

Creating Conditions for Effective Knowledge Brokering: A Qualitative Case Study

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Keywords: Process Improvement, Knowledge Brokering, Receptive Context, Australia, Healthcare Policy

Posted Date: September 23rd, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-892544/v1>

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Abstract

Background: Process improvement in healthcare is informed by knowledge from the private sector. Following which, individuals broker such knowledge to the frontline of care delivery. Their effect is likely limited where the context proves unreceptive to brokering knowledge. We need greater insight into what organizational and system level conditions are necessary to support individuals to broker process improvement knowledge to the frontline of care delivery, and how policy makers and organizations might generate such conditions.

Methods: Our research took place in a healthcare system within an Australian State. Following COREQ guidelines for qualitative research, we undertook qualitative research over the four year period of the process improvement intervention encompassing 57 semi-structured interviews, 12 focus groups, and 137 hours observation of process improvement workshops, which involved improvement advisors (the knowledge brokers), policy makers, and executive sponsors.

Results: We identified four phases of the process improvement intervention that moved towards a mature collaboration within which knowledge brokering by improvement advisors emerged as effective. In the first phase knowledge brokering was not established. In a second phase, whilst initiated, it lacked legitimacy amongst frontline practitioners, following which they resisted the brokering of process improvement knowledge by improvement advisors. Only following reflection by policy makers, and actions to engender a receptive context were improvement advisors able to effectively broker knowledge to frontline professionals for process improvement.

Conclusion: We highlight four interlinked prescriptions for the conditions policy makers need to engender to support individuals to broker process improvement knowledge to the frontline of care delivery, and how they go about this. Policy makers should: respect local context through building cultural linkages between people and organizations; build individuals' knowledge integration skills; awaken and enable active and latent "seekers" of knowledge to pull knowledge upward; strengthen collaboration, not competition so as to be friend, not foe, to healthcare organizations on their knowledge integration journey.

Contributions To Literature

- Knowledge brokering is promoted in implementation science as a mechanism that supports service improvement, but we highlight its success is shaped by context
- Context can be rendered receptive to knowledge brokering through emphasising alignment of novel knowledge associated with process improvement and clinical frontline adopters' cultures and values
- The capabilities of clinical adopters of novel knowledge, such as that associated with process improvement, need to be enhanced for knowledge brokering to succeed
- Organizations should put structures and processes in place for process improvement knowledge to be 'pulled up' by clinical adopters
- Policymakers should engender a collaborative ethos and avoid coercive, top-down regulation, as they seek to broker novel knowledge into frontline clinical practice

Introduction

Process improvement refers to the methodologies used to improve the quality, safety, and efficiency of healthcare service delivery by optimising the means (i.e. processes) by which healthcare services are provided. Examples include lean management systems, Six Sigma, and Robust Process Improvement [1]. Because process improvement knowledge comes from the world of business and has origins of non-clinical descent, its translation into healthcare is challenging, and involves supporting ideas to traverse disciplinary and organizational boundaries [2]. Thus, while the value of process improvement knowledge is widely accepted and promoted by policy-makers, its take-up in everyday practice is limited. [1]

Knowledge brokering is offered as a panacea to support mobilisation of generic 'managerial' knowledge into health systems, such as that related to process improvement. [2] However, its emphasis has remained curiously individualistic, focused upon behaviours and capabilities of knowledge brokers [2–6]. This is despite warnings that individual brokers are likely to have only a local and limited effect upon integrating knowledge into healthcare systems for process improvement. Following which, policymakers have been encouraged to attend to wider organizational and systems within which process improvement is enacted, and render the context more receptive for the efforts of individual knowledge brokers [7–9]. In essence, contextual conditions impact on the effectiveness of knowledge brokering, which raises two important research questions: *What kind of conditions best enable knowledge brokering? How might such conditions be fostered by policy-makers?*

From our empirical study we sought to induce the kind of conditions, and how they might be fostered, to best support brokering of knowledge by individuals for process improvement in a state-based healthcare system in Australia. Linking our findings to extant literature in the field of innovation studies, including that specific to healthcare, we generate theoretically transferable lessons for those policy makers concerned to support process improvement interventions across the globe.

