Lessons in implementing infection prevention

Journal of Infection Prevention
2016, Vol. 17(2) 84–89
DOI: 10.1177/1757177415619027
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Abstract

This paper has been developed from a conference presentation given by Professor Alison Holmes at the IPS Learning Labs launch event (2015). In it the implementation of research into clinical practice is discussed with reference to the upcoming Health Foundation Spotlight Report. The difficulties of engaging those in clinical practice are discussed with the importance of involvement of clinical leaders being highlighted. The importance of recognising that implementation science as a social process to bring credibility and legitimacy is also stressed. Following this, the Spotlight Report that is focused on strengthening implementation in the UK is discussed. There remains considerable scope for improvement and the impact of surveillance, targets and fatigue are considered. The tension between top-down and bottom-up approaches to implementation are discussed and a recommendation for a blended approach when implementing measures that are the components of an organisational infection prevention and control strategy is proposed. There also needs to be more scrutiny of the reasons for the failure of research implementation through an examination of the 'soft periphery' that comprises the organisational structure, systems and people that will be responsible for implementing and sustaining an intervention.

Keywords

barriers, healthcare-associated infections, implementation, research

Alison, there have been many interesting studies coming from your group recently, including the forthcoming Health Foundation Learning report. What is the approach to research into infection prevention at Imperial?

At Imperial College there is a research programme that was concerned with integrating infection prevention and control into practice and the team worked very closely with the National Institute for Health Research (NIHR) Patient Safety Centre at Imperial. Further funding has been received from the NIHR to become a Health Protection Research Unit (HPRU), which is examining both the infection prevention and the antimicrobial resistance agendas together. There are a variety of work themes including work on microbial genetics, organisational aspects, patient safety aspects, social sciences and policy, and it is important to mix those working in these fields together with the synergies, patterns and the opportunities for shared learning that this brings.

Through working with people with a background in organisational theory, in policy, there has also been a particular focus on the adoption of innovation and the adoption of technologies particularly for infection prevention and the lens and the framework that we use for this is one that has been developed by Rifat Atun (Atun et al., 2007), where we look at the context of the organisation as well as the context of the technology that is being used and look at adoption. The centre has also worked collaboratively with other colleagues internationally and has collaborated in delivering two courses on implementation in Geneva.

The background to our work on this has been examining how can we do infection prevention better, how can we use our evidence better, how we can use our technology better. We have looked at a variety of hospital trusts in England to

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determine how they implement infection prevention, how they allocate budget to infection prevention activity and technologies (Kyratsis et al., 2012b, 2014), particularly when ‘the user is not the chooser’ (Ahmad et al., 2012).

Of course we purport to be an evidence-based service, but what is your view on the implementation of evidence in everyday IPC practice?

There are many aspects to the issue of evidence. We talk all the time about evidence but we need to be aware that evidence, as well as being a great motivator, can also become a complete paralysing in terms of getting things done. Much of the discussion about evidence is actually about resisting the changes related to guidelines and the evidence contained in guidelines. Another issue is that the evidence often relates to the principles of whatever is under study; however, there is frequently very little evidence about how to implement the intervention. We need to understand that ‘your’ evidence, is not ‘my’ evidence, is not ‘somebody else’s’ evidence, and therefore there is a need to bring people on board at the beginning of the adoption and implementation process and be quite transparent about when evidence is emerging, recognise it and be transparent about the acceptance of new evidence (Kyratsis et al., 2014). We might have to ‘park’ the evidence debate, get everybody on board so we can actually ensure that we then can implement the findings of research.

Ok, so what do you think are the challenges with implementation?

When we consider the process of implementation, we should think about whom to involve and when we should involve them, because it makes a huge difference. If you only start involving people at the time of execution you’ve really missed a great opportunity. Unfortunately a lot of things are often just kept within the infection prevention team when actually you need to work with the wider organisation and also think about working externally. All issues around infection prevention are not solely related to acute care so we really need to take a whole healthcare economy approach and engage with as many people as possible.

