daily decisions and advice (see Annex A for the full declaration text).

A year later, we invited these national institutions to tell us about the ways in which they have been upholding that commitment. The responses we received have led to this report, which we hope will be useful to all professional bodies, including those in sectors outside policing, teaching and health.<sup>1</sup> Our recommendations, on [page 26](#), are particularly aimed at those bodies, but we hope they will also be of interest to anyone involved in getting research findings implemented in practice.

Much has been done to mainstream evidence into professional practice. We should not, however, be complacent. Historically, professions have not always been open to research and new ideas. Evidence-based medicine, teaching and policing are terms that were only coined in the 1990s.

## Box 1: The history of evidence-based practice

In medicine, the principles and importance of evidence-based practice were first advocated by the Canadian physician Gordon Guyatt from McMaster University,<sup>2</sup> and then described a few years later by David Sackett and his co-authors in the *British Medical Journal*.<sup>3</sup> In policing, Lawrence Sherman at Cambridge University first outlined a

definition of evidence-based policing in 1998. In education, David Hargreaves, a former schools chief inspector, adviser to government ministers and, briefly, chief executive of the Qualifications and Curriculum Authority, was an early advocate of evidence-based education, as seen in his speech to the Teacher Training Agency in 1996.<sup>4</sup>

A common perception is that medicine is at the cutting edge of research use. But that is not always the case. Too often in the past there has been 'eminence-based medicine', where evidence is overshadowed by the 'halo effect' of 'the eminent physician's white hair and balding pate'.<sup>5</sup> And online experiments conducted by the Behavioural Insights Team showed that cognitive biases, such as loss aversion, can significantly reduce doctors' willingness to choose innovative healthcare solutions.<sup>6</sup>

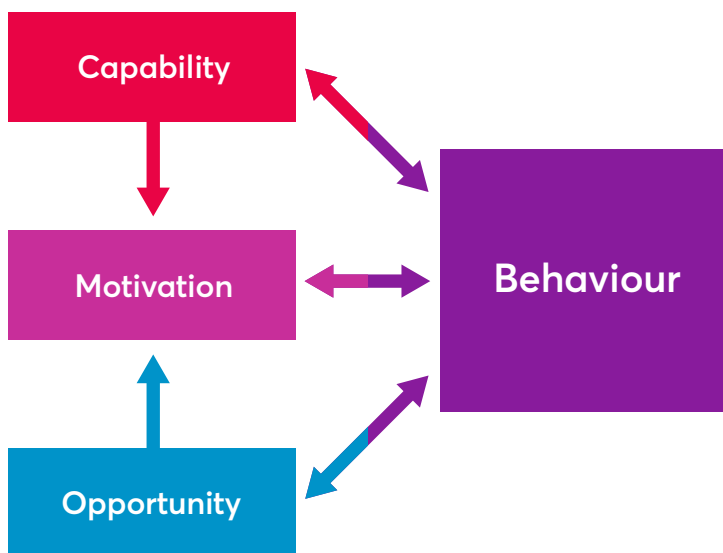
Other professionals have not been immune to evidence-free fads: take 'learning styles' in teaching (no evidence that it works<sup>7</sup>); or Brain Gym exercises in schools (pseudo-scientific<sup>8</sup>); or the use of 'Scared Straight' programmes for children at risk of offending (which actually increase crime<sup>9</sup>). Professional bodies can act as a bulwark against these fashionable programmes and policies.

“The idea that policy and practice should be underpinned by rigorous evidence is internationally accepted, yet billions of pounds are spent every year on social policies and programmes with little rigorous evidence on the impacts of these initiatives. And despite decades of producing excellent research we still encounter problems of getting this integrated into decision-making across all areas of social policy and practice. The creation of the Declaration on Evidence, signed by the Academy of Medical Royal Colleges, The Chartered College of Teaching and The College of Policing makes it more likely that evidence is commissioned and [...] used.”

Lord Gus O’Donnell at the Royal Society, 7 November 2017

How the signatories of our declaration have gone about promoting evidence among their members is categorised in five areas in this report, covering the supply of evidence to its mobilisation. A useful conceptual framework to think about these ways of working is the COM-B ‘behaviour system’ involving capability, opportunity, and motivation. Based on a review of the scientific literature by University College London’s Susan Michie and colleagues, the system provides a structure to think about different ways of fostering evidence use.<sup>10</sup> Although relevant to public health, it was adapted to thinking about evidence-use in the Alliance for Useful Evidence’s project, ‘The Science of Using Science’.<sup>11</sup>

Figure 1: COM-B Framework, from Michie et al (2011)



The three elements of COM-B are: capability, motivation and opportunity. **Capability** is defined as the individual's psychological and physical capacity to engage in the activity concerned – in this case evidence use. It could include professional training, and development of research knowledge and skills, such as the Evidence Base Camps run by the College of Policing.

**Motivation** is defined as all those brain processes that energise and direct behaviour, not just goals and conscious decision-making. It includes habitual processes and emotional responding as well as analytical decision-making. This might be fostered by professional rewards and recognition of evidence use, such as the Bazalgette Professorship – Champion of Evidence Award launched by the UK Faculty of Public Health.<sup>12</sup>

Meanwhile, **opportunity** is defined as all the factors at work beyond the individual that make the behaviour possible or prompt it. For example, dedicated staff time to spend on conducting research, accessible online guidance and tools, or what Michie and her colleagues call the 'cultural milieu', such as a positive, pro-evidence environment created by professional bodies. It could even mean a slot in the working day to engage with research, such as Journal Clubs run by the Chartered College of Teaching.

The arrows in Figure 1 represent the influences of components in the system. For example, opportunity can influence motivation, as can capability; similarly, enacting a behaviour can alter capability, motivation, and opportunity, and so on. The point is that all are interlinked.

## What are professional bodies?

There are no hard and fast definitions of a professional body. The Science Council describes them as:

"Organisation[s] with individual members practicing a profession or occupation in which the organisation maintains an oversight of the knowledge, skills, conduct and practice of that profession or occupation."<sup>13</sup>

In some professions, career progression is almost impossible without membership of the professional body. For example, fellowship of the relevant medical royal college, achieved by demonstrating specific knowledge and competencies in formal royal college assessments and examinations, is, apart from in exceptional circumstances, essential to achieving a consultant post in the National Health Service.

What is notable about published definitions is that there is no mention of research or innovation. Some of our signatories, however, are much more explicit about the importance of research. The Royal Charter of the College of Teaching, for instance, states that it will provide 'opportunities for professional development of educators and to advance this knowledge through research, publications and networking'. In their strategic priorities, we recommend that all professional bodies make clear and explicit reference to their commitment to promoting evidence-informed practice.

