

Research Summary

Analysing Implementation in Acute Stroke and Patient-Initiated Clinics (ASPIC)

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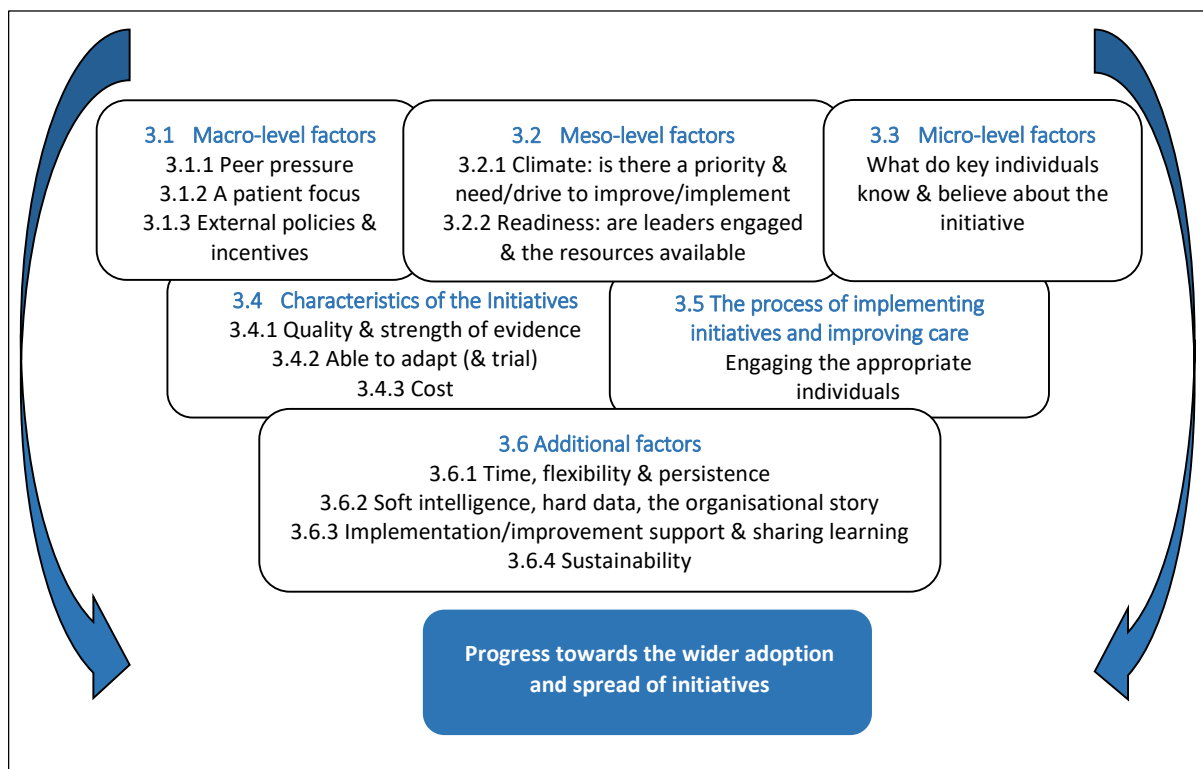
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Executive summary

This report presents findings of a study of the wider adoption of evidence-based initiatives in health services. We sought to understand the critical factors helping and hindering two *time-limited, externally-driven, collaborative projects* seeking to spread work in acute settings in the south-west of England: improvements to acute stroke treatment and implementation of patient-initiated clinics. Using a qualitative approach, we conducted observations, interviews and document analysis, informed by a framework from the field of implementation science, to explore and identify cross-cutting lessons.

Key insights

The figure below provides a summary of our overarching insights into the cross-cutting influences.



- The most important influences occurred at the organisational, department and team (meso) context level. Critical factors included the priority, need, or drive, for change and readiness in terms of skilled leadership (particularly from the clinical leads) and available resources.
- Influential factors included a competitive pressure to implement or improve, a patient focus, an ability to engage key individuals, an understanding of how to go about implementing changes whilst being flexible, creating space to reflect on progress and, sharing learning.
- External facilitation from a stroke quality improvement manager and researchers was experienced as supportive and constructive. Ownership resided ultimately with hospitals, particularly the clinical leads and teams, to decide to participate in these projects and to drive forward the implementation and improvements.
- There was a lack of external, national and regional, policy, incentives and drivers to support these projects to gain engagement and spread changes. Having strong research evidence was a facilitator but we did not find this to be always a dominant factor in the process of the wider adoption of these initiatives.

- We observed a need to consider from the start of such projects how to ensure the implementation and improvements are to be sustained.
- There is a benefit to collecting intelligence on 'hard data' on performance and outcomes and 'soft intelligence' on the social, psychological and emotional factors helping and hindering the spread of implementation and improvements.
- Project members and key individuals in the hospitals had to be persistent in their efforts. Time, priorities and the workloads pressures of health services staff to do implementation and improvement work, with the current demands in the healthcare context, are very challenging. Developing ways to assist this process within the current constraints are needed. This implementation and improvement 'work' is 'hard work'.

Implications

We identified that:

- Thought needs to be given to sustaining implementation, the time it takes to do, the intelligence ('hard' and 'soft') needed, and how to best develop ways to improve improvement and implementation 'work' in acute settings.
- There is a need to find ways to enable people to pause and reflect to facilitate the process of implementing changes and making improvements.
- Consideration needs to be given to how best to develop and support a learning culture in healthcare organisations, teams and departments.

We identified [18 lessons](#), in the form of questions, to aid future externally-driven, time-limited, collaborative efforts seeking to spread of evidence-based initiatives in acute healthcare settings. These have been developed into a draft checklist. We identified the following areas for further work:

1. Capture and assess the key contextual influences during an effort to spread practice.
2. Assess and develop organisational, department or team 'readiness' for implementation.
3. Apply and test spread and sustainability frameworks for evidence-based initiatives.
4. Enhance leader engagement.
5. Strategies, resources, and techniques to share learning.
6. Develop core principles to enhance the processes of projects to spread initiatives.
7. Develop ways to enable those implementing initiatives to pause and reflect.

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1 Background

1.1 Setting the scene

A widely recognised challenge in ensuring quality healthcare is reducing variation in the provision of effective and acceptable evidence-based initiatives so they are accessible to all who need them.^[1,2] One difficulty is achieving the wider adoption and spread of healthcare improvements and initiatives within and across provider organisations and geographic areas.^[3] In particular, there is more to learn about what influences the processes of quality improvement and the implementation of initiatives to enhance care for patients and public.^[4,5] A persistent challenge is that differences in context make it difficult to generalise about what approach or strategy to take, so what works to change practice in one setting may work partially, or not work at all, in another. These contextual differences may relate to personnel, organisational culture, financial considerations, physical constraints, staffing structures, styles of leadership (or absence of leadership) and so on. They may be strategic, cultural, technical, structural or some combination of these. Although each setting is unique, there are commonalities and similarities across them that may allow established approaches to be employed if we are able to understand the contextual differences and how best to approach them.

1.2 Two collaborative projects: Acute Stroke and PIC

Within the south-west of England, the South West Academic Health Science Network (SW AHSN) and the National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care South West Peninsula (PenCLAHRC) seeks to support the translation of research findings into practice to improve patient outcomes. They funded two projects (see Box 1) to support improvement and implementation initiatives in acute settings: the emergency treatment of acute ischaemic stroke (also supported by the South West Cardiovascular Strategic Clinical Network) and patient-initiated clinics (PIC). In both projects, initial work has been conducted in one setting and shown to be effective and acceptable and so, therefore was viewed as ready to be spread more broadly across the region. The initial stroke work occurred in a single hospital site and the goal was to apply the improvement approach in other hospitals. The initial PIC work was implemented in one hospital department and sought to be implemented in other clinics at the same Trust. Both used a *time-limited, externally-driven collaborative approach* to implementing and making improvements to current practice. The stroke project sought to model the thrombolysis part of the pathway and use this evidence to identify how performance could be improved. The PIC project involved the implementation of an intervention involving key elements. Hospital departments were invited to volunteer to be involved in this work.