So, when do we engage with people and what value do professional groups place on research, including research that helps with implementation?

People always need to be engaged in the earliest phases of initiation and decision-making, implementation planning or implementation execution, and as I said if you only involve people at the time of implementation execution, that debate

and discussion about the evidence will carry on and carry on and carry on. But there are some good things out there, including work lead by Yiannis Kyratsis (Kyratsis et al., 2012a) which looked at the value that different professional groups place on research and what helps in decision-making. The really good thing is that both medical and nursing professionals within our organisations actually really value implementation research and recognise its importance.

Are there any differences in the opinions between the different professional groups?

Yes, it’s interesting to see the differences Kyratsis found between what the nursing professional body thinks about expert opinion, where it is highly valued, versus what medical colleagues think, where it is not. However, it is encouraging that both groups think that work on implementation research is credible and worthwhile

So stakeholder involvement is crucial to success then?

Yes, absolutely. This was presented recently at a workshop for clinical leaders focusing on the antimicrobial stewardship agenda, where all clinical leaders were invited into a room to talk about why their involvement was so important. This was really important, engaging with clinical leaders and work from Mary Dixon-Woods has demonstrated this (Dixon-Woods et al., 2013).

Should we then totally rethink the way that we attempt to implement research at a local level then?

I think it is incredibly important that we actually recognise how it is vital that people are involved from the beginning, unpicking the technical aspects of implementing new evidence and reframing the approach as a social problem that can be solved if people work together. How to do that? Recognise how we can make it a social process. Unfortunately, we frequently introduce change without actually acknowledging how critical this social process is, and making sure it’s not just regarded as a simple and technical fix. We also need to recognise and acknowledge that these clinical leaders actually will breathe credibility and legitimacy into what we are wanting to do.

Tell me about the Health Foundation Learning Report, how does this help us?

This is collaborative piece of work with the University of Leicester and University Hospital of Geneva (Ahmad et al.,

2014). It has been fascinating and challenging to look at how we have been doing in terms of implementation in the sphere of infection prevention control within the UK.

The areas that I want to highlight in the report are issues around the body of research that we have and how we could potentially do a lot better, the impact of surveillance and targets on implementation, and the certain amount of fatigue there is with colleagues working in the NHS. The focus of the report is strengthening implementation practice but also I hope strengthening implementation research so that we can perhaps lead and drive on this area in the UK.

How was this piece of work undertaken?

The scope of this project was three-fold. First, there was a literature review, followed by case studies. There were only two hospital trusts looked at but I need to stress that these were in-depth studies building on a longitudinal study in these trusts, so a very, very rich source of data. Then we undertook qualitative research around group interviews and questionnaires with service users.

Reviewing implementation research studies presents challenges as they are not all randomised controlled trials and need a specific framework to be able to assess the quality of this type of work, for this we used a framework called ICROMS that is referenced (Zingg et al., 2015b).

Did you look beyond the UK?

In terms of the literature review, we were looking only at the UK to really identify where the local evidence base stands. We identified nearly 4000 studies but only 47 of them were of an adequate quality to be included in a systematic analysis, although 49% of these did include organisational factors. Internationally there is much interest, not only in the work that is being done in the UK around infection prevention, but particularly in how it is being implemented. Of course it would be better if we had a richer source of data, but at least this review is enabling us to assess what is being done on implementation and if we were to do a study, how could we do it better.

How did you look at implementation in the Spotlight report?

Our synthesis of the literature provides a way forward for implementation in practice, consistent with the needs of implementation evaluation. The Implementation Quality Index is presented as a tool to be considered when considering interventions for implementation. This then leads to appropriate and robust evaluation of the intervention (Table 1). Not only does this provide a method to evaluate studies, but it also provides a framework for considering how to establish effective implementation programmes.

Table 1. Quality index for implementation studies based on ICROMS (Zingg et al., 2015b).