Methods

Research Setting

We examined an ongoing policy intervention to integrate process improvement knowledge into the public healthcare system of a state jurisdiction within Australia. Established in 2008, the *Redesigning Care* intervention aims to improve the efficiency, effectiveness, and quality of care in hospital health services, by redesigning care processes. At the inception of *Redesigning Care*, health services possessed neither the capability nor the capacity to achieve the required

improvements to care delivery. Recognising this to be a serious problem, policy-makers sought to transfer new ideas and practices (specifically, Lean thinking and its derivatives) into 30-plus health services. Central to the intervention was the funding and training of full-time knowledge broker positions (henceforth, “Improvement Advisors / IAs”), who were embedded in participating health services. IAs were supported by executive sponsors, who were drawn from the ranks of senior management and clinical leadership within the host health service. Policy-makers commissioned the delivery of training in improvement methods and techniques for IAs, who were then tasked with building the improvement capacity of the clinical and managerial workforce in the health services where they were employed. The ambition of the intervention was to achieve the wide-scale integration of improvement knowledge into front-line practice, enabling front-line medical professionals to lead improvement projects. This was expected to generate sector-wide improvements and system-level impact, because manifold health services would possess the know-how to improve care delivery. However, when our research commenced in 2015, it was already clear via an independent evaluation that this expectation had not come to fruition. However, it was also clear that emergent learning and adaptation was under way to address the challenge, which we sought to capture.

Research Methods and Analysis

Our qualitative design was guided by COREQ. [10] We adopted a longitudinal, single case study design, considered essential to understand why [a particular intervention] has ended up as it has, where it is heading and what it may be able to achieve in the future. [11] As detailed in Table 1, we collected several kinds of data at various stages of the intervention. Our methods included semi-structured interviews, focus groups, and observational field work. We also collected a wide range of policy documents. Given *Redesigning Care* commenced prior to our study, we reconstructed its early history via interviews with key stakeholders involved in its initiation, and historical policy documents. We then re-entered the field at key stages of the intervention to capture shifting perceptions, activities, and effects.

Table 1
METHODS AND STAGES OF DATA COLLECTION

2008–2014 (Intervention commences in 2008)	2015 (Research commences in 2015)			2016–2017 (Bulk of empirical work conducted)			2018 (Research concludes in 2018; Intervention is ongoing)			TOTALS	
	Analysis of contemporary and historical policy documents			Analysis of contemporary policy documents							
	Semi-structured interviews with past & present intervention participants			Semi-structured interviews with present intervention participants			Semi-structured interviews with present intervention participants			Semi-structured i	
Empirical research yet to commence	Policy-makers:	Improvement advisors:	Exec. sponsors:	Policy-makers:	Improvement advisors:	Exec. sponsors:	Policy-makers:	Improvement advisors:	Exec. sponsors:	Policy-makers:	Imprc advis
	4	13	6	10	10	5	2	7	2	16	30
	Focus groups:			Focus groups:					TOTAL: 57 interv		
	8			4					TOTAL: 12 focus		
	Field work:			Field work:			Field work:			TOTAL: 137 field	
	9.5 notated hours			99 notated hours			28.5 notated hours				
*Three knowledge broker interviewees had also previously been involved in the intervention as policy-makers. We treated each of these cases as two distinct explored both sets of these participants’ experience. We also interviewed four key participants at multiple time points. In sum, we conducted 57 interviews wit											

We began our analysis with a theoretically-motivated coding procedure to elicit insights into the brokerage of improvement knowledge into front-line practice. During this process, we streamed our coded constructs into epochs to allow evolutionary phases of the intervention to be plotted against a time line, verifying key dates with informants and official policy documentation. Simultaneously, we channelled our coding into three broad levels of analysis: 1) a contextual level, to make sense of the environmental conditions affecting the work of policy-makers and IAs; 2) a policy level, to identify and chart over time concrete knowledge integration policy activities; and 3) the local level, which contained codes pertaining to the lived experiences of those actively involved in knowledge brokering. We then charted contextual shifts and policy activities against a time line, and temporally matched these events with people’s lived experiences of knowledge brokering. This allowed us to trace causal connections between environmental conditions, policy activities, people’s experiences of knowledge brokering, and the effectiveness of their brokering efforts.

Results

Table 2 sets out a summary of the phases, within which IAs sought to enact their knowledge brokering role, and summary data quotes regarding frontline professional responses to their attempts at knowledge brokering, which we detail further below.