1.3 ASPIC study initiation and aim

Senior members of the SW AHSN and PenCLAHRC were keen to generate learning about how the Acute Stroke and PIC projects sought to spread innovation. Consequently, they initiated the ASPIC study with the aim of understanding the differences in context and the improvement and implementation processes in these projects. We did not aim to follow the projects from start to finish, nor seek to assess the outcomes. Our goal was to explore and learn. One objective was to gain cross-cutting insights into the barriers and facilitators to achieving the desired changes in practice across the different contexts. A second objective was to use these insights to support future collaborative implementation and improvement projects by identifying lessons learned to inform the development of principles, a checklist or tool.

Box 1 Descriptions of the Acute Stroke and PIC projects

The Acute Stroke Project
<p>Goal:</p> <ul style="list-style-type: none">• Aimed to reduce stroke-related disability by improving the use of thrombolysis in the emergency treatment of acute ischaemic stroke. <p>Initial work:</p> <ul style="list-style-type: none">• Conducted between January 2011 and August 2013 and initiated by a clinician in one acute Trust. This was an award-winning research and implementation project using quantitative operational modelling.• Involved collaboration between one operational researcher and a stroke consultant who took on a quality improvement role working with clinicians, managers and analysts involved in the thrombolysis pathway. <p>Work to spread and implement improvements:</p> <ul style="list-style-type: none">• Conducted between June 2014 and March 2016. It sought to spread improvements to thrombolysis use by approaching six acute Trusts to voluntarily undertake similar work.• Two operational researchers and a service quality improvement manager worked with thrombolysis pathway clinicians (emergency department, stroke unit, radiology), managers and analysts at each Trust.• Bespoke quantitative modelling was undertaken by the researchers to identify improvements to the thrombolysis rate. The service improvement manager enabled Trusts to plan and make improvements. <p>Progress:</p> <ul style="list-style-type: none">• Operational modelling research was completed with six Trusts. Five Trusts were supported to identify areas for improvement and four Trusts developed action plans to support implementation.• In the initial work, the speed of a patient through the pathway was crucial. In the spread project this still mattered in some settings but in others so did (a) determining the time of stroke onset and (b) clinician attitude to thrombolysis.
The PIC Project
<p>Goal:</p> <ul style="list-style-type: none">• Aimed to reduce follow-up appointment backlogs for patients with chronic long-term conditions, through the patient initiating the clinic rather than the system. <p>Initial work:</p> <ul style="list-style-type: none">• Conducted between February 2012 and October 2013 and initiated by a clinician in one acute Trust. This was an award-winning implementation project undertaken in one long-term condition department. <p>Work to spread implementation:</p> <ul style="list-style-type: none">• Conducted between July 2014 and December 2015. It sought to spread implementation in the Trust by broadening inclusion in the department involved in the initial work and introducing PIC in two others.• Clinicians, managers from the Trust, and external researchers worked together to involve patients, design a toolkit to support the implementation of PIC, implement and then evaluate impact.• Senior managers' support was obtained. The initial department sought involvement to broaden their patient use of PIC. Two other departments were approached and invited to voluntarily participate.• PIC was tailored so that the educational materials were suitable for the two new departments.• In the initial department, to ensure that PIC could be spread and sustained, there was a change in the staff member who delivered the education session to patients. <p>Progress:</p> <ul style="list-style-type: none">• The inclusion of PIC was broadened in the department involved in the initial work, partial progress was made in a second and limited in the third department.

2 Study approach

We used a qualitative approach: this has been extensively applied in health services research to produce in-depth knowledge and understanding.[6] We sought to gain cross-cutting insights into the implementation processes and the differing contexts of spread in the Acute Stroke and the PIC projects within our local hospitals. Using focused ethnography [7,8], we asked for people's retrospective insights through semi-structured interviews (see Appendix A for interview topics), combined with real-time observation and supplemented with the analysis of project documents.

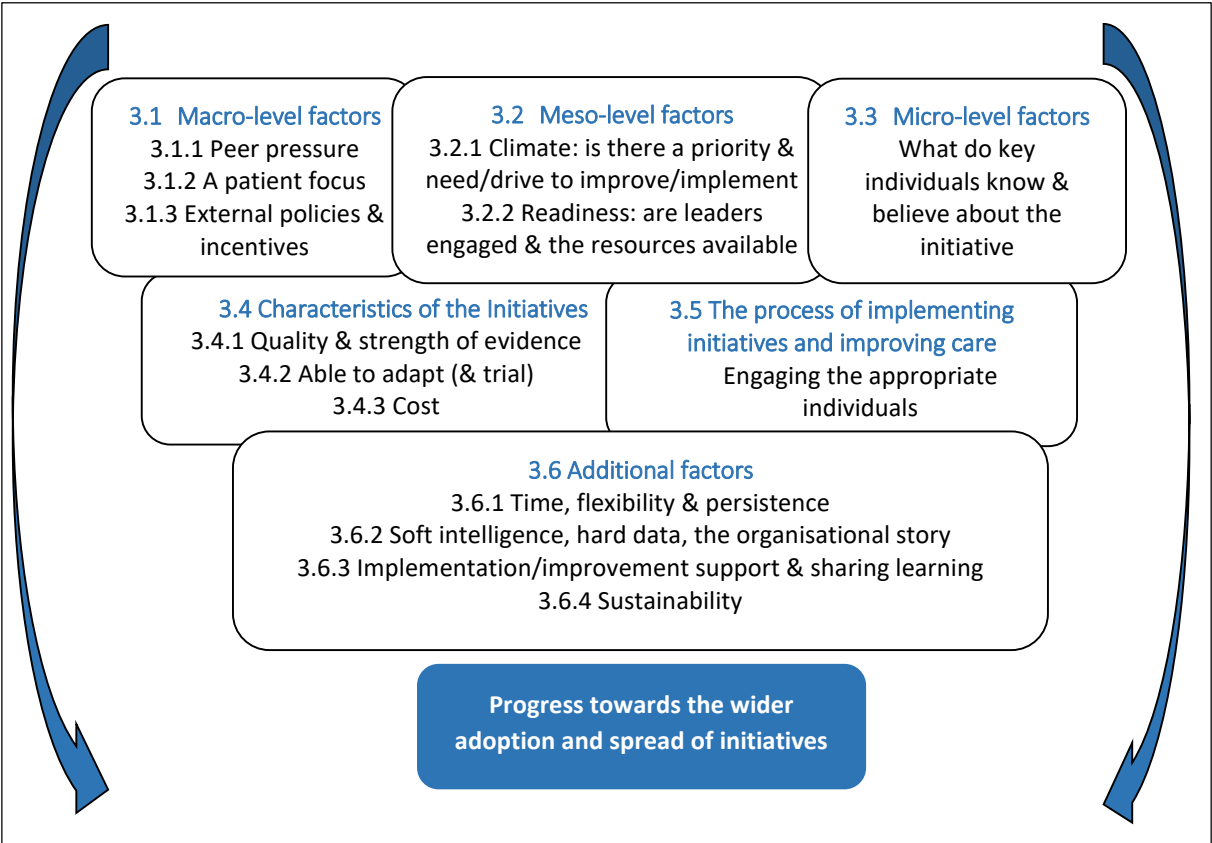
We have also drawn on relevant work from implementation science. This field seeks to understand how to systematically facilitate the uptake and spread of research findings into health care practice and policy. [9,10] We used the Consolidated Framework for Implementation Research (CFIR) [11] which offers an overarching model to help assess what works where and why across multiple contexts. This framework has had a limited use in this country and this study provided a novel application. We used it to help generate a better understanding of the critical factors enabling and hindering progress in implementing the desired changes to practice. Constructs from this framework guided our data collection and analysis (see Appendix B for a summary of the CFIR domains and constructs).

