

## Editorial

## Implementation science: understanding the translation of evidence into practice

Michele Tansella and Graham Thornicroft

**Summary**

This editorial summarises what is known about accelerating the transfer of discoveries in the health sciences into implementation in routine clinical practice. Three phases are described: adoption in principle, early implementation, and persistence of implementation.

Facilitators and barriers to the implementation across these phases are discussed.

**Declaration of interest**

None.

Michele Tansella (pictured) is Professor of Psychiatry, Head of the Department of Mental Health, and is Director of the World Health Organization (WHO) Collaborating Centre for Research and Training in Mental Health and Service Evaluation at the University of Verona. Graham Thornicroft is a consultant psychiatrist, and Director of Research and Development at South London and Maudsley NHS Foundation Trust, and Professor of Community Psychiatry at the Institute of Psychiatry, King's College London.

In 1747 James Lind conducted a trial to test the effects of citrus fruits in the treatment of scurvy. The results were published in 1753, but not translated into practice until 1795, 1 year after Lind died. This editorial summarises what is known about accelerating discoveries in the health sciences into implementation in routine clinical practice.

Recently two 'translational roadblocks' have been described that delay such knowledge transfer along the whole of the translational pathway.<sup>1</sup> The first block occurs between basic science and 'first in man' studies, where the spotlight is upon 'theory-enhancing' research. The second block is between efficacy and effectiveness trials. In fact, in our view, there is also a critical third roadblock where evidence can be delayed, namely between the formulation of clinical guidelines (following systematic reviews of clinical trials) and the delivery of routine clinical practice. It also needs to be appreciated that guidelines are based upon the best available scientific knowledge, and where this is missing, upon expert consensus. It is therefore this gap (in 'change-promoting' research) that needs to be understood and narrowed by the application of 'implementation science', for all sectors of healthcare including mental health.<sup>2</sup>

At present such implementation science is weak.<sup>3</sup> There is an underdeveloped theoretical framework to guide specific or combined interventions. Nevertheless, one can distinguish three phases of implementation: adoption in principle, early implementation, and persistence of implementation.<sup>4</sup> We therefore propose a scheme (Fig. 1) to clarify (at each phase) specific factors that have been shown to act as barriers or facilitators at the national, local and individual levels, some of which we discuss next.

**Adoption in principle**

It is now commonplace in high-resource countries for service commissioners and providers to set as a policy priority a commitment to evidence-based practice. This can be seen as an 'adoption in principle', which may be promoted at the national level by the actions of specific advocacy and lobby groups, or the concerted

efforts of opinion leaders.<sup>5</sup> Locally, healthcare policy makers increasingly recognise the importance of evidence-based practice and set specific requirements for its adoption, and indeed local 'early adopters' may precede national policy formulation. Features specific to professional culture have been shown to be important, for example, how far different disciplines give salience to the published results of peer-reviewed clinical trials. At the level of individual patients, widespread access via the internet to information about effective treatments can empower individuals to demand treatment according to clinical evidence-based guidelines and therefore encourage the practitioner to adopt evidence-based practices.

**Early implementation**

Having decided in principle to use evidence-based practice to shape routine clinical care, such a decision in principle may or may not lead to the implementation of this decision in practice, and in fact often, for example, national mental health policies do not proceed to implementation. What factors then act as facilitators or barriers to such early implementation? Nationally, there is some evidence that providing a degree of flexibility in how clinical guidelines are drafted can enhance how far they are seen by clinicians as feasible to use.

At the level of the clinical encounter, a series of aspects of professional culture have been identified as those that can accelerate or retard engagement with evidence-based practice. These are: the relationship with the evidence-based practice 'vector'; the reputation of the person promoting evidence-based practice; the time requirements to be trained in evidence-based practice; the rewards and recognition accruing to staff in changing their practice; the degree of reciprocity extended by clinicians to those undertaking 'academic detailing' (e.g. in relation to pharmaceutical sales representatives who may offer attractive settings or incentives for discussions about new products); the resolution or determination of the change agent to repeatedly urge staff to change clinical behaviours; and the respect felt by staff for their roles and responsibilities.<sup>6</sup>

Although most implementation studies are atheoretical, four psychological theories have been employed to understand behaviour change: the social cognitive model; the theory of planned behaviour; the theory of reasoned action; and the health beliefs model. Interestingly, these theoretical approaches have been applied far more often to behaviour change by patients than by clinicians, where there are only 20 published studies.<sup>7</sup>

		Phase		
Level		Adoption: intention to implement EBP	Early implementation of EBP	Persistence of implementation of EBP
Facilitator/ barrier factors	National	Advocacy and lobby groups Policy measures promoting EBP Opinion leaders and champions National policy on financial incentives	Networks of implementation sites Guideline flexibility Guideline feasibility Creation of financial and other incentives Creation of effective monitoring and feedback systems	Networks of implementation sites Consistency and persistence of policy and practice guidance, and financial incentives Effective feedback systems to policy makers
	Local	Local commissioning priorities Opinion leaders and champions Clinical and professional culture	Initial availability of resources to implement EBP Information technology systems Leadership and champions Consistency of local policy and practice guidance Clinical and professional culture Staff financial and other incentives Training Systems for assessing practice fidelity	Continuing availability of resources to implement EBP Staff turnover and continuing staff training Clinical and professional culture Financial and other staff incentives Systems to assess practice fidelity Effective feedback systems to staff
	Individual	Patient advocacy Carer advocacy Practitioner preferences	Practitioner preferences and characteristics Academic detailing Knowledge/training about EBP Awareness of litigation about EBP Patient characteristics and preferences	Academic detailing Awareness of litigation about EBP

**Fig. 1** Facilitators and barriers to the implementation of evidence-based practice (EBP).

Each of the factors described may act as either a facilitator or a barrier. The grey elements represent potential gaps or barriers between the three stages and the three levels of implementation.