Table 2

CONTEXTUAL CONDITIONS, POLICY-LEVEL KNOWLEDGE INTEGRATION ACTIVITIES, AND FRONTLINE KNOWLEDGE BROKERING EXPERIENCES

Timeline	PHASE 1 (pre-2008) Drivers of change and the beginning of an innovation discourse	PHASE 2 (2008–2011) Early implementation & the problem of legitimacy	PHASE 3 (2012–2015) Adolescent implementation & the problem of coordination	PHASE 4 (2016–2018) Maturing implementation & emergent collaboration
Contextual conditions	<ul style="list-style-type: none"> • Burgeoning interest in QI methods for healthcare, globally; growing interest in organization theory. Business process re-engineering at Royal Leicester Infirmary gains renown. • Rising influence, domestically, of organization theorists & international boundary organizations specializing in improvement (e.g. Institute for Healthcare Improvement). • Domestically, public hospitals in deep financial trouble; rising urgency to curb expenditure & improve value. • Federal domestic performance targets established to improve patient flow through EDs & surgery; Australian hospitals experiment with Lean. 	<ul style="list-style-type: none"> • Influence of organization theorists on healthcare performance improvement organizations grows. • High Performance Work Systems & Lean-inspired healthcare interventions flourish, internationally. • Domestic interest in improving value & efficiency heightens. • Domestic Lean networks and Lean boundary organizations capture policy interest. • Growing local discontent with poor research impact fuels domestic interest in research translation & knowledge integration. A knowledge translation & integration movement emerges. 	<ul style="list-style-type: none"> • Healthcare is fastest growing area of domestic government expenditure; hospital expenditure is greatest within healthcare funding envelope. • Government concern with waste peaks. • Seed funding provided to establish domestic research translation centres and accelerate knowledge translation, particularly in hospitals. • Research translation centres facilitate greater collaboration between universities & health, but integration with government health departments and policy-makers is poor. 	<ul style="list-style-type: none"> • Maturing conversations about knowledge translation, mobilisation, brokering, and integration. • Importance of research translation and knowledge integration gains recognition at Federal policy level. • Additional research translation centres established. • Push for greater transparency of hospital performance across a range of measures; push for innovation, rather than greater capital investment, to solve hospital capacity issues.

Timeline	PHASE 1 (pre-2008) Drivers of change and the beginning of an innovation discourse	PHASE 2 (2008–2011) Early implementation & the problem of legitimacy	PHASE 3 (2012–2015) Adolescent implementation & the problem of coordination	PHASE 4 (2016–2018) Maturing implementation & emergent collaboration
Policy-level 'knowledge integration' activities & events	<ul style="list-style-type: none"> • Perceived need for hospitals to acquire improvement capabilities. • Perceived need for hospitals to address lack of critical thinking skills in frontline staff, and lack of mechanisms for staff to challenge taken-for-granted, non-value-adding processes. • Perceived need for greater efficiency and waste reduction. • Distant rather than local searches for new knowledge carried out. • Early efforts to build basic process mapping, process redesign, and project management skills, facilitated by the funding of multiple, small improvement projects. 	<ul style="list-style-type: none"> • Policy intervention commences (2008). • Policy strategy is to differentiate the intervention from already well-embedded, potentially synergistic programs and methodologies (e.g. quality improvement). • Rationale for intervention betrays a strong interest in improving efficiency. • Lack of enthusiasm amongst hospitals leads policy-makers to dangle funds untethered to outcomes, to encourage engagement. • Substantial involvement of Lean-inclined industry & consultants in shaping & governing of the intervention. • Improvement leader roles funded & embedded in hospitals; training in Lean techniques commences; performance improvement work carried out via multiple projects within participating hospitals. • Industry internships, site visits & mentoring for improvement leaders commence. • Improvement leader network established. • Extensive suites of Lean-inspired tools developed & shared across improvement advisor network. • Improvement capability framework for hospitals developed. • <i>"My original and to this day strong recommendation, which wasn't taken up, is that the quality managers and the people working in quality in the hospitals should have been the targeted personnel for this [process improvement] training and this capability uplift. Because, to my way of thinking, it's the same family of theories."</i> (Policy-maker, Participant 43) 	<ul style="list-style-type: none"> • Policy intervention evaluated (2012). Discrete project successes identified, but clinician engagement, organizational capability, fragmented knowledge integration & poor diffusion of ideas identified as issues. • Government restructure brings policy intervention together with clinical networks & leadership development activities. • Organizational improvement capability tool rolled out. Focus on organizational capability intensifies: <i>"It's complex work, it's not simple, because we're trying to change the way organizations run, not just attack [performance] targets."</i> (Policy-maker, Participant 2) • <i>"We saw ourselves as facilitating and coordinating and supporting the hospitals to build their capability to improve."</i> (Policy-maker, Participant 9) • Training programs in process improvement for clinicians continue. • Review of public hospital capacity conducted (2015). Improvement capability (rather than capital investment) identified as key to sustainability of hospitals. • Improvement Advisor roles continue, but concerns emerge regarding impact and value of these roles. • Improvement clearinghouse is established. 	<ul style="list-style-type: none"> • Further policy restructure takes place in light of recent reviews. Policy functions of improvement, safety & hospital capacity brought together, as policy integration and synergies are sought. • Intervention survives, with new emphasis placed on: <ul style="list-style-type: none"> - Clarification of roles and expectations of Improvement Advisor positions. - Appointment of specialized "industry coaches" (specialists in process improvement) to work alongside Improvement Advisors, but with new conversations about knowledge brokering issues. - Engagement with Improvement Advisors to develop individual capability-building framework that extends beyond building technical knowledge and mastery of technical tools. - Engagement with Improvement Advisors to re-develop organizational improvement capability framework for hospitals, so that improvement knowledge can be better exploited. - Facilitation of peer-to-peer mentoring amongst improvement advisors through strengths-appreciation process that teams up experienced & inexperienced Improvement Advisors. - Establishment of an Improvement Advisor community of practice. - Cross-hospital knowledge-sharing via centrally-coordinated, cross-hospital networking & system-wide showcase events. - Use of social media to communicate & enhance profile & discoverability of local improvement learning. - New emphasis placed on looking locally for improvement inspiration and mobilising local know-how.

