

Delivering a national approach to patient flow in Wales

Learning from the 1000 Lives Improvement Patient Flow Programme

Helen Crisp



**The
Health
Foundation**

Acknowledgements

The Health Foundation would like to thank the programme evaluation team at the Centre for Systems Studies at Hull University Business School, which includes Professor Yasmin Merali, Professor Steve Johnson, Dr Richa Joshi, Huw Jones, Dr Duncan Ross, Ian Mills and Darren Hornby.

We would also like to thank 1000 Lives Improvement and the six local health boards in Wales that participated in the Patient Flow Programme for their cooperation and support during the evaluation.

About the author

Helen Crisp was Assistant Director of Research at the Health Foundation until April 2017. During her 8 years at the Foundation she managed grants for research into patient safety, quality improvement methods and person-centred care, together with developing the Foundation's Improvement Science Fellowship and PhD programmes.

Prior to joining the Foundation, Helen worked in health care accreditation, developing quality standards and assessment processes for mental health services, hospices, care homes and acute hospitals. She has worked as a consultant on: national and international improvement programmes for professional associations in the UK; quality accreditation of health services in Denmark; and health care improvement programmes with the ministries of health in Serbia, Bosnia Herzegovina, Kosovo and Albania.

Helen is now a freelance consultant working in quality improvement in health care as a writer, editor, programme developer and trainer.

Contents

Foreword	2
Executive summary	3
Introduction	7
The national context	9
Pressures on the health and social care system	9
The national response to system pressures	10
The concept of flow in health care	11
Tackling bottlenecks and delays	11
Learning from other approaches to managing flow in health care	12
The 1000 Lives Improvement Patient Flow Programme in Wales	13
The programme model	13
How the programme was delivered	14
Programme tools and techniques	16
What did the programme achieve?	18
What improvements did the local health board teams report?	18
What lessons can we learn from the programme's implementation?	23
Providing sufficient resources and infrastructure to support the programme	23
Requirements for a collaborative model	24
Leadership, communication and accountability	25
Technical expertise to support data analysis and interpretation	26
Conclusion	27
Appendix: Projects submitting information to the evaluation study	30
References	32

Foreword

Flow through hospitals is essential to providing good patient care. Patient experience, staff experience and standards of care are impacted when flow stops. Managing unscheduled care is a key part of the health care system; it can have a significant impact on health outcomes and can absorb large amounts of staff time – time that could otherwise be devoted to improving other parts of the health care system.

NHS Wales organisations wanted to improve flow using knowledge from systems and experience in England and elsewhere. They developed a patient flow improvement programme and sought support from the Health Foundation and Hull University to evaluate the work.

In this summary of the full evaluation report, you will see examples of where the programme was successful but also where it failed to create the improvements hoped for. This report aims to ensure that we learn from success as well as failure for the benefit of future efforts to improve health care systems.

Dr Aidan Fowler

Director of NHS Quality Improvement and Patient Safety, Director of 1000 Lives Improvement Service, Public Health Wales

Executive summary

The NHS in Wales is facing increasing pressure on its services due to an ageing population, a growing number of people with one or more long-term conditions, and significant funding constraints. Unscheduled hospital care for people who could be cared for in the community adds to stresses on the health and social care system. A holistic, systematic approach is needed to tackle these problems as part of a long-term approach to sustainable improvement.

The 1000 Lives Improvement Patient Flow Programme in Wales was inspired by the Health Foundation's Flow Cost Quality programme,¹ which demonstrated significant improvements in patient flow at Sheffield Teaching Hospitals NHS Foundation Trust and South Warwickshire NHS Foundation Trust. To help understand whether this approach could be applied at scale across multiple health care organisations, the Health Foundation agreed to commission an independent evaluation of the Patient Flow Programme.

In Wales, the programme was implemented by the six local health boards (LHBs) that incorporate acute hospitals, with support from the national 1000 Lives Improvement patient flow team and an external consultant. Each LHB appointed a local improvement team to develop and deliver projects to meet the programme's overarching aim – 'to build organisational capability to ensure better flow through the health and care system in NHS Wales for urgent and emergency care patients'.

The programme was delivered through three main activities:

- national learning events, providing expert input and the opportunity for knowledge exchange
- five local workshops at each LHB – two with clinicians to introduce the flow science, one with the executive team to give an overview of the programme, and two with core team members to consider how they might go about diagnosing flow issues and implementing solutions
- online training on the basics of flow management through the Foundations of improvement science in healthcare (FISH) distance learning course.

By June 2015 there were 45 improvement projects across the six LHBs, focused on different segments of the patient pathway, from unscheduled admission to discharge. The independent programme evaluation, commissioned by the Health Foundation, took place between September 2014 and June 2016. An evaluation team led by Professor Yasmin Merali and Professor Steve Johnson (Centre for System Studies, Hull University Business School) worked with the LHB improvement teams to understand the range of projects they had undertaken, the results they achieved and the challenges they encountered.