We obtained NHS Health Research Authority approval to study the Acute Stroke project. For PIC, the study was registered as part of the project’s service evaluation with the Trust’s Research and Development department. To ensure rigour, we used a range of methods to collect data and sought advice from an experienced implementation science researcher. We held two group sessions to assess data and confirm critical factors, then we checked our interpretations with key project members.

3 Findings

In this section, we share our understanding of the critical factors influencing the progress of the spread of improvements to the thrombolysis pathway and the PIC implementation. Figure 1 provides a summary of our overarching insights. Appendix C provides a summary of barriers and facilitators for each project. Our findings are presented by factors associated with the context level (macro, meso and micro), characteristics of the initiative, the process of implementing/improving and four other factors.

Figure 1 Cross-cutting critical factors influencing spread



3.1 Macro-level factors

We considered Influences that were external to each acute Trust. This includes a focus on patients, other Trusts and the national and regional economic, political and social context. We found three cross-cutting critical factors helping and hindering progress in each project.

3.1.1 Peer pressure

*“I think the benchmarking against other hospitals really helps even though it’s depressing.”
(Stroke Project)*

A competitive pressure from peers was found to help and hinder the implementation of PIC and the improvements to the thrombolysis pathway across settings.

Acute Stroke: We observed peer pressure helping teams in some Trusts to know how their thrombolysis treatment rate compared to others and where they were performing better. As quantitative modelling was conducted across all the Trusts this enabled benchmarking and a positive competitive influence to emerge. This acted as a motivator for some teams to improve their thrombolysis pathway. An additional wider external influence was the thrombolysis performance of the hyper-acute stroke units in London, and whether Trusts could either match or get close to their rates. Indeed, one approach used to engage Trusts was exploring how their performance might reach the national average.

PIC: A lack of national and regional peer pressure to implement the PIC was observed hindering progress for the two departments seeking to introduce the initiative. Instead, we found that a belief in the broader concept of patient-centred care provided two of the three departments with a competitive edge. This supported progress in widening the adoption of PIC in the Trust.

To summarise, in some settings competitive pressure can help drive improvement or implementation. In others being ‘better’ or ‘average’ may be more influential. This raises the question as to whether a service is aiming to be the best, better or excellent? Also, how achievable improvement or change is in an area of care if alternative external pressures, targets or incentives are greater.

3.1.2 Patient focus

“At the beginning... we said actually we can’t implement this in its purest form because we’re putting patients at risk.” (PIC project)

We found that the extent to which patient needs are known and prioritised by a Trust influenced the implementation and improvement process. This was found to have a greater presence in the PIC project than for Acute Stroke.

PIC: We observed that the Trust had a clear understanding of the need for follow-up appointments to be provided differently to improve care for patients with long term conditions. PIC was viewed as a potentially beneficial way to address this patient need. All three departments collated positive patient feedback during focus groups on the design of patient-related materials suggesting an enthusiasm for the initiative. One department, where partial progress was made, identified for some groups of patients' signs of deterioration in their condition can be symptomless. This acted as a barrier to providing PIC as clinicians assessed it as an unsafe option until the technology to undertake home testing becomes available. Another barrier was a lack of trust in other medical professionals to ensure patient safety once they were no longer under the care of the specialist.

Acute Stroke: the benefits for patients of implementing improvements to the thrombolysis pathway were recognised in most of the Trusts. Some clinicians expressed a cautious attitude to increasing their rate of thrombolysis, particularly if less familiar, confident or more sceptical to the use of thrombolysis due to the risk of harm for some patients.

3.1.3 External policies and incentives

"It [thrombolysis] was more prominent two, three years ago with the [initial] work, the Stroke Strategy come out...they were basically saying you had about five years to be on it, to draw out as best you can with it and move on. And it feels like it's moved on." (Stroke project)

For both projects we found a lack of external policy, incentives and drivers to support spread. The Trust staff we spoke to stated they were not aware of any current national or regional policies, regulations or guidelines influencing their decision to implement PIC or make improvements to the thrombolysis pathway.

Acute Stroke: The National Stroke Strategy was published by the Department of Health in 2007 and thrombolysis is no longer a performance metric. Although performance is still fed back to Trusts throughout the year via the Sentinel Stroke National Audit Programme. The external influences appear to have shifted significantly since the initial stroke work occurred. We observed the presence of the Care Quality Commission hindering and helping progress. In one Trust their presence hindered as the clinical teams were focused on other priorities. In another enabling, as extensive attention was paid to the stroke pathway so the clinical team could drive improvement to all aspects.

PIC: At a national level the shift towards a patient-centred approach, supported by NICE guidelines, helped to harness clinician support for implementing PIC in two departments. This was hindered by a lack of guidance and incentives as to how best to achieve this change at a department or team level. In two departments a concern was expressed about the loss of financial revenue if they implemented PIC as their clinics would not receive the same remuneration. This links to wider funding processes.

3.2 Meso-level factors

The most influential cross-cutting factors occurred at the organisational, team and department context level. The 'climate' and 'readiness' to implement stroke improvements and the PIC helped to understand the variation in progress across the different sites.

3.2.1 Climate: the priority and need to implement / improve

There's a huge focus on thrombolysis which is seen as brilliant but misses the non-thrombolysed pathway, and it's that cohort of patients that there are more concerns about here. (Stroke project)

"I don't think there was a really a strong need for PIC. I think there's a strong need for alternative follow-ups, of which one is PIC." (PIC project)

The capacity of a Trust, department or team to absorb changes or make improvements was a critical factor in both projects. This was important in how receptiveness key individuals were to taking part in these improvement and implementation initiatives. Additionally, how their efforts were rewarded, supported and expected within each Trust, team and department. The degree to which teams shared a perception of the importance of the implementation of PIC and improvement to the thrombolysis rate also influenced the process of wider adoption. One challenge was whether the initiatives fitted with what the team or department considered to be their 'real priorities'.

Acute Stroke: In some settings, the team considered improvement a priority. In other places, we observed it was less so, although involvement in the project was seen as a useful opportunity to improve their service. For other Trusts, progress was hindered where the priority for improvement was on another part of the stroke pathway, such as discharge or rehabilitation. There was also the added complexity that the thrombolysis pathway crosses different departments and organisations. Each of which has their own priorities that did not necessarily coalesce at the time of the project. We found across the Trusts the drive for improving thrombolysis rates lay primarily with the stroke team. If they identified a strong need for improvement this catalysed action with other teams in the pathway.

PIC: Appointment follow-up had been identified as an organisational priority which helped to progress implementation by garnering senior management support within the Trust. Other organisational demands did hinder spread in all three departments. Finance, bed management and length of stay were regarded as a higher priority than investing in the PIC as an alternative way of delivering clinics. The degree to which each department perceived the current situation as needing to change critically hindered progress in two departments. Managers and clinicians recognised that change was required to address the demand for routine follow-up for long-term conditions, which is outstripping capacity in the NHS. On the other hand, some departments were not convinced of a need to change or they believed they were already doing a version of PIC. This highlights the importance of being able to clarify at the team level the key elements of an initiative and how this compares to their current practice.