Timeline	PHASE 1 (pre-2008)	PHASE 2 (2008–2011)	PHASE 3 (2012–2015)	PHASE 4 (2016–2018)
	Drivers of change and the beginning of an innovation discourse	Early implementation & the problem of legitimacy	Adolescent implementation & the problem of coordination	Maturing implementation & emergent collaboration
Frontline knowledge brokering experiences	<ul style="list-style-type: none"> • Hospitals exposed to basic project management skills and rudimentary process improvement tools. • Concept of knowledge brokering and knowledge integration unestablished within jurisdiction. • Basic skills required to prepare workforce for required improvement: <i>“The main goal [from my perspective] was to increase capability and capacity to be able to respond to problems that [front line staff] identified. But the challenge was you didn’t have a workforce that even asked questions and solved problems.”</i> (Executive Sponsor, Participant 1) 	<ul style="list-style-type: none"> • Project approach becomes wearing on front-line staff, with Improvement Advisors bearing the brunt: <i>“Death by a thousand projects” seems to be a familiar refrain among Improvement Advisors.</i> (Field note) • Improvement Advisor network established, and successful in terms of circulating knowledge throughout this network. At the same time, collaboration between health services is seen as unusual: <i>“That network means that there’s a culture in [improvement] of sharing. That’s unusual [here] in health – it’s crazy, but it’s unusual.”</i> (Executive Sponsor, Participant 14) • <i>“I think broadly from [policy-makers, the ICPH in its early days] was [about] seeing health organizations tooling up.”</i> (Improvement Advisor, Participant 7) 	<ul style="list-style-type: none"> • <i>“My experience of watching [hospitals] go Lean is that after a point in time your staff do a backflip and start to resent it. ‘Here come the Lean people’.”</i> (Improvement Advisor, Participant 4). • <i>The Department should actually be building their policy knowledge based on the [local] issues that appear in health systems. And they don’t necessarily to the extent they could. It’s a power shift. So, do with, not to. So that’s the shift that I would see should be made.”</i> (Improvement Advisor, Participant 13) • <i>“I think [the IA network has] run its race in [terms of] being a supportive group, for a group who are thinking about, ‘Maybe I’ll do this [improvement] thing’.”</i> (Improvement Advisor, Participant 7) • Improvement Advisors report difficulties in engaging clinicians in process improvement and encountering receptiveness issues. • Competitive nature of system openly acknowledged by Improvement Advisors, Executive Sponsors, and policy-makers. 	<ul style="list-style-type: none"> • <i>By the time we got to the third [collaboration event] it opened right up because people started talking about their problems. We started to realise that actually, the issue you’ve got here at [this health service] is the same issue as [over there]. And [that other health service] has just recently solved that same issue as well, and we start to see this more collegiate kind of thing happen. For the most part, I think they’ve got these relationships now where everyone will pick up the phone and talk to each other.</i> (Improvement Advisor, Participant 48) • Improvement Advisors begin to express mixed opinions about the competitive nature of the system, and can instead point to examples of collaboration that extend beyond the Improvement Advisor cohort.