### Persistence of clinical guideline implementation

Arguably the greatest impact on public health comes not from the adoption in principle of evidence-based practice, nor from its early implementation, but from its continuing and long-term application to reduce unjustified variability in clinical practice (although where evidence is not clear then practice variability may be justified on the basis of clinical experience). The sustainability of clear expectations and incentives for practitioners requires a series of behavioural and organisational mechanisms to be deployed in a coordinated way.<sup>8</sup> For example, high rates of local staff turnover or sickness will need to be accompanied by commensurate efforts in training and retraining staff to support the sustainable patient benefits of evidence-based practice.<sup>9</sup> Feedback systems at local or national level can provide process information on how far clinical practice has changed, and whether this is associated with measurably improved patient outcomes.<sup>10</sup>

### Need for implementation science in mental health

One can conceive of a 2 × 2 table to show the relationship between innovation in healthcare and evidence. The four possible contingencies are: the absence of both evidence and practice change (maintenance of the status quo); innovation in the absence of evidence (e.g. based upon political priorities); lack of innovation when relevant evidence does exist (which may be understood in relation to the barriers outlined in Fig. 1); and the co-occurrence of evidence and practice change (the desired outcome stemming from the use and application of implementation science, which is the focus of this paper). Such a scheme can help us in characterising situations in which implementation has fallen behind the evidence, for example despite evidence that user involvement in planning mental healthcare is beneficial (e.g. it increases satisfaction), such participation is rare in routine practice.

If the development of implementation science is in its infancy, then its application to mental health practice may be considered as embryonic. Although there are now thousands of published papers on the development of clinical guidelines across healthcare, there are relatively few on how to put guidelines into cost-effective, routine practice in any specialty. This has been referred to as ‘the translational gap’ or ‘the quality chasm’ between bench and bedside, but it should be better understood as a series of deep canyons across which the fragile translational pipeline needs to be laid and maintained. In this sense, we need to undertake work to identify the barriers at which the implementation of evidence-based practice can fail (shown, for example, as the grey gaps in Fig. 1), and systematically study how each breakpoint can be successfully bridged. What is clear is that the methods most likely to do this will be combinations of interventions, potentially both at the different levels and at the different phases shown in Fig. 1. For example, by using routine outcome measures, one can compare otherwise similar clinical teams to identify those which have, on average, better clinical outcomes, and then investigate their characteristics according to the factors shown in Fig. 1, to identify which factors are most closely associated with better clinical outcomes. Until such evidence is produced on how to successfully penetrate these implementation barriers, the translational promise of accelerating knowledge into practice will remain unrealised.

**Michele Tansella**, PhD, Department of Medicine and Public Health, Section of Psychiatry and Clinical Psychology, University of Verona, Italy; **Graham Thornicroft**, PhD, Health Service and Population Research Department, Institute of Psychiatry, King’s College London, UK

**Correspondence:** Graham Thornicroft, Health Service and Population Research Department, Institute of Psychiatry, King’s College London, De Crespigny Park, London SE5 8AF, UK. Email: g.thornicroft@iop.kcl.ac.uk

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## Professor Freud and hysteria

Brener and Freud fourteen years ago, endeavoured to show that in every case of hysteria the illness was traceable to an actual but forgotten occurrence, in most cases to a painful emotional shock or mental trauma, the circumstances of the forgotten occurrence being in most cases discoverable in hypnosis. That is, as Freud said, "the hysterical suffer from reminiscences," or in Boris Sidia's words, from "resurrected moments." They further stated that when this buried reminiscence was translated into the awakened consciousness of the subject, and the subject had given to this recollection its adequate (motor) expression, the hysterical symptoms disappeared. This statement contains an implication which has since undergone considerable development at Freud's hands and forms one of the main props of his argument; he maintains that at the time of the original psychic trauma an adequate and fitting individual reaction was denied the subject, either through force of circumstances or by its voluntary suppression on the subject's part, and that as the consequence of this denied relief, and the voluntary suppression or displacement (*Verdrängung*) from the field of conscious mentality of the painful impression with its persistent affective colouring, these latter take on an independent, "split-off," subconscious existence, making their own hidden associations and resulting in a more or less fixed psychic dissociation. According to Freud and others, this split-off complex is inaccessible to the waking consciousness, though it may be revived in hypnotic or hypnoidal states and may give the framework to dreams. Yet it has its outlets, nevertheless, in bodily form by means of what Freud calls "conversion of the sum of excitation." "The sum of excitation," he says in his *Studien über Hysterie*, "which may not enter into psychosocial association, takes the wrong road, to bodily innervation all the more readily. The repression of the idea could only be due to an unpleasant feeling, to incompatibility between the idea to be repressed and the dominant ideational mass of the self. But the repressed idea avenges itself by becoming pathogenic." In this transformation, then, of psychical excitement into persistent bodily symptoms, or, perhaps, better in a bodily compliance or undue facility of somatic outlet of repressed psychic processes, Freud finds the essential characteristic of hysteria as contrasted with other neuroses and psychoneuroses.

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Researched by Henry Rollin.

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