3.2.2 Readiness: leadership and available resources

"It's really important that the clinical lead is on board... because the rest of the team aren't going to go forward with any ideas if the clinical lead isn't supportive of them. They are the crux point within a Trust." (Stroke project)

Leadership: The organisational commitment to implementing PIC and improving stroke was critical in helping or hindering progress. The role of leaders and their commitment, involvement and accountability was found to be influential across the different settings.

PIC: For one department, although there was enthusiasm for implementing, they also encountered resistance and were unable to garner the senior management support required to address this issue.

Interviewees consistently expressed a need for skilled leaders, with a strong capability to effect change and able to link the department with the broader organisation. For example, a member of staff in one department was keen to lead the implementation of PIC but did not have the necessary authority to agree and deliver actions. This highlights the importance of the 'right person' in the 'right position' to lead the implementation of initiatives at the meso-level to enhance readiness.

Acute Stroke: The role of the clinical leads, particularly in the stroke team, was found to be crucial to progressing improvements to the thrombolysis pathway. If they were not on board then the rest of the team struggled to progress improvements without their support.

In both projects, we observed an enabling influence when managers and clinicians were able to coalesce around the improvement and implementation goals. In this way, a 'whole team' approach, where directors, managers and clinical leads were all supportive and the need for improvement was shared and understood, enabled progression. Skilled, committed, engaged leaders were found to be crucial for enabling a shared focus and vision, driving and catalysing action and creating a supportive environment for implementation and improvement to occur.

"It's the practical logistics... resources are so suffocated that it's so much easier to just carry on what you're doing." (PIC project)

Resources: The resources available, such as physical space and time, for implementing changes and to also continue with day-to-day clinical practice influenced progress across the different settings. Staffing instability played a role in both projects. Staff changes, absences or inability to commit sufficient time stalled progression in some Trusts and departments. Both projects relied heavily on arranging meetings between researchers, managers and clinicians. This was often difficult with time pressures, clinical and organisational priorities, and meeting room availability. This was overcome in some settings, for example, by integrating the discussions about the initiatives into existing clinical and operational meetings. Workload pressures were also perceived to cause difficulties in creating the time and space to make stroke improvements and implement the PIC. A focus on daily 'firefighting' led to a struggle from those we spoke to, to develop their service as, 'too many other things are going on'. In both projects, we found that spread was facilitated in settings where people were able to fit the changes easily into their existing workflows and systems.

3.3 Micro-level factors

"The idea is that PIC works and stepping away from that is how PIC works in research to does it work in practice. And certainly we've got evidence that it does and the patients are really happy with it." (PIC project)

"For a couple of Trusts, the trouble is not the project itself but how the results will be used after the project has ended and if they are perceived to threaten their service." (Stroke project)

Key individuals within Trusts were a critical factor that helped and hindered the process of spread. This includes people directly involved in the projects as well as those who may be potentially affected by the PIC initiative or stroke improvements. Particularly crucial was the knowledge and beliefs individuals held about the projects, their attitude toward and the value they placed on the initiative, as well as familiarity with the key elements and principles.

Acute Stroke: We observed two Trusts to be highly engaged in the modelling process and making improvements to the thrombolysis pathways. Individuals actively shared knowledge with other key individuals in the pathway to ensure they were on board. This was crucial as thrombolysis treatment involves cross-disciplinary working. However, the timing of this project with another stroke services modelling project created suspicion within other Trusts as to how the data would be used. A concern was how its use may pose a potential threat to their stroke service. This was intensified by the same researchers working on both of these projects. This barrier was seen to be partially overcome through open acknowledgment of the issue, repeated assurance the projects were not linked, and confirmation of data usage by the external researchers and improvement manager. Individuals' attitudes towards thrombolysis treatment varied across the Trusts both helping and hindering the spread of stroke improvements. This issue was also identified as an important barrier in the initial stroke work when clinical concerns about the risks of thrombolysis treatment emerged. We found this barrier arose in Trusts where a cautious attitude was observed but was less of an issue with others.

PIC: Key individuals gaining knowledge about the PIC intervention was found to be important in making their decision to implement. We found that a person's belief that PIC could actually provide a viable alternative option for patients' facilitated progress. This was particularly noticeable in the department already implementing the PIC and who sought to broaden participation. A key individual, with a substantial knowledge of PIC, was able to facilitate spread to other patient groups. In the other departments, progress took longer as people considered the applicability and viability for their different patient groups. Project members described engaging in focused discussions with key individuals to persuade them of the value of PIC. This included providing a clinical interpretation, or 'clinical nuancing', of what PIC might offer. This was productive in enabling individuals in one department to conclude that PIC was a viable option. In another department, this was experienced as counterproductive when much time was spent discussing and deciding if PIC could be implemented or not. When sufficient knowledge about PIC was provided to key individuals, particularly how it may benefit some patients, this enabled departments to decide whether to progress with implementation.

3.4 Characteristics of the initiatives

"The disappointing thing about thrombolysis for ischaemic stroke is that despite all the effort and analysis that's gone over the last twenty years, there are still enough grey areas for people to logically maintain a dissenting position... so I think it is a difficulty." (Stroke project)

"When you've only got one centre who actually have this written up and proved it worked, evidence-based... it wasn't like half of England were using it." (PIC project)

The characteristics of the PIC intervention and the approach to improving stroke were an influential factor in the spread of these initiatives.

3.4.1 Quality & strength of evidence

A crucial influence on spread across the settings was how individuals' perceived the quality and strength of the evidence underpinning implementation and improvements. In addition, their belief that the changes will have the desired outcomes. This factor played out differently in the two projects.

PIC: We observed variation in the perceived strength of evidence for the intervention. It was well regarded by some individuals and further evidence was required by others. Evidence exists for proof of concept effectiveness; however, evidence for other patient groups that may benefit from PIC varies.

For two departments, population-specific randomised controlled trials had been undertaken whereas for one department there was no existing evidence for their particular patient group.

Acute Stroke: Some individuals queried the evidence underpinning thrombolysis as a treatment which was perceived to hinder progress in some Trusts. A sceptical view was held by some clinicians of ‘how good’ the research evidence is for thrombolysis. An important facilitator in the stroke project was the bespoke simulation modelling research undertaken using the Trust’s own data from the Sentinel Stroke National Audit Programme. This data provides real-time data collection, analysis and reporting on the quality and outcomes of stroke care. Individuals perceived this to be helpful and providing a quality of evidence trustworthy enough to underpin and facilitate improvements.

3.4.2 Adapt and Trial

Critical in both projects was the perception that the PIC and the Acute Stroke work could be adapted, tailored, refined or reinvented to meet local needs. Without adaptation, initiatives can be seen as a poor fit for a setting and therefore be resisted. A recurring theme in our analysis was that Trusts needed to consider how PIC or the stroke improvements could work in ‘one’s own back yard’. This is not a case of ‘reinventing the wheel’ but understanding what it takes to implement or improve in a particular setting. This links closely with departments and teams being able to pilot at a local level to see if changes work and so generate their own evidence to support implementation.

3.4.3 Cost (e.g. investment, supply and opportunity costs)

This arose predominantly in the PIC project and hindered progress in the two departments new to implementing. Some funding was available to support changes however this offer was not always taken up by them. In the Acute Stroke project, the focus was less on cost as clinician decision-making and staffing resources was more influential. In some Trusts, we observed the information generated by the quantitative modelling was incorporated into business cases to argue for further resources. Indeed the issue of cost was intentionally overcome by the project team who sought to ensure that improvements were ‘cost neutral’.