What did the programme achieve?

The programme resulted in some pockets of improvement. Based on information reported by 20 of the 45 projects carried out, there were improvements in pharmacy processes, chemotherapy processes, discharge transport, mental health capacity assessments, reduced waits in the emergency department, and reduced length of stay in the stroke rehabilitation centre. The most sustained improvement was achieved in the LHB that had a pre-existing whole-system approach to analysing and acting on blocks to patient flow, rather than adopting the approaches advocated through the 1000 Lives programme. One of the most popular aspects of the programme was the Big Room concept – a space designated for collaborative working. Progress was discussed at weekly meetings to explore the issues, with charts, project plans and data put up on the walls of the Big Room. This succeeded in integrating perspectives across professional and organisational boundaries and cutting through hierarchies.

Overall, however, the programme results fell short of what was hoped for. While some of the projects are ongoing and are now embedded – and there has been some replication in new areas of interventions that demonstrated improvement – activities are still not being implemented at the scale and pace originally envisaged.

What were the main challenges?

The approach adopted in Wales had significant differences from the work in Sheffield and South Warwickshire, where efforts were focused on end-to-end patient pathways, with strong engagement from senior leadership and clear links to the trusts' organisational strategies. The evaluation in Wales found that many of the projects were not clearly aligned with the strategic objectives of the LHBs. This meant it was difficult to secure the necessary support from management at every level – from board directors to service and team managers – in order to deliver sustained results.

While the programme provided a framework for staff to identify sources of delays and inefficiencies, these were then addressed through local improvement projects rather than by addressing system-wide patient flow. The 1000 Lives support team was itself severely under-resourced and unable to synchronise the delivery of adequate, timely support across the six participating LHBs.

One major constraint was low take-up of the FISH online training programme. Fewer than half (approximately 46%) of those registered completed the training but this rate varied widely across the LHBs. Few staff had protected work time to undertake the FISH training modules (which were only available online) or, indeed, easy access to a computer; many staff had already completed the national Improving Quality Together training, so could see no added benefit in undertaking FISH modules. Some of the feedback on the FISH training was that the vocabulary and mode of delivery impeded understanding of flow concepts.

Another substantial constraint was that none of the LHBs had sufficient capacity and expertise in data collection and analysis to provide ongoing support to clinicians and make sure they had the right information in the right format for effective decision making.

Finally, although the national learning events were attended by teams from all the LHBs, the decision to hold all of those events in Cardiff meant it was problematic for teams based in North Wales to attend. Overall feedback on these events was that, while they were interesting, the presentations crowded out time for collaborative work.

Key lessons

- There was a mismatch between the programme's ambitions and its design, timescale and resources. A 2-year timescale was not sufficient to achieve change at health and social care system level.
- The lack of formal communication flows across central and local levels of management meant there was no structured monitoring or progress reporting at the national programme level.
- Changes in personnel, at every level in the organisations involved, made continuity of implementation challenging.
- The programme and technical support available was not tailored or sufficiently responsive to the differing levels of resource and experience in each LHB. There was no provision made for using the knowledge and learning of staff who had participated in other process improvement programmes.
- There was insufficient capacity for the high quality data collection and analysis necessary to support organisation-wide approaches to flow.
- The reliance on online training, which was focused on instruction and delivery of codified information, was misplaced; it afforded few opportunities for generative learning and supporting and nurturing knowledge gained through practice.
- Successful implementation of a breakthrough collaborative model* needs to be based on local commitment from the health care teams involved.
- Shared learning events need to be structured to allow time for knowledge exchange.

More broadly, the programme highlighted some lessons for programmes that aim to improve patient flow to reduce waste, increase efficiency and improve patient experience:

- End-to-end design is essential to avoid a series of fragmented projects that are unlikely to achieve the desired improvements along patient pathways.
- Technical support is a key factor in enabling staff to successfully implement technical approaches to managing flow.
- Simulation and modelling approaches (as advocated in literature reviewed by the evaluation team at the Centre for Systems Studies at Hull University Business School) can help identify fluctuations in demand and to design end-to-end process flow.
- Information specialists have a critical role to play in supporting organisation-wide change programmes.

* A model, developed by the Institute for Healthcare Improvement, in which organisations commit to work closely together on an agreed quality issue, coming together to receive expert input and share learning.

To achieve sustainable improvement, organisations need to have the infrastructure in place for continuous process improvement. Where teams come together for a project and are then disbanded, as happened in several of the LHBs, it is hard for gains to be sustained. Finally, unscheduled care needs to be considered across organisational boundaries – from pre-hospital care to the point of unscheduled entry, through diagnosis and treatment to discharge – considering all aspects of blockage, delay and disruption of flow.