Another way to define professional bodies is to say what they are not. For example, they are not trade unions, practice regulators or universities. Trade unions are mainly concerned with terms and conditions of employment; regulators are mainly concerned with disciplinary procedures and protecting the public, and universities are mainly concerned with degree courses and research. In contrast, professional bodies are concerned with advancing professional standards, embodied, among other ways, in their entry standards. These distinctions help everyone; each entity has its own, distinct function. These functions complement each other and make up accountable, profession-specific systems. In medicine and dentistry for instance, standard-setting is the remit of the royal colleges; terms and conditions of employment are overseen by the British Medical and Dental Associations; evidence production is mostly done by universities and the private sector, and regulation is the remit of the General Medical and Dental Councils. In the evolution of some professions, however, these functions have become tangled, sometimes with a real risk of conflicts of interest. For example, the Royal College of Nursing has both trade union and professional body functions.

## Why are they an important part of the evidence system?

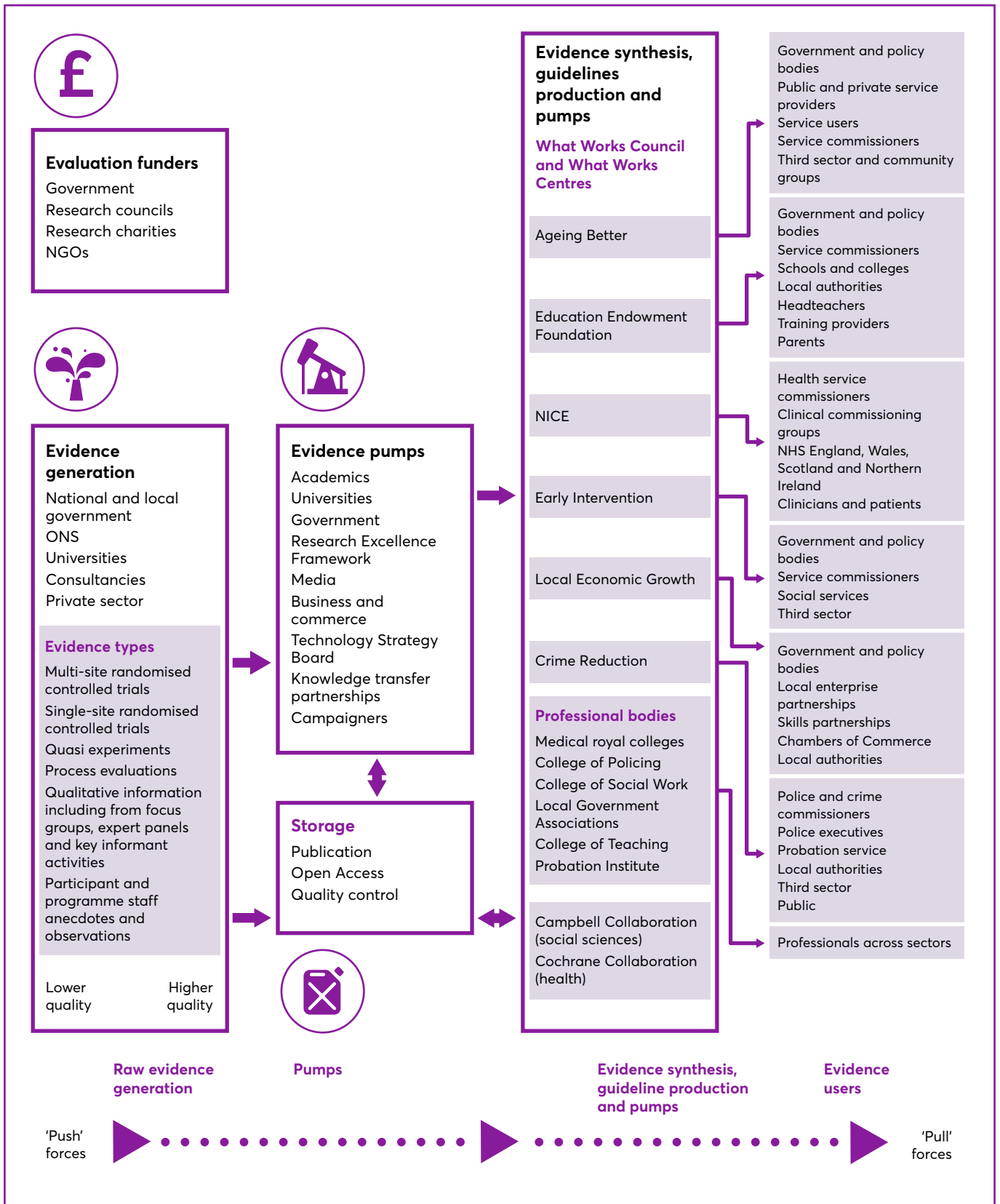
The medical royal colleges and other institutions are active intermediaries in the wider research and evaluation ecosystem which incorporates the production, synthesis and mobilisation of evidence (see Figure 2). They facilitate evidence production, for example through funded research fellowships held by trainees in universities; they synthesise evidence; they publish policy statements based on evidence; and they publish peer-reviewed evidence in their authoritative journals. Crucially, they are also powerful influences on evidence adoption, achieving evidence-based behaviour change among their members and fellows. As we reported in the first-ever professions summit on evidence in 2013, held at the Institution of Civil Engineers in London:

“There is consensus that evidence and evidence visibility is becoming increasingly important across all professions. Arrangements are necessary not just to synthesise evidence but also to generate new, reliable evidence, and for professional bodies to pump it to professionals primed to apply it.”<sup>14</sup>

This role of professional bodies as evidence mobilisers is also fulfilled through their curricula, training courses, assessments and examinations which are the basis of their conditions for membership and fellowship.



Figure 2: Diagram of the Evidence Ecosystem, from Shepherd's 2014 report to the UK Cabinet Office<sup>15</sup>



What we have also learnt from the signatories who responded to us is the sheer diversity of evidence work done by professional bodies. In the context of the eight archetypes of knowledge mobilisation approaches outlined by Huw Davies and colleagues from St Andrews University (Box 2) they fulfil multiple, highly complementary functions, and work at different levels of influence: with individual practitioners and at local, national and – in the established professions like engineering and medicine – international levels.<sup>16</sup>

### Box 2: Eight archetypal evidence organisations (from Davies et al)<sup>17</sup>

Archetype A: producing knowledge	Archetypes E and F: researching practice
Archetypes B and C: brokering and intermediation	Archetype G: fostering networks
Archetype D: advocating evidence	Archetype H: advancing knowledge mobilisation

### What is evidence – and how can it help us?

For our purposes, ‘best evidence’ means empirical research on effectiveness, including experimental designs and systematic reviews;<sup>18</sup> and from other scientific or social scientific methods focused on effectiveness and efficiency, such as case-controlled studies, cost-benefit analysis, or quasi-experimental designs (see Figure 2 above). Other types of evidence may be more appropriate for other types of practitioner questions, such as patient surveys and interviews, or administrative data to guide progress (see Box 3). For example, the Royal College of Physicians of Edinburgh worked with the Helen Hamlyn Centre for Design using observations, interviews and workshops to co-design services and reduce pressure in Acute Medical Units (AMUs). In the project ‘Patient Flow’ the research team spent hundreds of hours in nine hospitals in England and Wales observing and talking to staff and patients. They used their findings to create a digital Visual Care Journey tool to simplify and pool communication for AMU teams and make it easier to track patient progress, and a Patient Booklet to keep patients informed of their journey.

