This short document is a resource for postgraduate students and researchers in medical and health sciences who want to apply theory to research projects about improvement programmes.

There are many excellent resources that develop specific theories, demonstrate improvement, and offer step-by-step guides to evaluation. We have listed a few of our favourites at the end of this document.

There are three key terms in this resource: theory, improvement, and evaluation. These will be explored in relation to one another.

Much of the material presented here is based upon the work of Davidoff and colleagues (Davidoff 2009, Davidoff, Dixon-Woods et al. 2015).

**WHAT IS THEORY?**

Theory can be thought about and constructed at one of three levels: small, mid-range, and grand theory.

**Grand theory**, such as the theory of social inequality, is abstract and applies to many domains. It may not provide specific rules for particular situations, but it can lead us to question the dominant and culturally based assumptions that we subscribe to about our social world.

**Mid-range theory** fits between grand speculation and minor working hypotheses. They can be useful as a framework for understanding a problem, or a guide for developing interventions. The theory of the diffusion of innovations (Rogers 2003) is...
a mid-range theory used by many improvers when they recruit opinion leaders, work through social and professional networks, make innovations easy to try, and tailor innovations to make them consistent with existing systems.

The stages of change theory is an example of an ineffective theory. It is popular and intuitively sensible, but a systemic review found that its application had delayed progress in the field of health promotion for many years (West 2005).

Programme theories provide the practical small theories of change that are specific to each intervention. Every improvement effort can benefit from the use of a small theory of change.

Programme theories accomplish two things:

1. They specify the components of a programme for solving the problem, the expected outcomes, and the methods for assessment

2. They offer a ‘theory of change’ in the form of a rationale and assumptions about mechanisms that link processes and inputs in a specific context to particular outcomes

Programme theory should be feasible and practical. Its development can surface weakness or incoherence in the causal logic of the intervention. It is consistent with qualitative, quantitative and mixed method evaluation.

WHAT IS THE VALUE OF THEORY?

“Improvement science draws on, and aims to contribute to, clear and explicit theories of how change happens” (Marshall, Pronovost et al. 2013: 420).

Theory may be informal (based upon personal experience), or formal (publicly developed). As a way of applying reason to action, theory is intimately woven into most human endeavour. Whether or not we are aware of it, informal theory is always at work in strategies for improvement. We can strengthen our improvement programmes and evaluate them more effectively if we are better informed and more explicit about the theories that we are drawing upon.

Some improvement challenges may be due to a persistent failure to fully apply theory in planning and execution.
The explicit application of theory can optimise design, identify the necessary context, and enhance learning. It can maximise the transfer of learning from one context to the next.

**HOW IS PROGRAMME THEORY DEVELOPED?**

The development of programme theory can appear daunting but many of the tasks are relatively straightforward. An improvement team can start by sketching out an intervention, and then identifying its components, and the relationships that link application to outcomes. It is important to recognise the value of informal (small) theory from personal experience. The combination of formal and informal theory provides a more effective basis for decisions and actions than either alone.

When developing theory be aware of two things:

1. Few theories are fully predictive – they are frameworks for thinking and design that are under constant review
2. Few people proceed to action on the basis of formal theory alone, and it is rarely advisable to do so. The effective use of theory relies upon practical experience, contextual sensitivity, and informed judgment.
Useful questions to ask while developing programme theory:

- What is the existing context?
- What are the desired changes?
- What are the known barriers and facilitators that may inform the desired change?
- What do we imagine the barriers and facilitators that may inform the desired change in our specific project?
- What do we know about previous efforts to elicit change in this area?

AN EXAMPLE OF HOW THEORY CAN ASSIST IMPROVEMENT

Over a period of 18 months the Michigan Keystone Programme reduced the mean rate of potentially fatal central line associated blood stream infections in intensive care units (ICUs), from a baseline of 7.7 per 1000 catheter days, to 1.4. These improvements were sustained for 36 months post-intervention (Pronovost, Goeschel et al. 2010).

The basis of Keystone was a series of evidence-based practices that improved the safety of central lines. These were: “hand washing, using full-barrier precautions during the insertion of central venous catheters, cleaning the skin with chlorhexidine, avoiding the femoral site if possible, and removing unnecessary catheters” (Pronovost, Needham et al. 2006: 2726).

But while the outcomes of Michigan have been described as driven by the use of a simple checklist to remind and disciplined staff into compliance with correct procedure (Gawande 2007), the programme should be seen as a complex social intervention that was successful because it changed culture and mobilised organisational support (Bosk, Dixon-Woods et al. 2009).

So how did this complex social intervention work? A theoretical analysis of Keystone by Mary Dixon-Woods, Charles Bosk et al. (2011) identified six components of the Programme’s success:

1. ICUs voluntarily joined the programme because of institutional isomorphism – which is a process where organisations that face similar challenges adopt similar solutions. Isomorphic pressure may have been both normative (it was socially perceived as the right thing to do) and mimetic (it secured legitimacy and increased performance).
2. Through a variety of formal and informal means a networked community that supported change was created, which meant that the pressure to change was exerted by colleagues rather than outsiders. This network existed within a top down structure that coordinated action and managed competing interests.

3. Stories about real victims and data about poor performance were used to disrupt the assumption that everything was okay. An evidence-based solution that could be tailored to the needs of unique ICUs was then presented, and a legitimate professional movement was created to support new behaviours.

4. There was extensive organisational and managerial support to provide equipment and support learning, new ways of working, and cultural change.

5. Data on the rate of infections was used as a source of discipline. ICUs received anonymised results so they could compare their performance with the entire cohort. This data was often shared and discussed voluntarily as teams sought to match the overall trend of fewer infections.

6. Hard edges were used carefully. ICUs that failed to provide data were threatened with expulsion. A checklist made behavioural expectations explicit, and nurses were asked to contact programme leaders if they could not prevent a doctor from violating protocol. No nurses did this, but they reported that the threat of carrying out this action was a very powerful motive for doctors to follow protocol.

**DO YOU WANT TO KNOW ABOUT REALIST EVALUATIONS AND ANALYTICAL APPROACHES?**

**Realist evaluation**, also called realistic evaluation, is a particular type of evaluation that is underpinned by a realism paradigm. That is, a realist evaluation is one that specifically identifies what works, how it works, under what circumstances, and for whom.

**Check out this website:** [http://betterevaluation.org/approach/realist_evaluation](http://betterevaluation.org/approach/realist_evaluation)

There are lots of resources on this website that can support you in your theoretical approach to evaluation. The *Better evaluation* website recommends Pawson and Tilley’s published works on realistic evaluations (such as Pawson, R. & Tilley, N. (1997). *Realistic Evaluation*. London: Sage).
**DO YOU WANT TO KNOW ABOUT NORMALIZATION PROCESS THEORY?**

Carl May and colleagues have developed normalization process theory (NPT) resources and tools to assist evaluators of complex healthcare interventions. One of May’s areas of research expertise is multi-morbid chronic illness, which is an area where complex interventions tend to be needed. This website below provides some useful information about how to apply NPT to evaluating programmes for effectively managing patients with multi-morbidity, and other complex interventions.

**Check out this website:** [http://www.normalizationprocess.org/](http://www.normalizationprocess.org/)

**CONCLUSION**

Theory can enhance our understanding of how a programme works, and it can help us to identify a focus for the evaluation. Improvement requires a genuine partnership between academics who bring intellectual rigour to understanding the processes that are being set in motion, and front-line practitioners, who offer practical know-how and the wisdom of experience. These groups can work together to address the problems we are wishing to solve, and make improvement a reality.
REFERENCE LIST