Introduction

This learning report summarises an independent evaluation of the 1000 Lives Improvement Patient Flow Programme, which was implemented by six local health boards (LHBs) in Wales between June 2013 and July 2015.² The programme aimed to improve systems to manage the flow of unscheduled care patients – both to improve the patient experience and to ease pressure on services. The programme evaluation was commissioned by the Health Foundation in order to generate learning for health and social care system leaders, and improvement teams across the UK, working at the front line to enhance flow on a system-wide basis. It was led by Professor Yasmin Merali and Professor Steve Johnson of Hull University Business School’s Centre for System Studies. The full evaluation report is available on request.*

The programme in Wales was inspired by the Health Foundation’s Flow Cost Quality programme (2010–12),¹ which enabled two NHS trusts in England (Sheffield Teaching Hospitals NHS Foundation Trust and South Warwickshire NHS Foundation Trust) to improve flow along their urgent and emergency care pathways. Their work led to significant and sustained reductions in emergency length of stay, bed occupancy and readmissions, while improving patient safety and the patient experience. The programme was also launched at a time when policymakers and practice leaders right across the UK were making the connection between patient flow and service quality and productivity, and were putting in place measures to improve flow (see the section on learning from other approaches to managing flow in health care).

Box 1: Structure of the health and social care system in Wales

In Wales, responsibility for planning, designing and securing the delivery of primary, community, hospital and specialised services lies with local health boards (LHBs), although one of them, Powys, does not oversee a district general hospital.

There are also three NHS trusts covering the whole of Wales. These are the Welsh Ambulance Services Trust, Velindre NHS Trust (which provides specialist cancer care services) and Public Health Wales.

The responsibility for social care rests with the 22 local authorities. There is, however, a statutory requirement for LHBs and local authorities to work collaboratively through formal partnerships. This has allowed for pooled health and social care budgets and integrated plans, although there remain a number of budgetary boundaries.

* For information and the full report contact Professor Yasmin Merali at the University of Hull: y.merali@hull.ac.uk

From September 2014 to June 2016, the Patient Flow Programme evaluation team carried out more than 100 interviews, observed national learning events, carried out site visits to local project teams in the LHBs and undertook an online survey with members of the improvement teams.

The findings presented in this report are based on analysis of the interviews and survey responses, observation data from the researchers, and the results of the projects undertaken as part of the programme, as reported to the evaluation team.

The 1000 Lives programme was launched under the auspices of the Welsh Unscheduled Care Programme. It was implemented in the six LHBs in Wales that have acute hospitals, with support from the 1000 Lives Improvement team (see Box 1). The LHBs appointed local teams (including clinicians, managers and technical staff) to implement the improvement work. Local teams attended national learning events and were responsible for developing and delivering projects to meet the programme's aims.

The national context

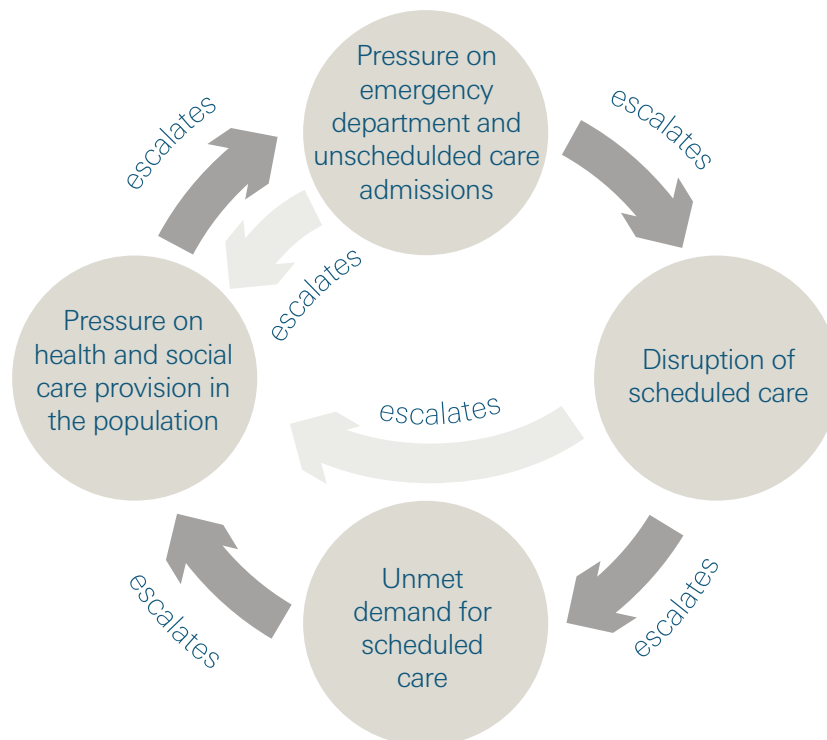
Pressures on the health and social care system

In common with other health care systems, the NHS in Wales is facing increasing pressure on its services due to an ageing population, a growing number of people with one or more long-term conditions, and significant funding constraints.³ There is therefore great interest in system-wide approaches to improving the quality and efficiency of services.