### Box 3: Scorecards on the health of a sector

The Royal College of Paediatrics and Child Health created a snapshot of infants’, children’s and young people’s health in 2017. For the first time, the State of Child Health report brought together 25 indicators of UK child health across the life course.<sup>19</sup> Their scorecard of progress across England, Scotland, Northern Ireland and Wales was updated to measure progress two years later. The report has been remarkably successful

in influencing public health policy across the UK, including a commitment by the Scottish Government to deliver a Child and Adolescent Health and Wellbeing Action Plan, provisions in the Public Health (Wales) Bill to extend bans on smoking in public spaces to school playgrounds and NHS grounds, and a commitment to make sex and relationships education mandatory in England from September 2019.

Research can provide insights on how to make better decisions – by avoiding cognitive biases. It is not just about learning from studies on what drugs or programmes work, but also about learning how the mind works. As the report of the Global Diffusion of Healthcare Innovation Working Group 2018 summarised:

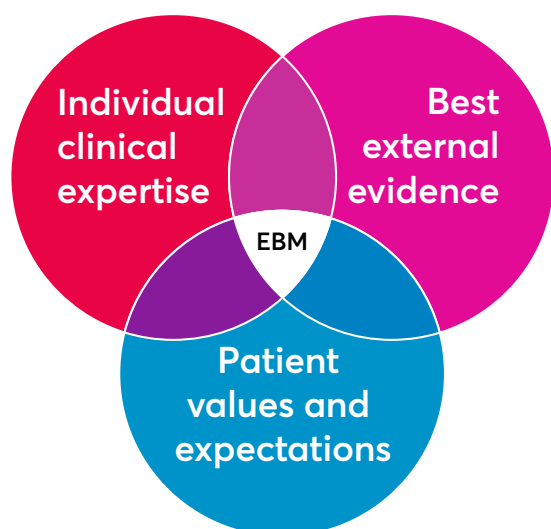
“A key insight of behavioral science research is that human decision-making is often influenced by heuristics and biases – that is, mental shortcuts that simplify decision-making, but which can lead to errors of judgment. This means that people’s decisions are not always the product of a purely calculated, reasoned process. Instead, they can be influenced by people’s emotional or psychological state, by contextual factors surrounding the decision, or by the way information is presented.”<sup>20</sup>

A large body of research shows how psychological factors and cognitive biases can harm the judgment of clinicians and other professionals (see Annex C).<sup>21</sup> Research can provide tips and systems to help limit these biases: by building in ‘breakpoints’ in routine work processes to encourage reflection, and using graphical information, data visualisations and other tools.<sup>22</sup> An important step is humility and recognising the limits to professional judgement, and strengthening ‘metacognitive’ skills, the self-awareness of your own thought-processes, through training and feedback.

## What do we mean by evidence-informed professional practice?

Evidence-based or informed practice is the conscientious and judicious use of current best evidence, in conjunction with professional expertise, contextual information (such as knowledge about practice location), and the values of stakeholders – such as particular groups of patients, students, and particular communities.<sup>23</sup> The aim is to guide better professional decisions (see Figure 3).

Figure 3: Evidence-based decision-making Venn diagram from medicine



When clarifying what we mean by evidence-based practice, it can help to say what it isn't. As Jonathan Sharples put it in his report, 'Evidence for the Frontline':

"[it's] not 'cookbook' teaching or policing, nor should it be about prescribing what goes on from a position of unchallenged authority. It is about integrating professional expertise with the best external evidence from research to improve the quality of practice. [...] there is a huge amount of experiential knowledge that is not captured by research, and, therefore, [...] an absence of evidence certainly does not mean absence of effectiveness."<sup>24</sup>

This is why we prefer 'evidence-informed practice', the term recommended by Sir Iain Chalmers,<sup>25</sup> to 'evidence-based practice'.

# Five ways professional bodies increase evidence use

## 1. Trusted intermediaries: Supporting and curating high-quality, relevant research

In order for professionals to make the most of evidence, high-quality, relevant, up-to-date and, crucially, accessible research findings must be available to them.<sup>26</sup> Neither professionals nor most service commissioners have time to consider hundreds of individual studies. There is also the danger that some research papers may be picked out over other less visible ones. Professional bodies play a vital role in this, as they curate the latest knowledge in the field and provide trusted professional homes in which their practitioner members and fellows can consider evidence.

One way of presenting evidence to professionals is to place research in a one-stop-shop online. The Chartered College of Teaching's new website, My College, provides an easy route for teachers to engage with carefully curated evidence. Since comprehensive reviews and meta-analyses of the best available research are the basis of guidance published by the National Institute for Health and Care Excellence, the Education Endowment Foundation, and other What Works Centres, profession-specific alliances between professional bodies and these centres, such as the relationship between the Royal College of Psychiatrists and NICE,<sup>27</sup> have much to contribute to better decision-making.<sup>28</sup>

'Child Protection Evidence' is a resource produced by the Royal College of Paediatrics and Child Health to inform clinical practice and child protection procedure, and also for experts in the legal system. The series of 15 systematic reviews uses the most up-to-date and best quality evidence available. For example, one review of the scientific literature sets out the best available evidence of signs of abuse or neglect. It helps answer questions like: which patterns of bruises are suggestive of abuse? Or, what are the features of parent-child interactions among neglected and/or emotionally abused children?<sup>29</sup>

Systematic reviews covering a vast range of topics are freely available online, such as those produced by the Campbell and Cochrane Collaborations. But there are also many gaps. The Royal College of Physicians of Edinburgh analysed research conducted in the UK or Ireland, covering more than 1.3 million acute care episodes and 3,617 patients. It looked at how best to deliver care in acute medical units and found 'operationally relevant evidence', such as the importance of increased consultant presence.<sup>30</sup> Exhaustive reviews of research like this can inform guidance for members. Another example is the Royal College of Paediatrics and Child Health's report, 'The health impacts of screen time' (Box 4).

### Box 4: 'Toxic' screen time – how much is safe? The jury's still out

Many parents worry about the time children spend glued to computers, phones and TV screens. What should paediatricians recommend parents do?