Phase 1: Drivers of Change and the Beginning of an Innovation Discourse (Pre-2008)

In the early 2000s, policy-makers responsible for the performance of the state’s public hospitals faced a daunting task: find new ways to make healthcare service delivery more efficient, but keep improving the quality and safety of care. A confluence of factors had sparked this imperative: financial pressures; the imposition of national performance targets; and the enormity of the impending demands of an ageing population. In light of the coming strain, existing models of care were scrutinised, and the seed of an idealised ambition sewn: build the capability of front-line healthcare professionals to fundamentally redesign business-as-usual mindsets and models.

Around this same time, healthcare policy-makers in Europe and the US were already in the process of experimenting with business ideas, and applying these practices and techniques to hospital settings. The promise of these ideas lay in their demonstrated ability in other sectors to create value, deliver efficiency, and improve quality for consumers. Sizeable gulfs existed, however, between the domains of medicine and business, across which bridges needed to be built, to aid the flow of knowledge. At the same time, awareness within healthcare of how to bridge these gaps was nascent. When stories emerged of the successful application of business process reengineering to hospital processes in the UK, pioneering policy-makers in Australia began agitating for funds to build basic project-management capability at the front-line, in preparation for trialing some of the more rudimentary process improvement tools in use overseas. These initial efforts were piecemeal when viewed in the context of the broader healthcare policy machinery; they touched relatively few front-line professionals and were described as *“fragmented”* and *“short-term in approach”* (policy document). But from the perspective of policy-makers they crystallised the need for concerted capacity-building approaches for front-line staff, and introduced to the jurisdiction new ideas, a new lexicon, and an awareness, even if peripheral, of improvement movements occurring in other jurisdictions. A process improvement discourse had begun.

Phase 2: Early Implementation and the Problem of Legitimacy (2008–2011)

Redesigning Care commenced in 2008, with funding secured to employ, train, and embed into 16 of the earliest participating health services the first two waves of IAs. While *Redesigning Care* built on precursor initiatives, it was pitched as a new solution and distinguished from quality improvement (QI), which

had been introduced into the jurisdiction many years prior. The declared centrepiece of *Redesigning Care* was the injection of a new kind of role and capability into health services.

Distinguishing process improvement from QI had important ramifications. It played up, rather than down, the novelty of the intervention, and it failed to leverage complementary skill sets, thereby foregoing crucial psychological and skill economies. It also overlooked, even antagonised, potential QI allies who were well-placed to chaperone the new roles and skills into health services:

There was a real tension when this first came [in] between what was [process] redesign and the bods that are traditionally in that quality space. (IA, Participant 19)

A mesh of difficulties awaited. The new focus on gaining abstract, system-level efficiencies appeared to be of little importance for healthcare professionals, whose core values and training promoted a focus on the singular needs and interests of the presenting patient. Front-line staff correctly perceived *Redesigning Care* as being animated by a strong “*efficiency remit*” (IA, Participant 7) and what they saw as bureaucratic concerns about unmet hospital performance targets. In general, IAs and Executive Sponsors reported that process improvement was seen by front-line professionals as a specialisation of little relevance to the skillsets of care provision, and at odds with their core values:

There's a fairly big difference between a patient flow versus a car production flow. (Executive Sponsor, Participant 39)

This proved a challenging context for IAs, who were rarely embedded within medical or QI teams, and whose main sources of advice and expertise came from outside of healthcare contexts, via participation in industry internships, visits to manufacturing sites, and mentoring from consultants embedded in business and manufacturing industries.