From 2008 to 2014, NHS Wales launched a series of policy initiatives on unscheduled care and set out a direction for improved performance across the health and social care system. Two policies in particular (*Improvement programme for unscheduled care* in 2008 and *Ten high impact steps to transform unscheduled care (USC)* in 2011) recognised the need to take a holistic, systemic approach across health and social care to tackle the issues to achieve sustainable improvements.

These policy imperatives noted the pressures that reinforce a downward spiral of performance. Pressure on emergency departments and unscheduled admissions disrupt scheduled care, which then puts more pressure on health and social care in the community. This, in turn, leads to greater pressure on the emergency department (see Figure 1).

Figure 1: The downward performance spiral



The national response to system pressures

The NHS Wales Unscheduled Care Programme Board had active ministerial support from the Welsh Assembly and oversaw a wide programme of activity, including initiatives to address pressures in out-of-hours care, emergency response services and integrated care. The 1000 Lives Improvement Patient Flow Programme was part of the Support and Intervention work stream, and sought to build on Improving Quality Together – the framework of core quality improvement tools for NHS Wales. The Patient Flow Programme was conceived as a nationwide initiative to improve the flow management of patients coming into hospital systems for unscheduled care and thus to improve the overall efficiency of this part of the care system across Wales.

The programme was designed and delivery supported by 1000 Lives Improvement, part of Public Health Wales, with activities overseen by the Unscheduled Care Steering Board.

The concept of flow in health care

Health system leaders have recognised that improving the flow of patients, information and resources within and between health and social care organisations has a crucial role to play in improving efficiency of services and patients' experience of care.⁴ Research has noted how methods originally developed for production systems in vehicle manufacture and other industries have been adapted to help health care managers understand and improve processes by which patients and other resources move through the health care system.⁵ The research has also highlighted problems with introducing approaches from other industries into health care.^{6,7}

As health and social care services continue to work within constrained budgets, the appeal of an approach that aims to improve efficiency by streamlining existing processes is clear.⁸ While any improvement intervention has an opportunity cost in terms of the staff time and management attention that is required to implement it, improving flow is a particularly attractive strategy. Not only are there recent examples of dramatic improvements that have been achieved without requiring more staff, new equipment or restructuring of services, but improvement initiatives have achieved good results by optimising end-to-end flow through the existing service.

In the Welsh context, concerns about the interlinked pressures between hospital and social care services highlight the importance of flow as patients move from one system to the other. The Patient Flow Programme looked at ways to improve the flow of patients entering the hospital system for unscheduled care, as well as out of the hospital to social care.

Tackling bottlenecks and delays

Flow-related interventions in health care aim to improve efficiency and the patient experience by reducing bottlenecks, waste, delays, and duplication in care processes. Certain flaws are extremely common: long waits for appointment dates (for GPs and acute hospital services alike) and long waits once in the clinic; repeated diagnostic tests; the same information repeated and fed into IT systems that do not link up; and extra days in hospital while the next stage of care is lined up. Such delays prevent people moving through the system and in turn create delays for other patients waiting for care and treatment. Even when a process includes only those tasks that are valuable and necessary, flow can still be disrupted by a mismatch between supply (availability of relevant staff) and demand (the times when patients need the service).

One factor that frequently disrupts a smooth flow is the way that health services batch tasks, including aspects of patient care, so that a certain task is completed at the same time for many patients. This means that patients need to wait until the next batch is ready to be processed. For example, when blood tests are batched a nurse or phlebotomist takes all

the samples at a set time, dictated by work routines rather than when the patient is ready for the sample to be taken. Other common problems include breaks in the flow of information through the system, particularly the lack of shared electronic records for all clinicians. The re-entry of patient details, test results and medication information wastes considerable time and is a major source of errors and duplication.

Approaches to improving patient flow seek to balance demand and capacity, to reduce variation in the way that processes are followed, and to manage care transfers effectively. Using lean tools and techniques developed in other industries, the defining feature of this work is the focus on end-to-end flow through a whole system. While health services have been attempting to implement flow processes for some time, it was noted in the 2005 NHS publication *Improving flow process and systems thinking* that initiatives had tended to focus on single bottlenecks in clinical services.⁹ To maximise impact, the report recommended that future work should consider the flow of patients across departments, organisations and care systems.

