Reflections of an ARC Director 2: The Role of ARCs in Research and in Implementation

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How Can an ARC Contribute to Service Improvement?

In our previous News Blog[1] I described the essence of an ARC as I see it. I pointed out that close embedding of the ARC *in* the services, exemplified by co-funding *from* the services, lies at the heart of an ARC. Such a model distinguishes an ARC from the generality of applied research collaborations across the world. In this, the second article in the series, I examine the nature of ARC service collaboration in more depth. To frame this discussion, I start by reflecting on what services Health and Social Care services strive to achieve.

What are Services Trying to Achieve?

The idea is that an ARC should improve the ability of the services to reach their objectives. So, let's start with objectives; adapting the US Institute of Medicine Quality Framework, a service should be:

1. Effective.

2. Safe.

3. Empathetic (patient-centred; respectful; compassionate; acceptable).

4. Efficient.

5. Equitable.

6. Accessible.

Much could and has been said about the items on this list. For example, there is no sharp distinction between safe and effective care. [1] And there are two types of efficiency – technical efficiency (doing things right) and allocative efficiency (doing the right things). The important points are that: 1) the services strive to reach multiple objectives; 2) implementing effective clinical care (closing the T2 gap [2]) is but one of those objectives; and 3) ARCs should concern themselves with all service objectives. Service delivery research is frequently described in terms of the above service objectives, for example quality research or safety research or effectiveness research or patient centred research. These descriptions are of limited value for the simple and obvious reason that in pursuing one objective it is possible, indeed likely, that there will be spill over effects on other objectives.

Service Delivery Research and a Causal Chain

Donabedian produced the famous *structure* → *process* → *outcome* model, which we have previously extended [3] to the model shown in Figure 1 on the next page.

Figure 1: Extended Donabedian Model
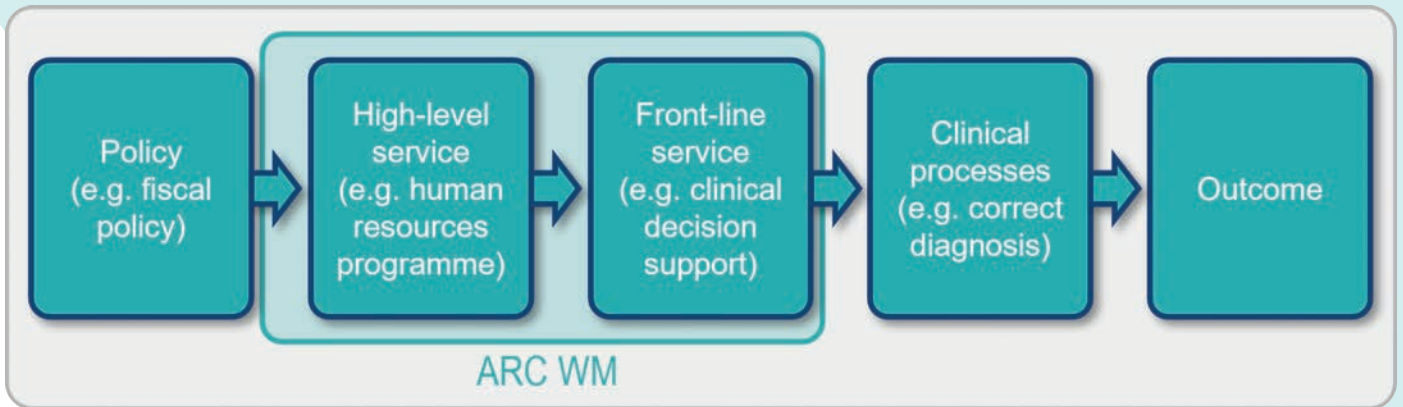
In ARC WM we major on high-level service processes and front-line service interventions (the blunt-end and the sharp-end of clinical care) in the rectangle in Figure 1. The high-level service includes the WHO Health System Building Blocks (leadership & governance, human resources, supply chains, information infrastructure, service configuration, and finance). Frontline services include guidelines, decision support, forced-functions, standardised procedures, and so on.

The types of knowledge needed to strengthen the service at both the sharp and blunt ends includes behavioural psychology and organisational science, including operations research (or flow modelling). This is the sort of knowledge ARCs implement and *one* reason for doing so is to implement clinical knowledge (Figure 2).