The problem is that there is very little reliable evidence of harm to children. The *"view [that screen time is directly 'toxic' to health] is popular outside the scientific literature, but has essentially no evidence to support it"*, according to a review of research by the Royal College of Paediatrics and Child Health.<sup>31</sup> If there is any harm, said the college, it is perhaps better to think of screens as displacing desirable activities, such as sleep, play, family time, and exercise, rather than screens being harmful per se.<sup>32</sup> The majority of the research is too weak to make strong recommendations, and a lot of the literature deals only with television screen time, not newer phenomena like social media or online homework. After sifting through 940 abstracts in 12 systematic reviews published in British Medical Journal 'Paediatrics Open',

College advice is not to push for a fixed amount of hours of screen time. As there is so little evidence that any specific intervention can be applied across the population to reduce screen time, they recommend families ask themselves some challenging questions, such as: Does screen use interfere with sleep? And are you able to control snacking during screen time?<sup>33</sup> The college also pleads for more and better-quality research in this area, to help health professionals give evidence-based advice.

This highlights another important function of professional bodies: to identify and communicate important unanswered research questions with research funders. Although in medicine, academics practice as well as carry out research, in other sectors, such as teaching, most academics do not practice; here, questions arising in practice do not easily find their way onto the research agenda.

Systematic reviews often state that the quantity and quality of relevant evidence on a particular intervention is insufficient to come to a conclusion. To address this, some of the signatory bodies have set up new trials and trials centres to fill the gaps in knowledge. For example, the College of Policing has helped to establish funding streams, prompting new evaluations including problem analyses, realist evaluations, test-bed research projects, and randomised controlled trials in priority policing areas. The Police Knowledge Fund (see Box 7), resourced by the College of Policing, the Higher Education Funding Council for England and the Home Office, was established in line with a recommendation in Shepherd's report to the Cabinet Office on the evidence ecosystem, in which he envisaged an arrangement for police research akin to the National Institute for Health Research in the NHS.<sup>34</sup> The fund facilitated new partnerships between universities and police forces which have continued, though this funding scheme was discontinued after two rounds.

The Royal College of Surgeons of England has also been active in finding new funding for research and it has set up a national network of Surgical Trials Centres (STCs) to advance knowledge. In 2017, less than 2 per cent of government medical research funding went into trials in surgery, despite the fact that a third of hospital admissions involve surgery. To help redress this imbalance, the centres were set up by the College across England, with funding from public bodies and 29 health charities like Cancer Research UK, the Rosetrees Trust, and SPARKS – the children's medical charity.<sup>35</sup> According to the College, the STCs have 'enabled surgeons to assess new surgical techniques and develop breakthroughs in treatment that will help to deliver improved care to thousands of patients'.<sup>36</sup>

When there are large and significant evidence gaps, the Royal College of Physicians of Edinburgh holds 'consensus conferences'. Following an 'evidence-based, multi-professional consensus methodology' they address areas of uncertainty within a particular area of clinical practice by reviewing the international evidence in relation to key questions.<sup>37</sup> Held over several days, a panel reviews all the evidence (including background papers, invited speakers' presentations and poster presentations) before drafting a consensus statement which is debated by the full conference and amended to reflect discussion. As well as involving professionals, they may include others such as patients, carers and families.

Research has also been done on the academic health of a particular professional area. The Royal College of Paediatrics and Child Health (RCPCH), for example, audited the state of research in its sector and in its report, 'Turning the Tide', highlighted worrying trends about the lack of basic science and clinical research, relative to other areas of medicine. Its report summarised all registered clinical trials across the globe where participants are children and young people, and considered objective metrics such as the number of scholarly publications by paediatric specialists (which have increased), and the limited amount of time (often zero) that UK paediatricians of all grades have for research in their job plans. A report like this is an exemplar of a research health check. Chris Whitty, Chief Scientific Adviser at England's Department of Health and Social Care wrote of the work: *"A discipline that chooses not to prioritise research is choosing not to advance, and it is therefore strongly in the interests of children in the UK that the RCPCH, and its outgoing President Modi, have highlighted this issue so clearly."*<sup>38</sup>

Generating research evidence relevant to practice fills gaps in knowledge. But it also has another benefit. It grows the motivation to use research, by nurturing a closer relationship between research and practice. As Sharples stated in 'Evidence for the Frontline':

"Across social policy and practice, research is too often seen as outside of professional practice; something that is done to practice; practice serving research, rather than the other way around. If we compare this again to medicine we see that the communities involved in delivering frontline services are much more infused with a research-facing outlook, so that the people involved in training, research and practice are able to move more fluidly between these different roles."<sup>39</sup>

We shall return to this issue of motivation and the culture of evidence use later.

## 2. Setting and promoting professional standards: Evidence-based guidance

A core part of the work of professional bodies is producing policy statements and guidance for practitioners in their sectors. Best practice guidance, if it is regularly updated in the light of the latest insights from research, can improve day-to-day practice. NICE accredits bodies which satisfy its criteria for guidance production.<sup>40</sup> Guidance published by the Faculty of Sexual and Reproductive Healthcare, for instance, is accredited and funded by NICE.

Typically, guidance is created by blending scientific evidence with expert opinion. Systematic reviews grade the quality and relevance of evidence; expert opinion comes from selected practitioners, subject-matter experts, academics and lay members, such as those in the Women's Network at the Royal College of Obstetricians and Gynaecologists, which comprises women who have had experience of obstetrics or gynaecological services.

Guidelines are recommendations. They are not hard-and-fast rules meant to dictate practice (which could counter the attempt to encourage evidence use<sup>41</sup>), but to support professionals in their work and indicate how evidence can be operationalised. In deciding what treatment or care to offer, the doctor, midwife, teacher, police officer or other professional should always take account of an individual's need, local conditions and resources.

Guidelines can also act as a standard against which to audit performance. For instance, the Royal College of Anaesthetists' 'Guidelines for the Provision of Anaesthetic Services' is the definitive UK anaesthetic service document, and it underpins peer review accreditation for anaesthetic departments.<sup>42</sup> The College of Policing's guidelines can act as a 'standard' for the assessment of local police forces and services undertaken by Her Majesty's Inspectorate of Constabulary and Fire and Rescue Services. The College's seven recommendations for Neighbourhood Policing, for example, have been used by Her Majesty's Inspectorate to develop their inspection criteria.