Policy-makers had anticipated and sought to counteract these difficulties by untethering the funded IA roles from predetermined outcomes, and granting hospitals considerable “*autonomy*” (policy document) to choose how they deployed this new resource. Success was mixed. Outcomes were certainly achieved, earning the extension of the programme to more than 30 health services, and the training of Waves 3 and 4 of IAs. But the lived experience of IAs suggested that these successes were hard won. IAs reported frequently encountering resentment (IA, Participant 4), aggression (IA, Participant 15), and defensiveness (IAs, Participants 4 & 16) at the front-line. So peripheral was the role of IAs, they identified being “*invited in*” (IA, Participant 26) to wards and units by clinical managers as crucial to the success of their improvement efforts. A threshold lay between the conduits of process improvement knowledge, and the intended adopters, the latter of whom sought to erect rather than dismantle knowledge boundaries by actively distancing their work, ideals, and values from the sectors that had given rise to process improvement:

One of the barriers we came across is that [frontline professionals would say], 'We're special and different and we don't need to do it that way because we're special.' (Improvement Advisor, focus group)

Ironically, through their training IAs had honed the *de*-legitimizing features of process improvement – the kind of processes, tools, and cultural referents that reinforced rather than dissolved knowledge boundaries (e.g. metaphors that likened hospitals to factory lines and people to widgets).

Phase 3: Adolescent Implementation and the Problem of Coordination (2012–2015)

An evaluation of *Redesigning Care* in 2012 called for its continuation, but voiced concerns that it had produced few joined-up, systemic outcomes, and that the integration of process improvement knowledge was immensely variable across the hospital system. Whereas the early years of the intervention had focused almost exclusively on building the technical skills of IAs, the middle years of the intervention saw an attempt to rebalance this focus. Effort was invested in building knowledge integration and exploitation capabilities at the organizational level, and in fostering a familiarity and affinity for process improvement among healthcare professionals, via an increased focus on training programmes in improvement for clinicians, and the roll-out of a tool to help health organizations assess and build their knowledge exploitation and process improvement capabilities.

A subsequent hospital capacity review in 2015 reinforced this diagnosis, noting that the intervention had facilitated “*important but small projects*”, but that there was “*no system-wide gain*”. The perceived need for centralised coordination to join up improvement efforts across the system, and to do more with less, was a strong undercurrent throughout the report. Healthcare was the fastest growing area of government expenditure at the time, with hospital expenditure the greatest contributor. The need to build improvement capability was identified as key to the sustainability of the healthcare system. The intervention thereby secured a reprieve, and signalled a more active coordination role for policy-makers in the future.

The sector's readiness for greater policy-making vigour was uncertain. Occasionally, tensions inherent in the devolved governance arrangements would surface between government and health services. Disgruntlement about the competitive nature of the sector (*There's a whole lot of competition* [Executive Sponsor, Participant 6]) was cresting, leading to calls for stronger policy intervention to help distribute knowledge across health service boundaries:

“It's such a pity that [policy-makers] don't take a leadership role in this sharing across health services. They just don't.” (Executive Sponsor, Participant 14)

An IA network had earlier been established, but on the face of the two reviews appeared to have yielded little in terms of diffusing improvement successes, probably because IAs wielded little influence within their health services – without internal purchase, strong relational linkages between IAs and meritorious improvement ideas mattered little in terms of knowledge integration. Even those IAs involved in the network in its early, strongest days, conceded it was ineffectual and indicated a need for more directive intervention from policy-makers.

Phase 4: Maturing Implementation and Emergent Collaboration (2016–2018)

The capacity review heralded a policy restructure, and a critical period for policy-makers to review and secure the survival of *Redesigning Care*. Substantial policy changes and a determination to “rejuvenate” (Policy-maker, Participant 37) the initiative ensued. *Redesigning Care* was enfolded into the quality and safety policy-making branch, to capitalise on the legitimacy of quality and safety, while maintaining the initiative’s unique value proposition. Crucially, policy-makers reconsidered their own roles as stewards of *Redesigning Care*, and set about dissolving boundaries between themselves and IAs, and instead creating complementarities by adopting a partnering approach:

“A challenge ... is knowing how we work, and try and look at those partnering relationships as opportunities. Also, don’t lose our sense of what our purpose is and how we can add value.” (Policy-maker, Participant 33)

We’re starting to get a reputation in being the helper. Linking people together. Leveraging the resource and the expertise that we have in our department. (Policy-maker, Participant 36)