Learning from other approaches to managing flow in health care

Prior to the 1000 Lives Improvement programme in Wales, several initiatives to improve flow in health care systems had been implemented – mostly in the US but also in Sweden, Ireland and the UK – with well-documented results. Reported improvements include:

- redesign of the pathway for hip replacement reducing length of stay by 33%, reducing standardised mortality by 50% and suggesting a 42% reduction of paperwork¹⁰
- cost reductions across health care organisations and improvements in unscheduled admission rates¹¹
- improved patient satisfaction, and improved safety and clinical outcomes, as well as a 50% reduction in liability claims.¹²

There was also a range of national flow improvement initiatives taking place elsewhere in the UK around the same time as the Welsh programme. For example, in Scotland, the Whole System Patient Flow Programme, which contains a number of acute focused work streams, was launched in 2013. Delivered in partnership with the Institute for Healthcare Optimization (IHO), this programme draws on IHO variability methodology and ‘classic queuing theory’ to describe and achieve ‘optimal flow’. In England, the Emergency Care Improvement Programme was set up in 2015 to improve patient flow in 40 challenged urgent and emergency care systems. NHS Improvement has also entered a 5-year partnership with the Virginia Mason Institute to support five NHS trusts to develop a culture of continuous improvement.

The 1000 Lives Improvement Patient Flow Programme in Wales

The programme in Wales aimed to use the same flow methodology as that used by the Health Foundation's Flow Cost Quality programme, which was implemented between 2010 and 2012 by South Warwickshire NHS Foundation Trust and Sheffield Teaching Hospitals NHS Foundation Trust.

Under Flow Cost Quality, the senior management teams at South Warwickshire and Sheffield were closely involved in the development of the programme to ensure that it was aligned with their trusts' organisational objectives for improving quality and efficiency around unscheduled care. South Warwickshire worked on the flow of emergency adult patients, while Sheffield focused on pathways in geriatric medicine. By making changes that included rapid assessment, faster turnaround of core processes, use of available data as close to real time as possible and a focus on post-discharge care processes, the two trusts demonstrated measurable impact on length of stay and bed occupancy. These improvements to patient flow enabled more effective use of available capacity in each trust. This sustained change was contingent on managing the relational aspects of change, bringing together key stakeholders to work collectively to identify and address flow constraints.

The programme model

The 1000 Lives Improvement Patient Flow Programme was a nationally led initiative, with sponsorship from the NHS Wales Unscheduled Care Programme Board. The six LHBs with emergency departments joined the collaborative, with the programme nominally led locally by each board's chief executive. The programme was publicised as a breakthrough collaborative. This model was developed by the Institute for Healthcare Improvement (IHI) (see Box 2).

Box 2: The breakthrough collaborative model

The breakthrough collaborative model, developed by the Institute for Healthcare Improvement (IHI), is one in which organisations commit to work closely together on an agreed quality issue. Team members from each organisation then come together to receive expert input and share learning gained during implementation.

The collaborative approach aims to motivate and empower front-line teams by ensuring there are measurable and achievable goals, equipping and supporting teams to deal with any issues that arise through knowledge exchange and coaching.¹³ The collaborative model intersperses shared learning events with action periods when the teams focus on implementing projects within their own organisations.

The 1000 Lives team was responsible for programme delivery, with input from a small group of staff (including the director, deputy director and two senior improvement managers) to support the LHBs. An external consultant (who had led the Flow Cost Quality work with South Warwickshire and Sheffield as part of Flow Cost Quality) designed the programme's patient flow methodology and delivered training to LHB improvement teams at the national and local workshops. These were supported by an online training package – the Foundations of improvement science in healthcare (FISH) – to train team members in the basics of flow management.

The programme had three main components (discussed in more detail later in this chapter):

- national learning events that aimed to provide opportunities for shared learning, knowledge exchange and to nurture the ethos of collaboration
- local workshops led by NHS Wales senior improvement managers and an external expert consultant to introduce the basic concepts of flow and their application in health care
- online training (delivered through the FISH package).

How the programme was delivered

The six LHBs vary considerably in their population density, geography, demographics, and number and size of hospital facilities. In general, the LHBs in South Wales are providing services in densely populated areas, and have some of the larger hospitals. North Wales and Mid Wales are much more sparsely populated. The LHBs in these regions cover large areas and there are long distances between hospitals.

The LHBs had different levels of resource to implement the programme. Each had its own organisational culture and leadership style, as well as a distinct history of involvement in quality improvement work and experience of the various approaches to this. One LHB had a pre-existing programme of work on patient flow, which it continued, rather than adopting the approaches advocated through the national 1000 Lives programme. Support from 1000 Lives was standardised, rather than tailored to the context of individual LHBs.

National learning events

From the start of the programme in December 2013 through to its end in early 2015, there were five national learning events held at 3-month intervals. Expert speakers were invited and LHB teams were encouraged to showcase and receive feedback on their patient flow work. These events were modelled on the IHI breakthrough collaborative model described earlier in this chapter.

All six LHBs sent representatives to the national learning events in Cardiff, although these tended to be project leads and some executive sponsors rather than all staff involved in the improvement teams. Moreover, the time and distance involved in travelling to Cardiff meant that teams from North Wales in particular were disadvantaged and found it difficult to attend all five sessions.