Figure 2: Two-stage implementation to improve clinical care
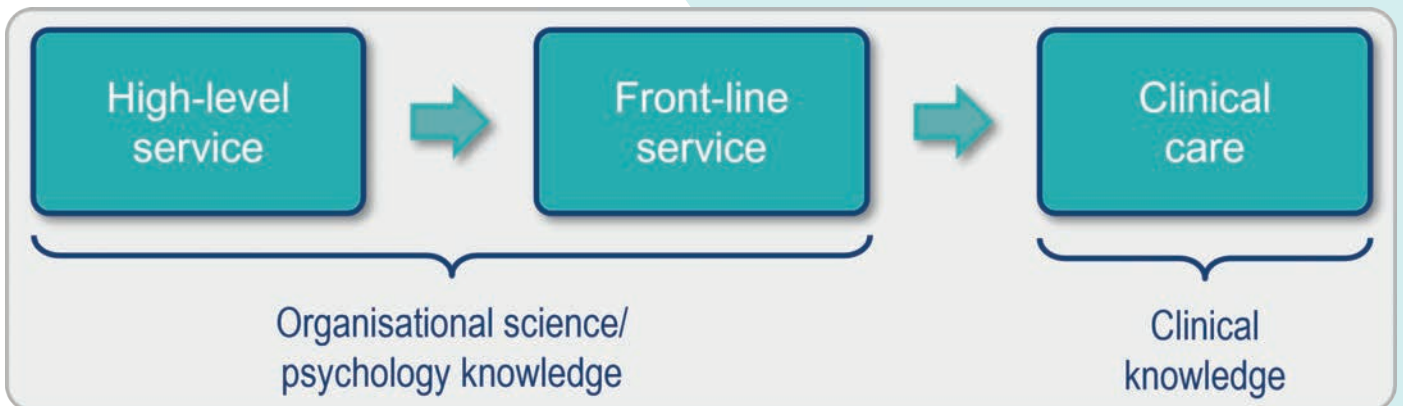
Framing the Development Process for Intervention Development and Implementation

The question for ARCs is: what can they contribute to the implementation of both social science and clinical knowledge. We conceptualise ARC activities according to the MRC [4] or Pena-Rosas [5] implementation frameworks that track an intervention through its archetypal stages:

prioritisation, iterative development and (beta) testing, piloting in the services, and broader roll-out across a system. This development chain, and the points where ARCs can gain purchase, are represented in Figure 3 on the next page.

Figure 3: Role of ARCs (green) in the conceptualisation, development and implementation phases of a Service Delivery Intervention (blue)
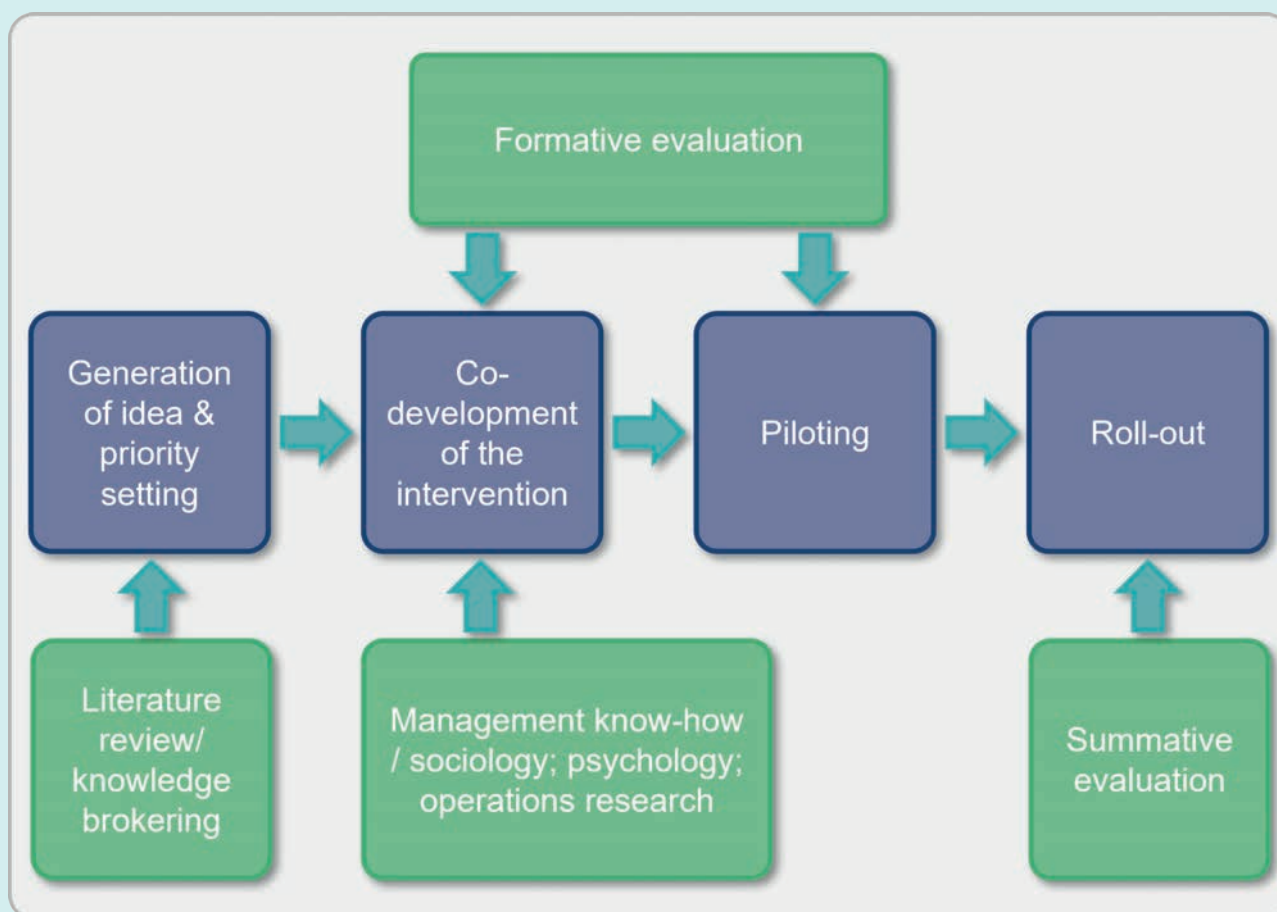
ARC Contributions at Various Points on the Implementation Development Pathway