1. Identify which stakeholders the intervention is aimed at (who?)	<ul style="list-style-type: none"> • Healthcare professionals (which ones) • Patients • Public
2. Clearly define the intervention and components (what?)	e.g. Technology, guidelines, protocol
3. Quantify the duration of exposure (i.e. adequate dose?)	Length of time (and which components if stepwise)
4. Specify the organisational level of implementation (where?)	<ul style="list-style-type: none"> • Department • Ward • Hospital
5. Most interventions are based on an assumption of human behaviour – be explicit (how?)	e.g. Feedback-based models – internal and external factors interact to shape how we behave (IC Link nurses wearing different uniforms to ward nurses)
6. Employ a theoretical framework for evaluation, i.e. theory of change (how?)	Should be consistent with underlying assumptions of behaviours on which the intervention is based; but also look at different levels (individual, organisational), e.g. diffusion theory, double loop learning
7. Specify the unit of analysis – quantitative and qualitative (where?)	Professional group, department, ward, hospital
8. Systematically consider barriers/facilitators to implementation (why?)	Structural / cultural / individual / organisational / macro

Targets are credited with reducing healthcare-associated infections in England particularly; what were your findings and how does this affect work going forward?

If you work in the National Health Service (NHS) in England you are extremely familiar with HCAI reduction targets and how they can be extremely demanding in terms of time and the work around them. But there has been a huge impact on MRSA bacteraemia rates in the UK associated with these targets that cannot be ignored and people are fascinated by this and want to know what has been implemented. So a lot has been done on *Clostridium difficile* and MRSA but while we have been focusing on that, our *E. coli* bacteraemia rates are going up and up, which is a major problem. Our Carbapenem resistance problem is enormous, but all our time is being devoted to MRSA and *C. difficile* because those remain the targets of focus. There is evidence from this Health Foundation work that practitioners can feel demotivated because of this. There is also beautiful work that Pronovost and colleagues have been involved in with respect to the validity and credibility of targets for the clinical frontline staff, how targets and the measures selected have to evolve and change to be credible, and to maintain engagement (Pronovost et al., 2007). So we need to be able to balance targets and hopefully be a little bit more flexible. I think it is really important that we recognise that the continual managerial focus on targets that do not change significantly loses impact and credibility and relevance.

What is your view on different approaches to infection prevention? At the moment, as you have said, they appear to be organism-specific

There has been some interesting work from Goldman and colleagues (Septimus et al., 2014) around vertical and horizontal approaches, vertical focusing on a single organism, horizontal focusing on an approach that is embedded in everything that you do, in all aspects of infection prevention and it is going to be interesting to compare those different approaches. Clearly it's slightly artificial, there needs to be a blended approach, but there is this real issue about when you focus on one target it always is at the expense of other work and we must make sure, as professionals, we do not let that compromise a programme of implementation.

Is there too much focus on guidelines and policies?

We know that we are drowning in them. Charles Vincent has some beautiful examples of how managing a patient

with a pulmonary emboli from A&E to ICU, you can go through about 50 or 60 different guidelines, they are too complicated, they are not up-to-date, they can be too simplistic, and so on (Carthey et al., 2011). Of course we need guidelines, we need to have a basis of a shared understanding, however just because they exist, does not mean that they are implemented.

So what about achieving a balance in approaches to implementation, how do we do that?

Excellent work by Gabbay about 'mindlines not guidelines' (Gabbay and le May, 2004) was completely reinforced and supported by the interviews through the Health Foundation work, about the importance of engagement and having everybody on board and understanding what they're doing. There is an excellent quote from an executive team member, the medical director (Zingg et al., 2015b):

"The ability for individual staff to passively resist something is far greater than the position and power of any individual within the organisation. So if we want to introduce something new and if it isn't really understood and accepted at the ground level, people will just make the right noises and not act, absolutely embrace it and do it. A lot of it is about hearts and minds."