Local workshops

The 1000 Lives Improvement managers ran two workshops with clinicians at each LHB to introduce the basic concepts of flow science and its application in health care. These were originally planned so that one would take place within the first 3 months and the other after 6 months. The external consultant ran a workshop at each LHB with the executive team to give an overview of the programme and flow principles, planned for delivery in the first 4 months of the programme, as well as two training workshops with the core team members at each LHB. The first of these focused on knowledge and tools to diagnose flow issues, and the second focused on implementing flow-related improvement activities.

However, the scheduling of these training workshops was not coordinated with the stage of implementation each LHB had reached. As 1000 Lives had limited staff resource to support the programme, the timings of kick-off and subsequent workshops were not synchronised across the six LHBs. This meant that some sites had a long wait to get their first workshop or a long wait between workshops, which they felt hampered progress. The support model did not allow for variation in delivery between the LHBs. A more flexible approach could have responded to the differing levels of experience among improvement teams already working on flow and those for whom it was a new approach.

Online training

Each LHB was provided with licensed use of the FISH training package for 12 members of their core team (additional licences could be bought as required). (The package had been newly developed to support the Patient Flow Programme as it was rolled out.) The package comprised four modules on the methods for service improvement-by-design, each of which included examples, multiple choice questions and practice exercises on diagnosing flow problems and testing solutions. The online format forced a linear progression through the modules. There was also an option to complete a more advanced online course – Improvement Science Practitioner (ISP). The expectation was that improvement team members would complete the online training modules independently. This was a big ask because few staff had protected time to undertake the training, or easy access to online systems, to enable them do it. Many had to do the training in their own time.

Because of this, there was mixed take up of the package. Overall, approximately 46% of those registered for FISH had completed the training by the end of the 2-year period. Completion rates across LHBs varied widely: in two, completion was in single figures, and the highest number of staff from one LHB completing the course was 69. In addition, many staff had already completed the national Improving Quality Together training programme and were not clear how they would benefit from doing the FISH modules.

Although some staff reported increased awareness of data measurement and analysis, putting the techniques learned through the FISH modules into practice proved challenging.

Action periods

The periods between the collaborative national learning events were designated ‘action periods’ – when each organisation put shared learning into practice to implement patient flow approaches locally. The first task for LHB improvement teams was to identify the priority patient flow issues in their area, then select areas for improvement that would benefit from the application of flow techniques. LHBs did this in different ways. Some identified these through patient stories that highlighted the impact of delays and poor flow. While this had the advantage of securing local ownership and motivating staff to improve the patient experience, it led to projects that targeted specific aspects of departmental service delivery, rather than working on flow issues along the whole patient pathway.

Other LHBs chose areas in which they were already doing improvement work around patient flow. In some cases, projects were driven by committed people who had identified key areas for improvement and used the programme as a way to spur greater local action. Again, this had the advantage of securing local ownership, benefiting from existing knowledge of an area that needed improvement. In these cases, the LHB improvement team used tools and techniques from the programme that fitted with their existing improvement effort, but the team did not adopt those aspects of the programme that they perceived as a distraction from local priorities.

Programme tools and techniques

The methodology included setting up a Big Room at each LHB as the space for collaborative working. All the patient flow information was put up on the walls and the team came together each week to discuss flow issues, monitor progress and plan further action. The Big Room approach aimed to overcome professional hierarchies and silos, so that teams could develop a coherent, collaborative approach to improving patient flow. All the LHBs adopted the Big Room and feedback from staff was very positive overall. However, apart from core team members, attendance at weekly meetings was inconsistent. It was hard to get other stakeholders such as GPs, social services and the ambulance service to attend regularly. Attendance from the extended care team across other organisations happened where good working relationships already existed, either as part of cross-organisational work on flow or general improvement interventions.

Once the project areas had been identified, the teams were encouraged to use the visual management technique of A3 problem-solving charts (see Box 3). The idea was that these would be updated regularly to enable all members of the team to track progress. Although the improvement teams put effort into developing the A3 charts and planning their project solutions in the Big Room meetings, over the 2 years it proved very difficult to maintain sufficient input and update the plans regularly. After 18 months of implementation, very little data was displayed to track progress within each LHB. In fact, few of the charts were updated beyond an initial pilot exercise.

All six LHBs were already familiar with, and using, plan-do-study-act (PDSA) cycles. The involvement of data analysts in the Big Room meetings promoted the focus on measurement, with access to some support to interpret the data.





Box 3: The A3 problem-solving process

The A3 process is a systematic, iterative and participatory approach to analysing a problem and developing solutions. It is based on discussion and collaboration among a group of stakeholders and encourages them to work together to 'see' and understand a problem, and track the changes made to solve it. The A3 is a process, not a plan, and can't be written by one person.

The A3 name comes from the paper size used to capture all the information concisely – and with visual clarity – on a single sheet. The process has its foundations in Deming's original plan-do-study-act (PDSA) cycle for quality improvement. It starts at 'study' and focuses on really understanding the problem before jumping into ideas for solutions, and has a strong emphasis on facts, data and measurement. It evolved from Toyota's approach to improving its manufacturing process.