### Box 5: The National Guideline Alliance (NGA)

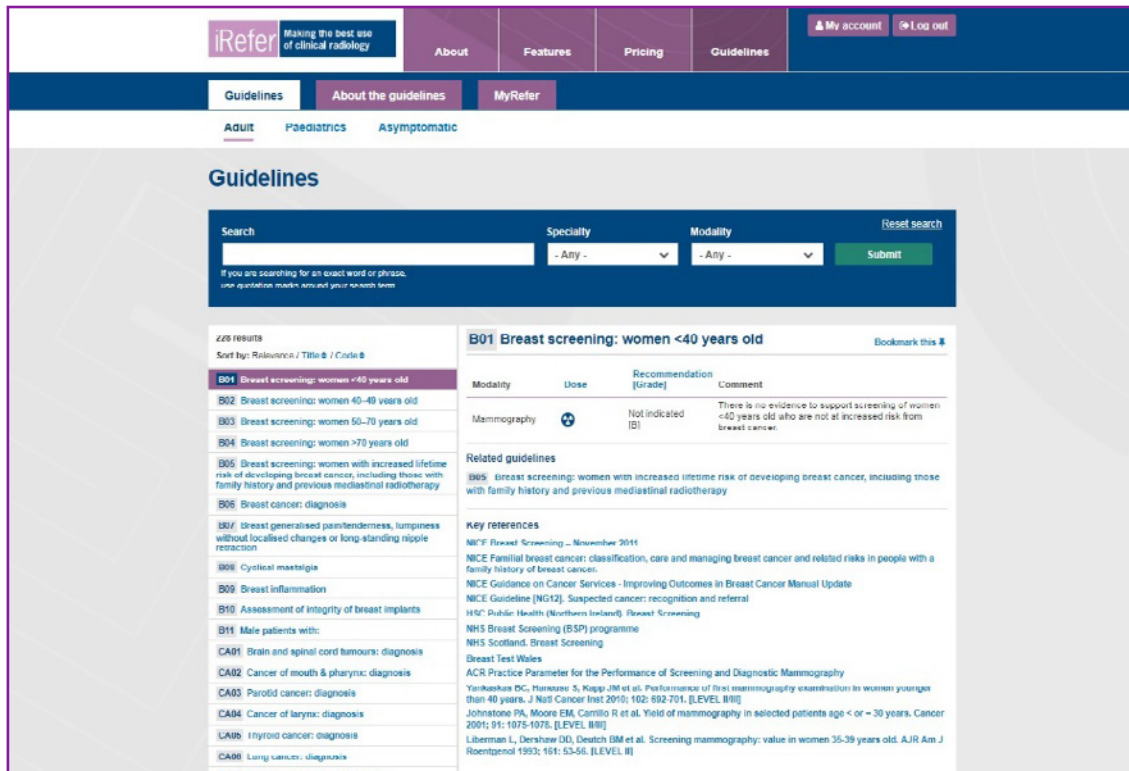
Launched in 2016 following a tender award by NICE, the National Guideline Alliance, based at the Royal College of Obstetricians and Gynaecologists, prepares guidelines across many aspects of health and social care.

With its diverse topic portfolio across women and children's health, mental health, cancer and social care, the NGA works on behalf of other professions to develop robust, evidence-based guidelines aimed at the continual improvement of patient care and services.

The NGA's systematic reviewing team provides standalone evidence reviews, training on using GRADE methodology and expertise from its health economists to develop new health economic models to assess cost-effectiveness where published evidence is lacking or not sufficiently up-to-date. Training and advice for professionals on health economic concepts and methods is also available.



Figure 4: The iRefer tool



Colleges have influence beyond their respective memberships, with their recommendations supporting the uptake of evidence in UK policy. For example, a Royal College of Surgeons of England report in conjunction with the British Hernia Society found that 57 per cent of clinical commissioning groups were denying patients quick access to groin hernia surgery.<sup>43</sup> This evidence, gathered through freedom of information requests, bolstered their call for ministers and NHS England to intervene to prevent rationing of hernia surgery. And as we have seen above (Box 3), the Royal College of Paediatrics and Child Health’s ‘State of Child Health Report’ had far-reaching impact on public health policy across the UK.

### 3. Easier evidence-informed decisions: Toolkits, decision-aids and artificial intelligence

Behavioural research shows that documents and websites outlining hundreds of best practices and innovations can get ignored by the frontline. This is not surprising given the pressures of practice; the 'cognitive ease' of user-focused design is needed, together with acceptance that professionals sometimes use heuristics (rules-of-thumb or problem-solving aids).<sup>44</sup> Professional bodies have confronted this reality of 'heuristic-based decision-making' with checklists and graphical aids.

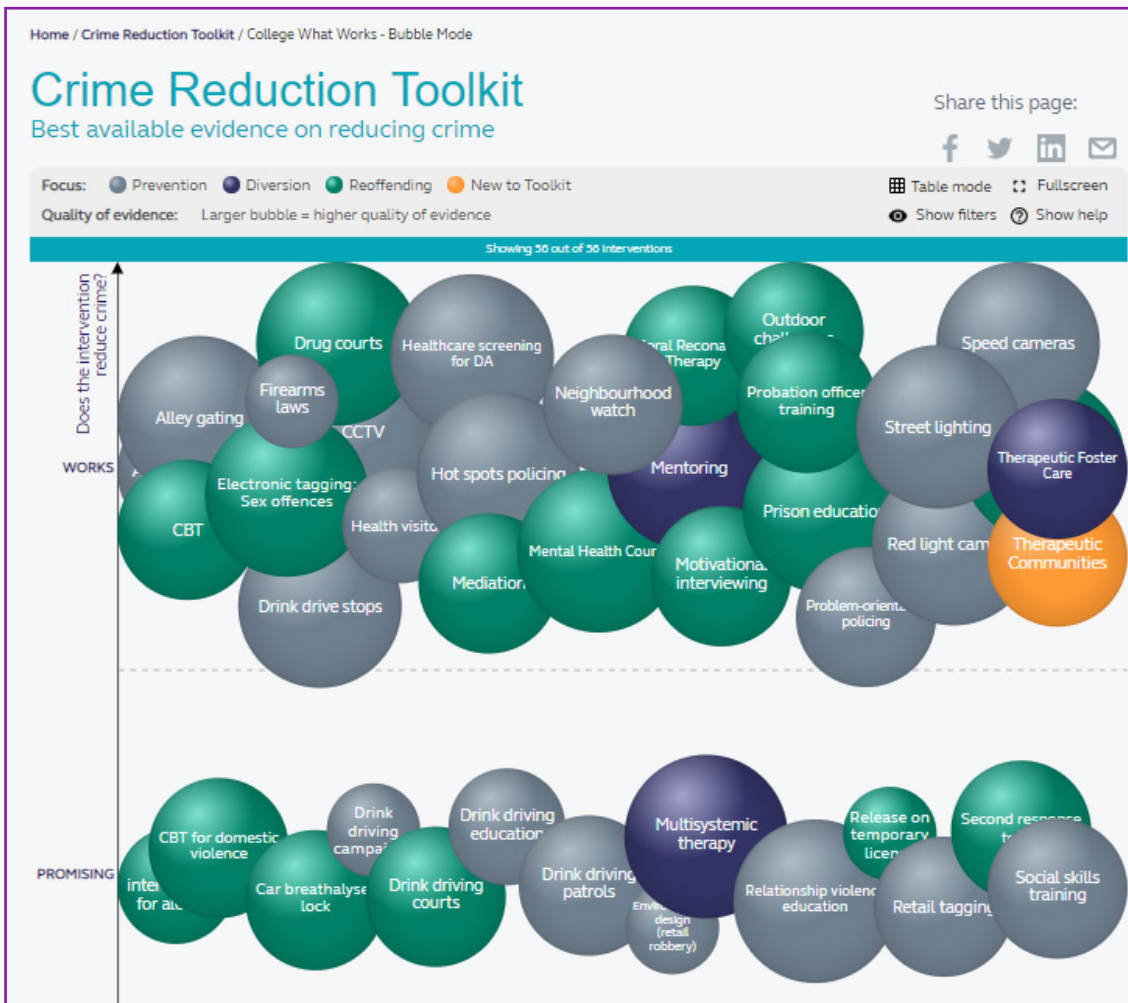
For example, toolkits have been designed that visually represent evidence. The Crime Reduction Toolkit produced by the What Works Centre for Crime Reduction at the College of Policing allows users to navigate the global research base through easy-to-understand icons and images. In response to feedback the College has created an attractive, user-friendly 'bubble' version of the toolkit (see Figure 5). Nerys Thomas, Knowledge, Research and Practice Lead at the College, told us, *"The user can now filter the evidence in a variety of ways depending on the nature of the problem they are trying to tackle, which is how officers and staff were saying they wanted to access the evidence, and the initial interface has been designed to provide a quick overview as to what works and what doesn't at a glance."*