3.5 The process of implementing initiatives and improving care

“I think having a clinical champion for it [PIC] is very advantageous.” (PIC project)

“It has been expressed on a number of occasions that improvement only happens when Trusts truly want to do it – you can’t make them do it.” (Stroke Project)

The process used to spread the adoption of the PIC and the Acute Stroke improvements also critically influenced progress. A crucial factor was the engagement of individuals and identifying champions in each Trust. The support provided by the external researchers for both projects and, for stroke, a service quality improvement manager was specifically employed, who sought to support and enable the wider adoption of these initiatives, played an important role.

Engage people: Within both projects, the ability to attract, involve and engage key people at the meso-level (Trusts, departments, and teams) was observed to take effort and time. Our analysis highlighted how unpredictable this could be as individuals varied in how they received the offer to become involved in the projects. For each setting, a ‘hook’ to take part was often required. Ownership of the

initiative by key influential individuals, i.e. champions, was critical to facilitating the progress of wider adoption. A learning point for both projects concerned how to best to obtain engagement at the start of the projects. Rather than just spending time persuading people to become involved, this was also about finding ways to assess interest. For example, towards the end of the PIC project, a questionnaire was produced and sent to departments asking for interest and if they had patients that were suitable.

Individuals within an organisation with a formal or informal influence on the attitudes and beliefs of their colleagues were influential in the change process. As we highlighted in section 3.2.2, the clinical leads within each team or department were critical ‘opinion leaders’ driving implementation and improvements within their Trust. They acted as ‘catalysers’, identifying how to make changes and improvements and monitoring outcomes in an ongoing, rather than one-off, effort. Another influential role, particularly in the Acute Stroke project, was that of a ‘clinical-academic’ to facilitate progress in Trusts. Where people were identified as ‘followers’ of this individual, this helped progress, though hindered in settings where they were less influential and/or other factors were more critical.

Externally driven nature: The perception that ownership for these projects lay outside each Trust influenced progress in the spread of these initiatives. Our analysis suggested that for some steering group members, the Acute Stroke and PIC projects were very different to their usual experience of improving practice. Their past work involved projects instigated, and actively sought, by a Trust or department, often linked to a strong internal or external priority. This was partially addressed in the Acute Stroke project by offering to help with other issues as appropriate. This led to additional operational research projects whilst securing the Trust’s engagement to participate in the stroke project. A benefit of both the researchers and the quality improvement manager being ‘external’ was their ability to benchmark of thrombolysis performance across the region and share this with teams. Some Trusts noted that they could see a benefit from an ‘external audit’ of their stroke data to assure their own analysis, providing a ‘reality check’. Within the PIC project, the external researchers were able to link a key individual in one department new to the intervention, with a knowledgeable staff member in the department that had implemented PIC in order to learn from their experience. One obstacle was the lack of available internal change management support to help facilitate implementation. Our analysis indicated a barrier in both projects was the ‘cold calling’ approach to gaining engagement and a perception the projects were being ‘imposed’ on Trusts.

3.6 Additional factors

Four influential factors, not informed by the CFIR framework, emerged which we found to constrain and enable the wider adoption of the Acute Stroke and the PIC initiatives.

3.6.1 Time, flexibility and persistence

*“That’s the problem, isn’t it? It’s complex... it’s quite hard to get all of those ducks in alignment.”
(Stroke project)*

A common finding in studies about the process of implementing change and making improvements is they take longer and are harder to undertake than predicted. Unexpected barriers emerged as a theme in both projects. This necessitated an ability and flexibility from leaders and project members to modify their approach to implementation and adapt to the variations encountered within, and between, participating Trusts, teams and departments. Progress in spreading these initiatives was not a linear

process. We also observed fluctuations in engagement and momentum within and between the Trusts and Departments involved. One lesson from this is to 'be prepared for the unexpected'. A second is to be persistent and resilient. A third is to build in flexibility to timescales whilst weighing up the value of continuing the implementation and improvement efforts.

This factor was particularly evident in the Acute Stroke project, with some evidence indicating it was also relevant to the PIC project. We observed difficulties for the stroke project steering group members during meetings to predict progress in meeting their outcomes. Another recurring theme was a need for people facilitating, and leading, implementation having the time to step back and reflect on the process. This provides an opportunity to consider obstacles, how to address them, and if it is worthwhile to continue or extend a project within a Trust or department. The timescale of the Acute Stroke project was considered ambitious given how long the initial work took in just one acute Trust. This did lead to an extension of the project from 12 to 15 months. We also observed that timing was important. During the summer and Christmas holiday periods, progress slowed due to staff availability. Persistence by project members to keep the momentum going to drive improvements. Similarly, progress in implementing PIC in the two departments new to the initiative also took time.

These experiences captured in our study challenge the claim that, just because something has been effectively done in one place, this will make it easier to do elsewhere. To spread these initiatives, the elements of time, timing, flexibility and persistence were noted. Consequently, our study confirms the common observation in studies that the process of doing implementation and improvement is hard, time-consuming, unpredictable work for those involved.

3.6.2 Soft intelligence, hard data and the organisational story

Interviewer: What evidence has been important for supporting this kind of working?

Interviewee stroke project: I think soft evidence - how do you know how an organisation works, and their drivers... as you get to work with organisations you get to know almost what makes them tick, for want of a better word, or about their leadership within that organisation and I think the harder evidence of the performance of the Trust.

We observed a need to capture 'soft intelligence' about the psychological, social and emotional factors influencing the progress of the process spreading initiatives, as well as 'hard data' to assess performance and outcomes. This was particularly beneficial given the externally driven nature of these projects. Attending to both kinds of data enables reflection and evaluation of progress. Our analysis indicated that understanding the story, and on occasions, the history, of each Trust, and the teams and departments involved, was beneficial to understanding how services varied. It is also beneficial to know why previous attempts to implement similar changes or improvements did or did not succeed. These two kinds of intelligence help to adapt an initiative or improvement at a local level, whilst keeping the crucial elements, and create a local evidence base. To date, evidence on how to efficiently capture and incorporate soft intelligence to inform an approach to making changes is not greatly developed. There is much to learn in this area to optimise the spread the implementation of initiatives.

3.6.3 Implementation / improvement support and sharing learning

"There is no additional resource or money or time being put into service improvement." (Stroke project)

“There is a department that has been doing PIC for a number of years and they’re really willing to share their expertise and practical solutions on how they solved problems.” (PIC project)

We observed benefits for the Trusts and Departments involved in the PIC and the Acute Stroke projects through receiving external support to enable the spread of these initiatives. In particular, a value in facilitating the sharing of learning. We found that a ‘can do’ and ‘opportunistic’ attitude towards taking part in the spread of initiatives from key people in Trusts, with support from middle / senior management, was an enabler in both projects. However, this can also stall progress if they conclude that financial resources are also required to implement or make improve improvements. Our analysis suggests it is valuable to provide opportunities for individuals to participate in formal and informal interactions to enable learning with, and from, others. A broader issue impacting on these projects concerns how the work of improvement and implementation itself in the NHS can also be improved.

3.6.4 Sustainability

“I think it’s a sustainable solution. It probably needs revisiting by patients within it and they should be designing what it looks like into the future so it’s maximally responsive for their needs.” (PIC project)

“There is something about ownership of service improvement and to make it sustainable, how that happens in everyday life.” (Stroke project)

A challenge for externally-driven, time-limited, collaborative adoption and spread projects is how to close projects and leave a legacy. This can depend on whether a Trust, team or department is seeking to develop a culture of ‘continuous focus’ on improvement and implementation or a ‘one-off transformation’. We found how service improvement and implementation initiatives are perceived by key individuals and leaders has a critical role. From the experience of those involved in the initial work in both projects, a ‘sustained focus’ is required otherwise the improvement can be lost, implementation stalls or is discontinued. Thus, not achieving the goal of becoming ‘routine practice’. The lesson here is to think about sustainability and how this could be ‘designed in’ from the start.