As a working document, the A3 record is handwritten in pencil to enable the continual updating required at each iteration. There are many different versions, but most are based on the common features shown in the format in Figure 2.

Figure 2: The A3 chart

<p>Box 1: Issue or problem</p>	<p>Box 4: Current state map (current condition) <i>What is happening currently?</i></p>	<p>Box 7: Improvements required (countermeasures to reach future state) <i>What changes are required?</i></p>
<p>Box 2: Background <i>How has the problem come to light?</i> <i>How important is it to:</i></p> <ul style="list-style-type: none"> • businesses • customers • suppliers? 	<p>Box 5: Analysis - data <i>Why are these problems happening now?</i></p>	<p>Box 8: Weekly review meetings <i>What change By who By when State of completeness</i></p>
<p>Box 3: Stakeholders <i>Who is affected by this problem?</i> <i>Who is involved in the process?</i></p>	<p>Box 6: Future state map (target condition) <i>What would the process look like if all the waste was eliminated?</i></p>	<p>Box 9: Measuring for improvement</p>  <p>Time  Cost </p> <p>Quality </p> <p>Target conditions achieved by: Date Condition Signed off by</p>

What did the programme achieve?

By June 2015 there were 45 improvement projects across the six LHBs, focused on different segments of the patient pathway, from unscheduled admission to discharge. One LHB concentrated on the flow pathway for a single condition (the stroke pathway, particularly flow from the stroke rehabilitation centre, with transfer to the ward or discharge).

Other LHBs implemented multiple projects spread across the areas making up the unscheduled care pathway. More than a third of these focused on emergency department attendances but only four took account of the pre-hospital pathway. Of the other two-thirds, most focused on flow across therapies, through wards and discharge, while seven addressed linkages with diagnostic departments and pharmacy. These disparate projects were not aligned to form one linked programme for the unscheduled care patient pathway across each LHB.

One LHB had started working on patient flow across its services prior to the 1000 Lives programme and so continued with the pre-existing initiative. This was led by senior managers and took a whole-system strategic approach, from pre-hospital assessment through to discharge.

What improvements did the local health board teams report?

The reports and data from the LHB project teams suggest that many pockets of improvement were achieved through their work under the programme. The efforts of the local improvement teams and champions led to measurable improvements in performance in many of the areas tackled. Of the 45 projects, 20 reported impact at the end of the programme and provided data for the evaluation team. There may have been other projects that achieved improvements during the lifetime of the programme but no data was reported to the evaluation team.

Of the 20 that did provide information, 10 projects achieved results with no additional resources, and 7 of the 20 did so without needing reorganisation or process changes. Improvements were reported in areas such as pharmacy, chemotherapy, discharge transport, mental health assessment, reduced waits in the emergency department, and reduced length of stay in the stroke rehabilitation centre (see Table 1 for a summary of selected projects and Appendix 1 for a full list of projects submitting information to the evaluation).

The most sustained improvement was achieved across the LHB that had continued its pre-existing whole-system approach to analysing and acting on blocks to patient flow. The flow work at this LHB was clearly linked to the organisation's broader strategic objectives and thus had management support from senior executives, which helped ensure that the improvements were sustained. The LHB did participate in the national learning events and adopted the Big Room approach to help coordinate and communicate the work. Patient flow was improved in several key areas that were embedded across hospital care and, since the end of the 1000 Lives Improvement programme, improvements have extended to community services across the LHB area.

Table 1: Selection of projects that reported improvement to the evaluation team

Project focus	Minor trauma patient flow in emergency department		
Improvement aim	<ul style="list-style-type: none"> To improve flow for patients in the minor trauma stream, subject to delays in care due to focus on rapid assessment and treatment of patients in the major trauma stream. 		
Flow issues identified	<ul style="list-style-type: none"> Long waits before treatment and/or x-ray, with insufficient staffing to carry out initial assessment once identified as 'minor'. Mapping activity and demand enabled a better understanding of the flow of attendances, discharges and work in progress in the department. Analysis of 4-hour breaches identified this as a serious issue outside of regular hours (09.00–17.00). At busy times patients in the major trauma stream take precedence as staff resources for minor trauma are diverted to majors. 		
Improvement actions	<ul style="list-style-type: none"> An extra band 5 nurse was employed on the minor trauma staff team. 		
Reported performance impact	<ul style="list-style-type: none"> The number of breaches of 4-hour waits in the minor trauma stream was effectively halved. Project data show this was maintained for more than 6 months after the change was introduced. There were fewer verbal complaints from patients about long waits Reducing the number of 4-hour breaches and fewer verbal complaints contributed to improved staff morale. 		
Resources added?	Yes	Process change?	Yes
Project focus	Improvement in medicines reconciliation in pharmacy services		
Improvement aim	<ul style="list-style-type: none"> To reduce delays in the process of medicines reconciliation and ensure completion within 24 hours of admission. 		
Flow issues identified	<ul style="list-style-type: none"> Substantial variation in how the medicines reconciliation process was undertaken. Build-up of admitted patients needing medicines reconciliation over the weekend, leading to long delays in the early part of the week. Failure to recognise medicine-related admissions in a timely way. Delay in medicines reconciliation is also a cause of drug reactions while in hospital. 		
Improvement actions	<ul style="list-style-type: none"> Two pharmacists worked additional shifts from 08.00 to 17.00 on Saturdays, to undertake medicines reconciliation for admitted patients. 		
Reported performance impact	<ul style="list-style-type: none"> The delay from admission to completion of medicines reconciliation was halved. This was reported to contribute to a reduction in average length of stay for patients admitted on a Saturday, from 13.3 days to 10 days. 		
Resources added?	Yes	Process change?	No