1. Intervention Selection. Researchers can compile the evidence that the service needs to decide what service interventions to implement and how to implement them. For example, ARC West Midlands carried out an umbrella review of 80 systematic reviews on methods to provide more medical care in the community to inform the development of integrated care models.[6] In our experience it is often sufficient to assemble existing reviews rather than the conduct of systematic reviews *de novo*. Service leads often determine what they want to implement in collaboration with ARCs, but academics in the ARC may prompt service managers to intervene. For example, at ARC WM our Maternity theme lead decided that something should be done in response to national enquiries showing that babies and mothers were dying while pregnant women waited to be seen in turn when they presented to maternity services with serious symptoms. She therefore worked with local services to develop and implement a system of triage that is now used routinely in the UK and increasingly in Australia.[7] Many ARCs are also expert in database studies, which may also reveal a need for service improvement. For example, a recent ARC WM study showing that NHS-funded elective surgery in independent hospitals is associated with reduced emergency readmission compared to NHS-owned hospitals, suggests that the independent sector has a role in clearing the post-COVID back log.[8] If necessary, ARCs can inform priorities by carrying out a 'value of investment analysis' using tools developed by ARC WM researchers.[9, 10]

2. Intervention Development. Since ARCs work with behavioural science and organisational scientists, they can help ensure that interventions are informed by the latest '*state of the science*'. Service interventions to

promote uptake of evidence are most successful when implemented at more than one 'level', as described in a previous news blog.[2, 3] For example, at the organisational level, it could be the absorptive capacity of the organisation,[11] or how leadership is distributed,[12] or how its human resource policies and practices support brokering of knowledge across academic-practice boundaries,[13] which influences prospects for implementation and scale up of evidence-based interventions, or how service development tools such as 'lean' support better clinical outcomes in a value-based manner.[14] ARCs therefore draw on schools of management/business, which have expertise in models of knowledge mobilisation, such as knowledge brokering that emerged as a template that many of the pilot CLAHRCs followed.[15] One should not confuse such input from schools of management/business as replicating management consultancy; we claim that ARC input is more theoretically informed and more methodologically robust. After all, we educate the people who work in management consultancy! Likewise, co-production of services, involving the people who use services, results in better outcomes than interventions developed by service providers alone.[16] As such, ARCs might embed their researchers closer to the frontline of service delivery, and NHS and social care providers reciprocate in supporting frontline practitioners to become embedded in research teams. Such knowledge brokering arrangements are evident in ARC WM, particularly in its organisation science theme, so that evidence is translated at scale into frontline practice. The researchers seek to understand the barriers and facilitators to intervention success and also observe how well the intervention is being implemented. Such observations can be seen as *formative* evaluations, in contrast to *summative* evaluations; a distinction which we have discussed elsewhere,[17] and to which we will return in the next article in this series.

3. Evaluation. Perhaps most obviously, ARC researchers can study the effectiveness of interventions. The nuance here is that the interventions are complex and hence need to be studied both formatively and in a summative way using flexible tools, as per recently updated MRC guidance.[4] ARC West Midlands has written articles in the NIHR Encyclopaedia about the importance of causal pathway analysis in such evaluations.[9, 18] In following these guidelines and methods, evaluations have salience; not just for evaluation of *particular* problems, such as safer prescribing, but also for generic methods for the introduction of interventions generally, such as understanding the motivations of staff involved and ways incentives can backfire.[19]

The Implementation Lead

The above analysis informs ARC WM's understanding of the role of the Implementation Lead; a post that must be included in any ARC. We conceptualise this post as informing service change with the latest organisational thinking and, in the process, learning more about the psychology and sociology of organisations through formative research.[4] It is no surprise, therefore, that Graeme Currie, our Implementation Lead at ARC WM, is based at the Warwick Business School, one of the leading schools in the UK.

In this article I have discussed the role of an ARC in relation to implementation of interventions to improve the outcomes of the health service. I thank Graeme Currie for his critique of the article. ARCs have a crucial role in informing, supporting and evaluating interventions designed to improve services. In the next article I will discuss in more detail the form that these evaluations may take, drawing on the most recent MRC guidance on Complex Evaluations,[4] guidelines on different types of Implementation Trial,[20] and on our ARC experience.

[References on next page.]

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