This stresses how important it is that you have staff on board because passive resistance will undo any optimism about implementation. So in terms of engagement we must consider top-down and horizontal approaches and we need to manage that tension. We do need the legitimacy and the leadership to actually validate and support implementation within infection prevention and give it that support, but we need to make sure that there is also the bottom-up approach with frontline staff and we have to manage that balance carefully. It is vitally important that both are recognised, but sometimes maybe a little less of the top-down and more of the bottom-up approach.

We have talked about the roles of healthcare workers and managers, but where can service users fit into infection prevention research? Do they have a role?

Absolutely. Another piece of work that was incredibly valuable was getting the public and patient voice. This was a very active engagement programme both with patients and their carer's groups across London. We asked them 'Who is responsible for patient safety and what is your role?' And actually they thought they did not have a role, they thought the responsibility sat with hospital and healthcare staff.

Table 2. Key components of an IPC Programme (Zingg et al., 2015a).

1. IC programme at the hospital, appropriately staffed and supported
2. Bed occupancy, staffing, workload, and use of agency and pooled staff
3. Availability and easy access to materials, equipment and optimum ergonomics
4. Appropriate use of guidelines, with practical education and training
5. Education and training involves frontline staff and is team- and task-oriented
6. Auditing organised and standardised with timely feedback
7. Participating in prospective surveillance, involvement in networks, active feedback
8. Implementing infection prevention programmes with multiple methods, strategies, accounting for local conditions
9. Identifying and engaging champions in promoting interventions
10. Positive organisational culture by fostering good working relationships and communications across units and staff groups

However, when questioned more deeply, they actually felt that they all did have a role but they weren't answering 'yes' because they felt their voice was not listened to. They also voiced that when they actually felt the most vulnerable was after they leave hospital and there was little or no support.

What about the ability of the patient to challenge healthcare staff?

Asking the question about hand hygiene has been the subject of so much literature. Is it okay to ask? Tricky when you're on a ventilator or when you are a neonate and all of those issues. However, what was fascinating was that when it was explored a little bit more, the people who would ask were the patients who had been very satisfied with their healthcare. The people who did not want to ask, were the people who had not been satisfied with their healthcare. So I think there's an interesting aspect there about satisfaction with your care and the willingness then to engage and interest in engagement, versus dissatisfaction with care.

So what would you consider to be the critical elements of an organisational infection prevention strategy?

A very recent study (Zingg et al., 2015a) has looked at the key elements within hospitals that we should have organisationally to best deliver infection prevention. This systematic review yielded a total of over 48,000 records, of which 833 were suitable for quality assessment. From this, key elements were identified and a consensus among recognised leaders on key recommendations was reached which also considered the ease of implementation and applicability across Europe.

There are no surprises in what was identified; for example, having a programme that is appropriately staffed and funded, issues of bed occupancy, staffing workload and the use of agency staff, availability and ease of access to materials, human factors, ergonomics, etc. (Table 2). Appropriate use of guidelines was also important, but they must be supported by practical education and training; training must involve frontline staff, be team- and task-oriented and audit needs to be organised effectively and standardised with appropriate and timely feedback. Making hospitals aware that participating in surveillance and involvement in networks, but only if they have active feedback, is really important; multi-modal strategies; clinical champions.

How would you sum up your feelings on implementing research then?

I think we need to recognise that evidence can be a barrier as well as a great motivator. We need to make sure that we use implementation research, but it is very encouraging that people are thinking that it is of value across professional groups. We have now developed a quality index to help us know how to 'do' implementation better and we need to recognise our patients as service users, not just when they are in hospitals but before and after, as all of us are really service users. Then I think it is important that we reflect on whether our NHS hospitals could deliver on what Zingg and colleagues (Zingg et al., 2015a) are recommending as 10 key aspects for organisations. My final point is that I think future research must do a little bit more in terms of how and why things don't work. We need to really strive to understand why some interventions have worked and why others have not by understanding the 'soft periphery' of an intervention (Denis et al., 2002); the organisational structure, systems and people that will be required to fully implement a guideline or intervention.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Peer review statement

Not commissioned; blind peer-reviewed.

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