4 Conclusions

We have explored the cross-cutting critical factors influencing the progress of two acute-setting collaborative projects seeking to spread improvements to the acute stroke pathway, and the implementation of PIC. We generated in-depth knowledge and understanding of barriers and facilitators based on real-time observations and the experiences of those involved. There are limits to what we can say about other sites and other improvements based on this study, though our insights may resonate and transfer to similar efforts to spread adoption of evidence-based practices.

The most important influences we identified occurred at the organisational, department and team (meso) context level. The current climate within each Trust, team or department for making improvements and implementing a change were crucial. Whether there was a strong need, or drive for change - and how much it was viewed as a priority relative to other demands within the organisation - mattered. The readiness of the organisation, team or department to improve or implement change was also critical; in particular, if there were skilled leaders and available resources present. This should include a stable team, with a manageable workload, to engage with and progress implementing interventions and improvements.

We found factors relating to the process of implementing changes impacted on progress. The ability to engage key individuals was influential. Having an idea of how to go about implementing and making improvements, reflecting on how it is going and providing opportunities to share learning, was crucial. External facilitation was experienced as helpful and supportive, particularly from the researchers and the stroke service improvement manager. However, ownership and authority for implementing changes and improvements were ultimately retained by the organisation.

Although sound research evidence is important, although this is not always a dominant, or sufficient, factor in the decisions to implement an intervention or make improvements. This was confirmed in our analysis. Studies suggest that the more sources of evidence used - such as research studies, clinical experience, patient experience, local pilot results and guidelines - the more likely it is that initiatives will be taken up. A critical influence was the perception that the stroke and the PIC work could be adapted to meet local needs and piloted on a small-scale. Associated with this is the challenge of the actual 'costs' for Trusts implementing initiatives.

We observed a need to consider from the start of such projects how to ensure that changes can be sustained so they become routine practice. There is a benefit to collecting both 'hard data' on performance and outcomes and 'soft intelligence' on the social, psychological and emotional factors helping and hindering the spread of implementation. Calls for the greater use of 'soft intelligence' have been highlighted in the patient safety literature.^[12] Identifying efficient and meaningful ways to capture, harness and use this type of knowledge is needed. We found that it can be difficult to judge the time and timing to scale-up across different sites and so an appropriate level of flexibility within the planning process was needed. Project members and key individuals in each organisation had to be persistent in their efforts. They also need to be able to adapt and modify their approach in response to unexpected barriers encountered in the implementation and improvement journey.

4.1 Broader learning points

4.1.1 Time to pause and reflect

People's capacity and capability to step back, reflect and evaluate during the implementation and improvement process emerged as an issue. Time, priorities and the workload pressures of clinicians, managers, and analysts to do this within the current demands in the healthcare context are very challenging. The capacity for health care organisations to analyse, monitor and learn from intelligence has more broadly been identified as limited.^[13] We recommend developing ways to assist this process within the current contextual constraints could be beneficial.

4.1.2 Develop a learning culture

One issue is how to best develop a learning culture in healthcare organisations, departments, and teams. We observed how peer pressure facilitated progress in some acute settings. This raises the question of whether the goal is for services to be the best or better or excellent. Don Berwick argues to improve patient safety there is a need to develop a learning culture where the "NHS should continually and forever reduce patient harm by embracing wholeheartedly an ethic of learning".^[13] This resonates with research on the value of a "growth-mindset" in leaders and organisations.^[14] Leaders with this mindset are seen to embody a zest for learning, openness to giving and receiving feedback, and an ability to confront and surmount obstacles. A growth-mindset organisational

environment (or culture of development) involves: presenting skills as learnable, valuing learning and perseverance, open communication, teamwork, independent thinking, giving feedback to promote learning and future success, and presenting managers as resources for learning. Research indicates people who work in such organisations are supportive of reasonable risk-taking, innovation, and creativity enabling them to be agile and thrive.[14]

4.2 Strengths and limitations

A strength of our approach has been to observe and generate cross-cutting in-depth knowledge about two efforts to spread evidence-based practice. One benefit a number of participants shared with us was how this study gave them the opportunity, afforded through semi-structured interviews and informal chats, to reflect and learn from their experience of implementation. We did not capture all views and we are lacking the patient and public perspective and involvement. In future work, it would be useful to analyse how the factors we identified interact and influence outcomes. Despite difficulties generalising due to the exploratory nature of our study, our insights are likely to resonate with other people's experience of implementing initiatives and improvements.[15] They are also likely to have transferability to similar time-limited collaborative projects in acute settings where the goal is to spread the implementation of evidence-based initiatives found to work in one place.

5 Implications

5.1 18 lessons

We identified the following questions (see Box 2) that can be applied to assist similar externally-driven time-limited collaborative efforts to spread evidence-based initiatives in acute settings.

Box 2 18 lessons from the Acute Stroke and PIC projects to assist future efforts

1. (a) Is there an understanding of how the improvement or initiative will benefit patients and (b) are the views of patients being considered?
2. Are there any external drivers that support or undermine the change or improvement?
3. Does a Trust or Department want to be better or excellent in the area in which improvement or implementation is planned? Do they see it as a priority or need?
4. Are you monitoring what the Trust and Department see as the priority/need for change?
5. How will the environment for the proposed scale-up help or hinder? Can you gather soft intelligence about this and thus inform your approach?
6. Can you identify and collect hard data and measures to assess performance and outcomes?
7. Are there leaders involved who are engaged, skilled, involved, committed and accountable with a level of authority sufficient to enable change?
8. What are the available resources for making the changes? What are the costs? Are they sufficient?

9. Is the team sufficiently stable to make changes and do you know their workload pressures?
10. Do you know (a) who the key individuals are that need to be engaged and (b) what they think and know about implementing this improvement or initiative?
11. Do stakeholders think the quality of evidence is good enough to implement this change?
12. Can the initiative be adapted to (a) meet local needs and (b) tested on a small scale?
13. Is the project perceived as (a) research (b) implementing a change/improvement (c) implementing a change/improvement that will be evaluated or studied?
14. Do you have an idea of how to go about making improvements and implementing an initiative? An idea of how long it might take? Is there a way to reflect on how it is going?
15. Are you building in ways to enable constructive opportunities for people to share learning?
16. Is some flexibility to the time and resources allocated to the project being built in?
17. Are the feasibility of implementing an initiative and making improvements explored and the possibility of halting or stopping considered throughout the project?
18. From the start are you considering how the improvement or initiative can be sustained?

5.2 Developing a set of principles, checklist or tool

The lessons we identify above can be developed further to inform the development of a checklist of 'things to consider' when seeking to spread evidence-based practices and improvements. In Appendix D we provide a draft version. This checklist would be enhanced by:

- Scoping the empirical literature for critical factors relating to spread in health care settings.
- Scoping existing guides and frameworks on how to spread and widen adoption.
- Testing and refining the use of a checklist in future projects.

From our brief search, we identified some existing implementation and improvement checklists, tools and frameworks available for use in healthcare and other sectors. We recommend that, rather than developing new ones, the most promising one(s) could be tested, further developed or adapted. The following areas are useful to consider:

1. Capture and assess the key contextual influences during an effort to spread practice.
2. Assess and develop organisational, department or team 'readiness' for implementation.
3. Apply and test spread and sustainability frameworks for evidence-based initiatives.
4. Enhance leader engagement.
5. Strategies, resources, and techniques to share learning.
6. Develop core principles to enhance the processes of projects to spread initiatives.
7. Develop ways to enable those implementing initiatives to pause and reflect.