Policy-makers also became more circumspect about allowing themselves to be seduced or “distracted by shiny new stuff – ‘Oh, someone’s just doing this. I’ve just been to England, or Scotland, or America and they were doing this’” (Policy-maker, Participant 33). Disregarding local learning, experience, and needs began to be understood as a distancing and demoralising experience for IAs and front-line staff:

We’re thinking, ‘Don’t discount the in-house and the local expertise that we might have, as well as the value in using local examples of innovation and scaling’, because people relate to that much easier than they would caesareans, [for example], in South America. (Policy-maker, Participant 33)

This reflection led to the development of a “ground-up”, “sector-led” model of collaboration that eschewed didacticism and identified the issue of competition between hospitals as “a really strong theme in terms of what people want to address. I can’t tell you how many times we had doctors, particularly, going, ‘Golly, it was good to find out what our neighbors are doing’” (Policy-maker, Participant 34).

Themed, structured cross-hospital knowledge sharing to enable a more coordinated, wider spread of process improvement ideas became a focus, and emphasis was placed on helping IAs to better integrate process improvement knowledge into hospitals’ operational processes, and to better position hospitals to exploit that knowledge. These initiatives were received enthusiastically by IAs, who reported growing in confidence, moving away from a “fundamentalist”, “quite strict” approach to improvement (Executive Sponsor, Participant 6) that alienates front-line professionals, and learning how to “soften” process improvement methodologies and render them “more adaptable” (IA, Participant 20) to the sensibilities of front-line professionals.

Discussion

Knowledge brokering is promoted in implementation science as a mechanism that supports service improvement, but we highlight its success is shaped by context. [2–9] Our study seeks to help those policy makers and organizations on their knowledge brokering journey, with a specific focus upon the integration of knowledge for process improvement, the latter an increasingly common intervention in global healthcare systems. [1] There have followed a range of studies reporting on knowledge brokering, these have focused on an individual level of analysis: e.g. upon what knowledge brokers do, or upon the characteristics of knowledge brokers. [cf. 8] At the same time, there have been reports of the limited effect of the knowledge brokering solution upon service improvement. These critiques of knowledge brokering have highlighted that the limited number of individual knowledge brokers struggle to effect wider system change. [cf. 8], which highlight context is everything. [10] Yet we lack understanding of how to support knowledge brokers to have this wider system effect upon service improvement. Through examining a specific service improvement intervention, a process improvement intervention in an Australian State, our study provides insight into the system level issues to be addressed, moreover we offer prescriptions for policymakers and organisational managers regarding how they might best support knowledge brokering. In essence, our study builds upon extant literature in implementation science by setting out a knowledge brokering ‘plus’ intervention to render the organisational and systems context more receptive for knowledge brokering. [12] As an analytical framework to aid our endeavour, following a call to integrate more generic organisational literature into implementation science, we draw upon innovation studies literature to develop prescriptions for policy makers and organisational managers.

Specifically extending insight into how to support knowledge brokering, our study suggests knowledge brokering is best enabled when policy-makers focus locally on potential adopters of new knowledge and the context in which they are embedded, where new ideas must take root. The substance of new knowledge, itself, is still important, as are the skills of knowledge brokers. But these matters constitute only one part of the integration puzzle, which requires holistic thought and action. The demand side of knowledge integration is as important as supply, and knowledge itself cannot be treated as a fixed property that exists independently of the implementation context. Engagement flourishes when interest in new knowledge is ripened in the adopting context, and when policy-makers balance their distant searches with an awareness that these are not asocial “inputs”, which will necessarily obtain when seized and transplanted from one context into another. [13] Policymakers need to respect local context and exercise care when brokering knowledge across distal geographic, sectoral, or disciplinary boundaries. As our analysis shows, the novelty of distant, abstract solutions is not always beguiling. [14] Novelty can instead underscore the gulfs between current and idealised practice, and repel potential adopters. Novel knowledge is difficult to exploit, and hence complicates the work of knowledge brokers, and intensifies the need for support at the front-line, where ideas must be enacted. [15] Following which, drawing upon innovation studies literature [13–14, 16–17], we identify four interlinked implications for policy interventions that seek to integrate new knowledge into public health systems, set out below.