However, good design may not always be enough. Other tools have been created to be directly part of professional decision-making. Clinical decision support (CDS) systems can automatically remind a frontline health worker of specific actions or dosages, for example through instantaneous online alerts, reminders, and drug-dose calculations. Instead of wading through reams of guidance or research, the practitioner is given the best relevant evidence that is '[appropriate] to a specific patient to facilitate decision-making at the point of care or for a specific care situation'.<sup>45</sup>

The Royal College of Radiologists has carried out a series of pilots to incorporate its radiology referral guidelines, iRefer, into a ready-made CDS system, run by the Canadian software company MedCurrent (see Figure 4). There are 40 million imaging investigations undertaken a year in England, such as X-rays, CT scans, and mammograms.<sup>46</sup> The range and uses of imaging tests grow more complex each year.

Decision-tools may, however, have been overemphasised, and evidence of their clinical benefits or financial savings is sometimes sparse.<sup>47</sup> But, with growing evidence of their effectiveness, they must be part of the solution by providing easier opportunities for professionals to access knowledge.

Figure 5: The Crime Reduction Toolkit in its 'bubble' version<sup>48</sup>



Machine learning and artificial intelligence (AI), where information is adapted and learning embedded in the system, are also growing in the rest of society and the economy. Again, from the perspective of available evidence, AI has also been overhyped, and some AI scientists have made unwise statements, such as: *"We should stop training radiologists right now."*<sup>49</sup> But as a report on a roundtable conference convened by the Royal College of Physicians set out, while such remarks are undoubtedly premature, AI tools will probably have:

"Significant impact on our work, professional training, the nature of some specialties and even the content of the MRCP [Membership of the Royal College of Physicians]. In future, we will need to focus our efforts away from technical tasks amenable to AI (e.g. calculating disease probability or drug dosage) to more human tasks."<sup>50</sup>

## Box 6: Professional judgement vs AI

Examples of tasks that AI is unlikely to take from human physicians (in the near future), published by the Royal College of Physicians:<sup>51</sup>

- Maintaining rapport with and trust of the patients and colleagues who rely on us
- Obtaining an accurate clinical history and examination and recording the key findings as high quality, structured coded clinical data for sharing in repositories used to train deep learning algorithms, as well as human colleagues
- Taking a more holistic overview of patient management for the increasing proportion of patients with complex multi-morbidity, by eliciting patient preferences and tailoring care pathways according to these
- Using our clinical skills to safely carry out bedside diagnostic and therapeutic procedures
- Using clinical observation and our scientific knowledge to develop new tests and procedures (or even AI algorithms) for testing in well-designed research studies.

Decision-aid tools are also available to professionals in other sectors, such as social workers,<sup>52</sup> teachers,<sup>53</sup> and police officers.<sup>54</sup> They are aids, not alternatives to professional judgement, and more evidence is needed on their effectiveness. It's encouraging that The Royal College of Radiologists has been working with MedCurrent to pilot the iRefer CDS tool. Tools need to be evaluated to see if they really are better than business-as-usual and save money and time.

## 4. Opportunities to interact: Training, learning and networks

So far, we've seen how professional bodies can make relevant evidence easier to access and slot into everyday decision-making. These activities could be considered as the 'opportunity' part of the COM-B model. But while evidence resources can be useful, the skills and knowledge to critically engage with content are still needed. This is the 'capability' part of COM-B: the psychological capacity to engage with the evidence.

Evidence-informed practice does not mean slavishly following guidance and research; professional judgement will always be needed. Growing this ability to analyse and action evidence may need formal training. This could be early in a professional career, in preparation for examinations and assessments necessary for professional body membership or fellowship. Many such tests already include evaluation of candidates' abilities in this area. The College of Policing's Police Constable Degree Apprenticeship, for instance, helps new recruits build 'the knowledge and skills to critically analyse, interpret, implement, share and build the evidence base'.<sup>55</sup> Training can range from two-hour research methods master-classes for senior staff, to training programmes spanning several days for staff at all levels. By 2021, all new officers in policing will have been provided with learning in evidence-based approaches.

The College of Policing also provides a bursary scheme, with more than 150 police officers and staff supported to develop their skills, knowledge and expertise in the use of evidence. Examples from the medical royal colleges include the Royal College of Surgeons in Ireland's funding for research master's degrees for those in surgical training;<sup>56</sup> The Royal College of Radiologists' biannual Dr Karol Slicher Cancer Research Fellowships to support research in any aspect of cancer diagnosis, assessment or management; and the Royal College of Surgeons of England's awarding of around 25 research fellowships annually, which fund the salary and overhead costs of a year out of clinical training.

### Box 7: Training supported by the Police Knowledge Fund

The Police Knowledge Fund facilitated:

1. **Participants developing their own research.**
2. **Follow-up sessions** for attendees to identify, share and discuss their own examples of applying research in their practice.
3. **Operational workshops which brought** together police officers/staff and academics to explore the nature, value and challenges of using evidence in operational settings.

4. **Subject-specific learning**, drawing on evidence, contextualised to particular roles and/or projects, for example, cybercrime and child sexual exploitation.

The fund also supported the development of online educational resources, including a free Public Leadership course, which attracted more than 14,000 registered users.