In Appendix E we provide a table of potential tools, frameworks, and ideas for further work.

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Appendices

Appendix A Interview topics

- Why this is being implemented
- The evidence aware of and needed as to whether the improvement or implementation will work
- Views of influential stakeholders
- Costs to implement

- How well think it will meet the needs of patients
- Views on giving autonomy to patients (PIC only)
- Concerns around patient safety and how to make the intervention safer (PIC only)
- If implementing would provide an advantage for the Trust
- Performance measures, policies, regulations or guidelines, financial or other incentives influencing the decision to implement

- The changes needed to make it work in the Trust
- Impact of organisational culture
- If there is a strong need for implementation
- How fits with existing work processes
- How to work together to implement
- The priorities in the Trust
- Support and actions needed from leaders in the Trust
- If expect to have sufficient resources

- If think the implementation will be effective
- Confidence, of self and colleagues, that will be able to successfully implement

- The plan for implementing
- Key individuals needed to implement
- Who will lead
- If implemented as planned
- Views on sustainability (PIC only)
- Recommendations for future implementation (PIC only)

- Anything else like to add that has not been covered

Appendix B CFIR domains and constructs short descriptions

CONSTRUCT		SHORT DESCRIPTION
I. INTERVENTION CHARACTERISTICS		
A	Innovation Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B	Evidence Strength & Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C	Relative Advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D	Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E	Trialability	The ability to test the intervention on a small scale in the organization [8], and to be able to reverse course (undo implementation) if warranted.
F	Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement.
G	Design Quality & Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled.
H	Cost	Costs of the intervention and costs associated with implementing that intervention including investment, supply, and opportunity costs.
II. OUTER SETTING		
A	Needs & Resources of Those Served by the Organization	The extent to which patient needs, as well as barriers and facilitators to meet those needs are accurately known and prioritized by the organization.
B	Cosmopolitanism	The degree to which an organization is networked with other external organizations.
C	Peer Pressure	Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or in a bid for a competitive edge.
D	External Policy & Incentives	A broad construct that includes external strategies to spread interventions including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting.
III. INNER SETTING		
A	Structural Characteristics	The social architecture, age, maturity, and size of an organization.
B	Networks & Communications	The nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization.
C	Culture	Norms, values, and basic assumptions of a given organization.
D	Implementation Climate	The absorptive capacity for change, shared receptivity of involved individuals to an intervention and the extent to which use of that intervention will be rewarded, supported, and expected within their organization.
1	Tension for Change	The degree to which stakeholders perceive the current situation as intolerable or needing change.
2	Compatibility	The degree of tangible fit between meaning and values attached to the intervention by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the intervention fits with existing workflows and systems.
3	Relative Priority	Individuals' shared perception of the importance of the implementation within the organization.
4	Organizational Incentives & Rewards	Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary and less tangible incentives such as increased stature or respect.
5	Goals & Feedback	The degree to which goals are clearly communicated, acted upon, and fed back to staff and alignment of that feedback with goals.

6	Learning Climate	A climate in which: 1. leaders express their own fallibility and need for team members' assistance and input; 2. Team members feel that they are essential, valued, and knowledgeable partners in the change process; 3. Individuals feel psychologically safe to try new methods; and 4. There is sufficient time and space for reflective thinking and evaluation.
E	Readiness for Implementation	Tangible and immediate indicators of organizational commitment to its decision to implement an intervention.
1	Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the implementation of the intervention.
2	Available Resources	The level of resources dedicated for implementation and on-going operations including money, training, education, physical space, and time.
3	Access to Knowledge & Information	Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.
IV. CHARACTERISTICS OF INDIVIDUALS		
A	Knowledge & Beliefs about the Innovation	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.
B	Self-efficacy	Individual belief in their own capabilities to execute courses of action to achieve implementation goals.
C	Individual Stage of Change	Characterization of the phase an individual is in, as he or she progresses toward skilled, enthusiastic, and sustained use of the intervention.
D	Individual Identification with Organization	A broad construct related to how individuals perceive the organization and their relationship and degree of commitment with that organization.
E	Other Personal Attributes	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.
V. PROCESS		
A	Planning	The degree to which a scheme or method of behaviour and tasks for implementing an intervention are developed in advance and the quality of those schemes or methods.
B	Engaging	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modelling, training, and other similar activities.
1	Opinion Leaders	Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing the intervention.
2	Formally Appointed Internal Implementation Leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.
3	Champions	"Individuals who dedicate themselves to supporting, marketing, and 'driving through' an [implementation]", overcoming indifference or resistance that the intervention may provoke in an organization.
4	External Change Agents	Individuals who are affiliated with an outside entity who formally influence or facilitate intervention decisions in a desirable direction.
5	Key Stakeholders	Individuals from within the organization that are directly impacted by the intervention, e.g. staff responsible for making referrals to a new programme or using a new work process.
6	Innovation Participants	Individuals served by the organization that participate in the intervention, e.g. patients in a prevention programme.
C	Executing	Carrying out or accomplishing the implementation according to plan.
D	Reflecting & Evaluating	Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.

Appendix C Summary of influential barriers and facilitators within each project

The PIC Project	
Facilitators	Barriers
<ul style="list-style-type: none"> • All patients in the departments involved expressed enthusiasm about PIC during focus groups and feeding back on the design of materials • A lead in the department seeking to broaden PIC was able to drive scale-up • Pro-active and empowered staff able to address barriers as they arose • Recognition from managers and clinicians that change is needed • The change in practice is supported by NICE guidelines • Compatible with team's values about patient care • Easily able to fit PIC in with existing workflows and systems • Key individuals gaining knowledge about PIC and feeling confident to change • Key individuals able to consider how PIC applies to patients, undertake 'clinical nuancing' as to who would benefit and tailor the intervention to their context • Open to external facilitation and support from researchers • The Trust was keen to be involved in the project and senior management had expressed their support 	<ul style="list-style-type: none"> • A perception the project was a research study rather than a change to practice that was being evaluated • Robustness of the research evidence for the different patient groups varied • Some staff not understand/support the notion of PIC or thought there were already doing it • Concerns about patient harm and suitability of PIC for some of their patients • A perception could lose money if implemented • A lack of specific external strategies, policies, and incentives to help drive person-centred care at a team level • Difficulties creating the time and space to make changes due to workload pressures and staff changes/absence • The cross-departmental and infrastructure changes required were challenging to address • Data and information systems were not capable of enabling a 'local' evaluation • Not being able to locate the 'right' person to lead the project (i.e. with authority and enthusiasm) and/or sufficient time to drive it • Focus on other priorities such as finance, bed management, and length of stay • Unable to make use of external support
The Acute Stroke Project	
Facilitators	Barriers
<ul style="list-style-type: none"> • Clinical leads engaged, supportive and acting as a catalyst and coordinator to make changes • Managers (senior and operational) and clinicians coalesce to make improvements • External facilitation from an experienced service improvement manager to support bespoke improvements and help clinical teams produce a feasible and realistic action plan • Experienced operational modellers to map pathway, analyse data and present in an accessible form bespoke to each Trust • Access to Trusts stroke audit data • The opportunity to improve the pathway perceived as important, helpful and timely • Current pressure to improve the pathway externally (e.g. the Care Quality Commission) and from within the Trust • Teams created time, space and had an energy and enthusiasm to improve • Ability to compare a Trust's performance with other Trusts in the region to identify areas doing well and where could do better • Able to share knowledge to the key people from different departments in the pathway 	<ul style="list-style-type: none"> • Interdisciplinary conflict, staff team instability or absences • Attitude to thrombolysis and if cautious about a risk of harm to patients • Lack of national drivers and incentives for improving thrombolysis rates in the pathway • Focus of the team on another part of the stroke pathway such as discharge, rehabilitation or another treatment • Sceptical, or questioning, of the research evidence underpinning thrombolysis • Time taken to arrange meetings to progress work in each setting • Timing of the project with another regional modelling project creating suspicion of how the data could be used • Ambitious timescales to undertake both modelling and support improvements in the Trusts • How best to 'launch' the project to engage Trusts whilst balancing timescales of delivery • How and when to close the project • Perception the project was 'imposed' on Trusts

Appendix D Draft checklist

Based on the 18 lessons and informed by CFIR this aims to (a) assist pre-implementation exploration, discussion, and preparation, (b) inform the approach to implementing an initiative or improvement, (c) reflect on how it is going during a project and, (d) review at project closure as a learning exercise.