Limitations: Our study is a single case, in a particular international context, and there may be limits to transferability. Nevertheless, through theoretical generalization, we have sought to draw out lessons for others from our single case. [18] We also highlight our analysis derives from those concerned with developing and implementing the process improvement intervention, with a specific focus upon the experiences of those IAs enacting their knowledge brokering role (see Table 1). The response of adopters of process improvement towards knowledge brokering, that is frontline clinicians, was not elicited. Others may extend our critique of knowledge brokering through more inclusive empirical study.

Conclusion

There are four interlinked prescriptions to render the organizational and systems context more receptive for knowledge brokering aimed to improve service.

First, relational linkages accelerate the diffusion of “socially meaningless” phenomena (e.g. infectious diseases), but they are less potent in aiding the flow of new knowledge and practices, which are social in nature. Cultural linkages ameliorate an over-reliance on the strength of personal relationships. Stark differences between two knowledge domains may or may not pique the interest of potential adopters, but knowledge that resonates with adopters’ underlying belief systems and advances their professional goals is more likely to appeal to a professional community as a whole, and to be integrated into practice. For this reason, seasoned IAs were “*always keep bringing people back to the focus on the patient*” (IA, Participant 16), and participants emphasised the need for policy-makers to reach out to professional associations and colleges – those who guard the canons of the medical discipline and determine what counts as legitimate knowledge. [16] Knowledge, particularly if seen as exotic by adopters, must be *suitably* explained and “externalised” if it is to be well-received [17]. Likening patients to widgets is heretical; it antagonises healthcare professionals and undermines knowledge integration. Metaphors are not superficial linguistic devices; they carry meaning from one context into another, deliberately or otherwise, and must be chosen wisely. [19]

Second, proficiency with the specialised techniques of the body of knowledge that is to be mobilised (“*tooling up*”, as one IA expressed it) is only one important area of mastery. A need for new knowledge begets a need for that knowledge to be absorbed. Equally crucial, therefore, are the capabilities of those brokering knowledge to the frontline, such as their interactional skills, externalisation skills, and cultural skills. [16] At the same time, the knowledge integration capabilities of potential adopters – would-be “seekers” of process improvement solutions, in our case medical professionals at the front-line of service delivery – ought not be overlooked. A single-minded focus on skilling up designated “solvers” of problems (e.g. IAs) is in vain in the absence of adopters’ capabilities to integrate novel knowledge. [20].

Third, the most powerful shift in *Redesigning Care* occurred during Phase 4: policy-makers’ appreciative and *local* (not distant) exploration of novel improvements, and the establishment of mechanisms (e.g. system-wide show-case events, communities of practice) to “pull up”, rather than “push down”, local examples of excellence, and lift the performance of struggling healthcare organizations in the process [21].

Finally, in order to broker knowledge, a culture of collaboration across professionals and organizations, rather than competition, is required. Knowledge integration journeys can be long, difficult, and riddled with setbacks. We suggest policy-makers would be wise to avoid, where possible, coercive measures to progress the integration of new knowledge. Arduous journeys require resilience, hope, understanding, and support for knowledge brokers and front-line professionals, alike, which policy-makers are well-placed to provide [21]. Laggardly behaviour in integrating knowledge is often a sign of difficulty, not obstinacy, and benefits from support rather than discipline. If health services’ performance is variable, mechanisms and incentives are required to redistribute ideas and insights, which extend beyond top down regulation and coercion [22].

Abbreviations

IA
Improvement Advisors
COREQ
Consolidated criteria for Reporting Qualitative research
QI
Quality Improvement

Declarations

Ethics Approval: *The Monash University Human Research Ethics Committee approved the parent study (Project Number CF15/1290-2015000614) on 27 April 2015. The health service that hosted the project provided approval from its governing ethics committee for the research conducted on its sites and with its employees (reference number 16 390 L, approved on 6 September 2016)*

Consent for Publication: *Not applicable*

Availability of Data & Materials: *The detailed nature of the qualitative research means participating organizations and individuals cannot be anonymized in the primary data set. The lead author will grant access to interim and final reports upon reasonable request*

Competing Interests: *None*

Funding: *The research is supported under Australian Research Council (ARC) Linkage Project funding scheme LP140100243*

Contributors: *PB, GC, IM, TR, AS, HT contributed to research conception and design. PB and TR carried out fieldwork. PB, GC, IM, TR, AS, HT contributed towards empirical and theoretical analysis. PB and GC wrote the first edit of the manuscript. IM, TR, AS, HT contributed edits to the final manuscript*

Acknowledgements: *Not applicable*

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