Reflecting the demands of full-time practice, opportunities to study in universities are scarce in many professions. So professional bodies also provide in-house and distance learning, in short courses, lectures, symposia and conferences – all to spread best practice. The Royal College of Physicians of Edinburgh, for example, hosts Medical Evening Updates on new evidence on a variety of topics, such as acute confusion and breathlessness, as well as a medical research symposium for students and foundation-years doctors.

A traditional means of disseminating and promoting new evidence is publication in professional bodies' own, usually highly rated, journals. For example, the Faculty of Sexual and Reproductive Healthcare BMJ specialist journal, 'Sexual and Reproductive Health', promotes reliable evidence and offers the opportunity for correspondence and feedback in relation to Faculty guidance. 'Impact', the new, award-winning journal of the Chartered College of Teaching (Box 8) is published in a style specifically designed to engage teachers in primary and secondary education. Three editions are produced annually for members only, with occasional special issues sponsored, for example, by the Wellcome Trust and the Department for Education, which go both to members and to all schools. The College also publishes a magazine specifically for student teachers, 'The Profession'. According to Dame Alison Peacock, Chief Executive at the College:

"For the first time in the UK teaching, these publications bring education academics and teachers together in the same journals, moving evidence around the education system. Like much of the College's other work, the journals bridge the gap between practice and research, help head teachers challenge dogmatic ('evidence is contestable') or poorly informed Ofsted inspectors, and, with 'The Profession', inform not just student teachers but also their trainers in colleges of education."

Another way to develop evidence skills is to get directly involved in research. *"The best way to foster an evidence-based approach to practice is to encourage practitioners to engage in scholarly activity"*, according to Kenneth Mealy, President of the Royal College of Surgeons in Ireland.<sup>57</sup> The Intercollegiate Surgical Curriculum in Ireland and across the UK requires that trainee surgeons spend time in research and produce at least two original papers prior to certification. The College of Policing provides a DIY evaluation toolkit for professionals, to ensure that evaluations are designed in such a way that strong statements about causation can be made.<sup>58</sup> Not only does this help with developing skills and knowledge, research experience fosters interest in a career in an academic post. Many a professor of surgery, obstetrics and general practice started their research careers in a research fellowship funded by their medical royal college.

### Box 8: Magazines produced by the Chartered College of Teaching



## 5. Incentivisation: Professional recognition and awards

Professionals need to feel motivated to use research. This is the 'M' aspect of the COM-B model: the drive to seek and deploy evidence in day-to-day work. A fascination with the cutting edge of science, the creativity of new research hypotheses, experimenting with different practices, and the joy of learning and novelty. Growing motivation – so that it feels innately satisfying – is where professional bodies come in, fostering a pro-evidence culture, and a sense that research is a vital part of professionalism.

This can be an explicit part of college or faculty membership. There is an expectation by all the Royal Colleges of Surgeons, for example, that surgeons 'should update their professional knowledge and skills as required' in their Codes of Practice.<sup>59</sup> The new Chartered College of Teaching has piloted its criteria and arrangements for awarding teachers Chartered Teacher status – the highest qualification offered by the College. Candidates must demonstrate use of evidence in their teaching practice and that they have changed their practice as a result of applying evidence. Evidence-informed practice is built into The Royal College of Radiologists' training curricula and will continue to be emphasised in future versions as a requirement of the General Medical Council's generic professional capabilities.<sup>60</sup>

Professional bodies' prizes and awards both celebrate and incentivise excellence, especially personal example in evidence-informed innovation. Prestigious examples include the Hunterian professorships awarded by the Royal College of Surgeons of England, and the Faculty of Public Health's new Bazalgette Professorship – Champion of Evidence Award which celebrates 'major contributions to public health policy and/or practice through research translation to the benefit of UK population health'.<sup>61</sup>

This sense of a duty to take full account of available evidence can be amplified by the encouragement of peers in their professional homes. Behavioural research stresses how much we follow like-minded people and social norms. We are heavily influenced by what those around us do, think and say.<sup>62</sup> Informal networks of professionals provide a platform for learning and sharing a commitment to evidence. The Chartered College of Teaching has established almost 90 new thematic and regional networks across England and Wales and supported them with journal clubs, book reviews, video clips demonstrating evidence-informed teaching interventions, and other materials available on the My College website. These networks provide attractive new settings for teachers to engage with the evidence and make decisions to change course based on evidence of what works.

The Evidence Champions Network at The College of Policing has more than 300 members across all UK forces, and anybody can join, regardless of role or rank. The champions help with the 'Motivation' of the COM-B model by acting as role models and advocates for evidence. By joining the network, they are responsible for promoting evidence-informed



approaches within their force and sharing ideas and knowledge across forces. They meet through virtual communities and face-to-face events, sharing progress on evidence-informed initiatives across the UK and learning on how to embed evidence into everyday policing. The College has recently produced an evidence-based policing 'maturity model' to help the champions assess the progress their force is making in establishing itself as an evidence-informed organisation.<sup>63</sup>

Shepherd's report on the evidence ecosystem highlights the importance of networks in the adoption of new practices: *"Using large-scale data sets to investigate how innovations are adopted, it was found that informal networks and local intermediaries made a significant difference among general practitioners (GPs). Increasing uptake of, and adherence to, evidence-based interventions needs to involve networks of practitioners. Apart from providing mechanisms for engaging practitioners with evidence, these networks also promote and sustain an evidence-reliant culture among their members."*<sup>64</sup> Through networks and facilitation and all the other mechanisms of encouraging evidence use we have discussed, professional bodies help to foster a culture where evidence use becomes the norm.

# Conclusion and recommendations

Royal Colleges, their Faculties, and the other professional bodies that signed the 2017 Evidence Declaration are powerful organisations which influence the decisions made by professionals across the UK and more widely. Without doctors, dentists, teachers and police who practice effectively, civilisation would rapidly dissolve. Professional bodies play a vital role in ensuring that the latest reliable evidence makes its way to the frontline so that the public benefit. This is achieved through a range of mechanisms, including the support and curation of research, training and skills development, tools to make evidence use easier, and incentives and encouragement.

In addition to the traditional research support, dissemination and promotion activities which they provide, many new and multi-pronged approaches to promoting and sustaining evidence-informed practice have been shared with us by Evidence Declaration signatory professional bodies. However, not all signatory bodies responded to our request for information. Further, the importance and emphasis placed on evidence use as an integral aspect of their respective professions seems to vary from one body to another.

Not all professional bodies have yet had the opportunity to sign the declaration. We hope that national standard-setting institutions in other sectors, such as the Royal Town Planning Institute and the Royal Institute of British Architects, will be encouraged to declare their commitment to taking full account of the evidence in the guidance they publish, and their expectation that their members and fellows do the same in their practice.