A. Wider (macro-level) influences		
Question to ask	Help, hinder or neutral?	Action needed (if any)
Does a Trust, team or department want to be better or excellent in the area seeking to implement?		
Is there an understanding of how the improvement or initiative will benefit patients?		
Are the views of patients being considered?		
Are there any external drivers that support or undermine the change?		
B. Organisational, department and team (meso-level) influences		
Question to ask	Help, hinder or neutral?	Action needed (if any)
Is this change a priority and/or is there is a strong need, or drive, from the site?		
Are there leaders engaged (skilled, involved, committed, accountable) with the authority to enable change?		
Are there available resources for implementing the change?		
Is the team sufficiently stable to make changes and do you know their current workload pressures?		
C. Individual (micro-level) influences		
Question to ask	Help, hinder or neutral?	Action needed (if any)
Do you know who the key individuals are that need to be engaged?		
Do you know what key individuals think and know about implementing this improvement or initiative?		
D. Initiative characteristics		
Question to ask	Help, hinder or neutral?	Action needed (if any)
Do stakeholders think the quality of evidence is good enough to implement this change?		
Can the initiative be adapted for local needs and tested on a small scale?		
Is there a cost (investment, supply, and opportunity) to implementing?		

E. The process of implementing and improving		
Question to ask	Help, hinder or neutral?	Action needed (if any)
Can you collect 'hard data' and measures to help assess performance and outcomes?		
Can you gather 'soft intelligence' about the context that may help or hinder and inform your approach?		
Is this change perceived as either a research project, a service improvement, or an improvement to be evaluated and/or studied?		
Do you have an idea of how to go about implementing, how long it will take and a way to reflect on progress?		
Is flexibility built into the time and resources allocated to the project?		
Are you building in ways to enable constructive opportunities for people to share learning?		
Has the feasibility of implementation been explored? Is consideration given to stopping throughout the project?		
From the start are you considering how the change can be sustained so it becomes routine practice?		

Appendix E Ideas for further work

Areas for potential further work	
1. Capturing and assessing context	
Capturing key contextual influences during an effort to scale-up practice. Existing tools noted below.	
The Context Assessment Index (CAI)	Developed by McCormack and colleagues (2009). Based on the implementation framework Promoting Action on Research Implementation in Health Services (PARIHS). A 37 item model designed to help clinicians with the means to assess and understand the context in which they work http://www.science.ulster.ac.uk/inhr/public/pdf/CAI_instrument_pack.pdf
The Model for Understanding Success in Quality (MUSIQ)	Developed by Kaplan and colleagues (2011). Identifies 25 contextual factors likely to influence quality improvement success and can help to guide the application of quality improvement methods https://qi.elft.nhs.uk/resource/the-model-for-understanding-success-in-quality-2/
QUASER	A research-based tool developed by Fulop (2014) to reflect on, develop and implement quality improvement strategies in hospitals. Focuses on organisational and cultural factors https://www.ucl.ac.uk/dahr/pdf/study_documents/iQUASER_Hospital_Guide_291014_press-ready_cs4.pdf
The Learning Pyramid	Produced by The Health Foundation (2014) identifies three sets of skills (technical, soft and learning) required for successful implementation of quality improvement. This can be reviewed to aid improvement efforts http://www.health.org.uk/sites/health/files/SkilledForImprovement_fullreport.pdf
The Hexagon Tool (2013)	A context exploration and discussion tool for the implementation and spread of evidence-based practices developed for schools. Includes six broad factors to consider at an early stage of exploration, help decide whether to move forward, assist in communicating with stakeholders, and developing an implementation plan http://implementation.fpg.unc.edu/sites/implementation.fpg.unc.edu/files/resources/NIRN-Education-TheHexagonTool.pdf
2. Assessing readiness to implement or improve	
Assess and developing ways to enhance organisational, team or department readiness for an implementation or improvement effort. Existing checklists noted below.	
Checklist to Assess Organisational Readiness (CARI)	Developed for evidence-informed practice implementation by Barwick (2011). Designed to address the level of readiness for implementing evidence-informed practices within behavioural health service organisation. Tailored to a specific Canadian context (Ontario) but can be adapted. http://www.effectiveservices.org/downloads/Checklist_to_Assess_Organisational_Readiness_for_Implementation.pdf
Organisational Readiness to Change Assessment (ORCA)	Developed by Helfrich and colleagues (2009). Based on the Promoting Action on Research in Health Services implementation framework. Assesses readiness in preparation for testing interventions designed to implement evidence-based changes. Helps identify needs/conditions to target with implementation activities and prognosis of success.
Further work is needed to identify existing strategies and resources to develop, nurture and sustain organisational, team or department readiness for change.	

3. Applying and testing approaches to adoption, spread and sustainability Existing resources noted below.
Institute for Healthcare Improvement ‘Seven spreadly sins’ https://qi.elft.nhs.uk/resource/seven-spreadly-sins/
Institute for Healthcare Improvement Framework for spread https://qi.elft.nhs.uk/resource/a-framework-for-spread-2/
Healthcare Improvement Scotland 2013 Guide on Spread and Sustainability http://www.healthcareimprovementscotland.org/about_us/what_we_do/knowledge_management/knowledge_management_resources/spread_and_sustainability.aspx
NHS Improvement Spread and Adoption Tool - now archived
4. Developing improvement and implementation leader engagement
Research, develop and evaluate evidence-based approaches to support leaders at all levels. E.g. develop and pilot growth-mindset workshops
5. Developing ways of sharing learning
Research, develop and evaluate evidence-based resources, strategies, and techniques for sharing learning
6. Principles and pointers for enhancing the process of scale-up projects
Institute for Healthcare Improvement project roadmap for improvement (need to register and login to view) http://www.ihl.org/resources/Pages/Tools/ImprovementProjectRoadmap.aspx
The National Implementation Research Network Stages of Implementation Analysis Tool (2013). Provides a team with the opportunity to plan for, and assess, using stage-based activities to improve the success of implementation efforts. Helps assess barriers and reflect on past efforts http://implementation.fpg.unc.edu/sites/implementation.fpg.unc.edu/files/NIRN-Education-StagesOfImplementationAnalysisWhereAreWe.pdf
Identify if already exists or develop (a) checklist of signs that a team should pause or stop a project (b) approaches for celebrating success and excellence in improvement and implementation efforts
7. Developing ways to stop, step back and reflect
Identify if already exists or develop a tool, resource or guide to enable people leading implementation and improvement to stop, step back and reflect to inform action in the implementation process. This needs to be practical and user-friendly