The nine recommendations which follow are for all professional bodies, whether they've already embraced their role as evidence mobilisers or whether they'd like to do more. Importantly, they are also relevant to government professions, including government policy professionals, economists, and science and engineering professionals.

## Recommendations:

- 1. Conduct research health checks.** As leaders of the field, it's vital to understand the evidence base relevant to your profession. Regular 'health checks' on the status of evidence activities within your membership can reveal knowledge gaps and opportunities for improvement.
- 2. Do systematic reviews or rapid evidence assessments – not literature reviews.** Reviews and syntheses of existing evidence should follow a documented process to ensure all relevant evidence is included, and to avoid the effects of bias and cherry-picking. For bodies in the health and care sectors, NICE accreditation signals competence in this area.
- 3. Combine evidence with practitioner insight.** Professional judgement and lived experience are priceless – the best guidelines incorporate these with the evidence.

4. **But... don't conflate expert opinion and research evidence.** Experts may be considered such for good reason. But be clear about the difference between an opinion based on experience and judgement, and the findings of a scientifically conducted study, especially a randomised trial.
5. **Develop practitioner-friendly decision-aid tools.** We need the 'cognitive ease' of user-focused design; and accept that professionals will sometimes use heuristics (rules-of-thumb or problem-solving aids).
6. **Provide dedicated time in service careers for research.** This can be through research fellowships, professorships, or bursary schemes – and simply making time within the working day to engage with evidence.
7. **Support members' capability, opportunity and motivation to use evidence.** Adopting a new behaviour requires capability and motivation to change, as well as the opportunity to do so. Consider how your activities support members in all three areas.
8. **Scrutinise compliance with authoritative guidance when inspecting or assessing service delivery and training programmes.** Professional bodies have important responsibilities in the oversight and improvement of public and private services, including the training of new generations of professionals.
9. **Make evidence use a pillar of your profession.** Membership criteria for professional bodies should require members to engage with the best available evidence and always be prepared to adopt new, more effective policies and practices (and dispense with less effective ones) if the evidence supports it. All professional bodies should make clear and explicit reference to evidence-informed practice in their mission statements.

In politics and policy, facts and empirical evidence may struggle to be heard. Independent professional organisations, on the other hand, can rise above this anti-empiricism and resist ideological narrow-mindedness, fad and fashion. As Ian Wylie, former Chief Executive of the Royal College of Obstetricians and Gynaecologists, told us:

"[We are] in an era when there is a regrettable anti-science trend in aspects of social media and some parts of traditional media, as well as in some political discourse. We believe it is particularly important that professional societies, such as the medical royal colleges and other learned societies, promote and defend the primacy of empiricism, scientific methodology, and the crucial importance of evidence-based decision-making."

# Annexes

## Annex A: Declaration on Evidence – full text

Evidence of what works and what doesn't has become, through formal trial and error across all professions and public services, a foundation of professional practice. Equally, many untested interventions can do more harm than good and are wasteful of public and private resource.

Therefore, Medical Royal Colleges, the College of Policing and the Chartered College of Teaching as leaders of our professions, declare that our institutions expect all members to take full account of evidence and evidence informed

guidance in their daily decisions and advice to individuals and organisations.

Further, because potential new policies and interventions need to be tested for effectiveness and cost benefit, we also declare that our institutions expect and will support rigorous evaluation.

To these ends we undertake to ensure that these principles are reflected as appropriate in our respective values, constitutions or conditions of membership.



## Annex B: Evidence Declaration signatory bodies

Professional body	
The Academy of Medical Royal Colleges	The Royal College of Obstetricians and Gynaecologists
The Chartered College of Teaching	The Royal College of Ophthalmologists
The College of Policing	The Royal College of Paediatrics and Child Health
The Faculty of Dental Surgery, Royal College of Surgeons of England	The Royal College of Pathologists
The Faculty of Forensic and Legal Medicine	The Royal College of Physicians and Surgeons of Glasgow
The Faculty of Intensive Care Medicine	The Royal College of Physicians of Edinburgh
The Faculty of Occupational Medicine	The Royal College of Physicians of Ireland
The Faculty of Pharmaceutical Medicine	The Royal College of Physicians of London
The Faculty of Public Health	The Royal College of Psychiatrists
The Faculty of Sexual and Reproductive Healthcare	The Royal College of Radiologists
The Faculty of Sport and Exercise Medicine UK	The Royal College of Surgeons in Ireland
The Royal College of Anaesthetists	The Royal College of Surgeons of Edinburgh
The Royal College of Emergency Medicine	The Royal College of Surgeons of England
The Royal College of General Practitioners	

## Annex C: Potential impact of cognitive biases on the diffusion of healthcare innovation

Adapted from: [www.wish.org.qa/wp-content/uploads/2018/11/IMPJ6078-WISH-2018-GDHI-181016-2.pdf](http://www.wish.org.qa/wp-content/uploads/2018/11/IMPJ6078-WISH-2018-GDHI-181016-2.pdf)

Bias and definition	Potential impact on take-up of innovation
<p><b>Outcome bias:</b> Evaluating the quality of a decision by its outcome rather than the process used to reach that decision.</p>	<p>Healthcare professionals who have seen many patients successfully recover following a particular treatment may prefer to keep using it, even if other treatments have a better success rate.</p>
<p><b>Loss aversion:</b> The tendency to weigh losses more strongly than equally sized gains.</p>	<p>Healthcare professionals assessing a new practice may put more weight on its downsides than its benefits (including the fact their experience of using the old method will no longer be seen as valuable if they switch to the new one).</p>
<p><b>Status quo bias:</b> The tendency to prefer the current state of things for their own sake, rather than because it is superior to alternatives.</p>	<p>Healthcare professionals may prefer to stick to old practices simply because they are already familiar with them.</p>
<p><b>Sunk cost bias:</b> Evaluating something based on how much resource has been spent on it already, rather than whether it's a good idea on its own merits.</p>	<p>Healthcare professionals that may be reluctant to adopt a healthcare innovation if a lot of time, money or effort has already been spent on the existing process.</p>
<p><b>Source bias:</b> The source of information can influence whether it is readily accepted.</p>	<p>Healthcare professionals may prefer to adopt innovations that originate from more prestigious or well-known sources (eg high-income countries) compared to less familiar ones.</p>
<p><b>Relative risk bias:</b> The tendency to be more accepting of options when their relative superiority to existing options is emphasised.</p>	<p>Healthcare professionals may grasp the benefits of an innovation more quickly when its superiority to current practice is described in relative (rather than absolute) terms.</p>

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## About Nesta

Nesta is an innovation foundation. For us, innovation means turning bold ideas into reality and changing lives for the better.

We use our expertise, skills and funding in areas where there are big challenges facing society.

Nesta is based in the UK and supported by a financial endowment. We work with partners around the globe to bring bold ideas to life to change the world for good.

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