Project focus	Improved flow to achieve timely transfer of patients from critical care		
Improvement aim	<ul style="list-style-type: none"> To transfer patients ready to move from critical care unit to ward within target time of 4 hours. 		
Flow issues identified	<ul style="list-style-type: none"> Delay in getting patients who need critical care beds admitted to the unit. Patients ready to transfer to ward not discharged in a timely way. Large proportion of critical care doctors and nurses, bed managers and ward nursing staff not aware of the 4-hour target. 		
Improvement actions	<ul style="list-style-type: none"> Raising awareness of 4-hour target among relevant staff through education and information. Daily site meetings, with all relevant team leaders required to attend. Communication channels mapped and content reviewed to ensure that critical care staff, bed management and ward staff all receive up-to-date information on the daily situation. 		
Reported performance impact	<ul style="list-style-type: none"> Patients being discharged within 1 hour of bed allocation. Patients discharged or transferred within 4-hour target. All critical care staff fully aware of the 4-hour target. Timely feedback from team leaders on bed status so staff aware of potential escalation. Bed availability declared and allocated in a timely way through engagement with bed management staff. 		
Resources added?	No	Process change?	Yes
Project focus	Improved awareness of community resources team to facilitate appropriate use of the service		
Improvement aim	<ul style="list-style-type: none"> To facilitate timely discharge from the emergency department and emergency admissions unit through use of the community resources team (CRT). 		
Flow issues identified	<ul style="list-style-type: none"> Lack of awareness among emergency department staff of the role of the CRT. Lack of awareness among emergency department staff of CRT weekend working hours. Poor information flow from nurse practitioners in emergency department to the CRT. Incomplete data collection to support discharge process. 		
Improvement actions	<ul style="list-style-type: none"> Precise information on the role of the CRT circulated to all relevant staff, including placing posters in work areas. Process flow chart developed by the CRT and emergency department staff to clarify the CRT role and communication flows. Education sessions for emergency department staff on the CRT role. Shadowing undertaken by staff to understand each team's roles and processes. Change to communication flow: CRT directly contact nurse practitioners on weekend mornings to identify potential discharges. New data collection template designed to gather all information needed for discharge process. Shared database set up, accessible by CRT and emergency department staff, to provide accurate information to support discharge. Increased involvement of the care transfer coordinator in Big Room meetings. 		
Reported performance impact	<ul style="list-style-type: none"> Emergency admissions unit discharges increased. CRT presence and services used to support discharges from emergency department. Increase in appropriate referrals to the CRT. Improved working relationships between staff teams/ departments. Increased awareness of numbers of patients awaiting discharge. Increased awareness of hospital bed status and escalation triggers. Average number of patients awaiting transfer reduced from 12 to 2. 		
Resources added?	No	Process change?	Yes

Project focus		Improvements to the stroke care pathway	
Improvement aim		<ul style="list-style-type: none"> To reduce delays in discharge of patients with complex needs from the stroke rehabilitation centre to a care home. 	
Flow issues identified		<ul style="list-style-type: none"> Lack of staff time to undertake the unified assessment process that drives discharge. Variation in completion of the unified assessment process. 	
Improvement actions		<ul style="list-style-type: none"> New staff role created to coordinate completion of unified assessments. Monitor the time taken for each stage of assessment. Sample assessments monitored to identify variation. Assessment process streamlined to remove unnecessary steps. 	
Reported performance impact		<ul style="list-style-type: none"> Reduced length of stay in the stroke rehabilitation centre. 	
Resources added?	Yes	Process change?	Yes
Project focus		Improvement in mental capacity assessment	
Improvement aim		<ul style="list-style-type: none"> To improve the implementation of the mental capacity assessment process to reduce delays in discharge and improve coordination of care. 	
Flow issues identified		<ul style="list-style-type: none"> Mental capacity assessment process not consistently followed. Lack of confidence in robustness of assessments leading to delays in decision making while information checked and re-collected. 	
Improvement actions		<ul style="list-style-type: none"> Mental health capacity lead officer role created to lead on assessments. Support provided to other staff (2 days per week). Training for completing mental capacity assessments implemented. 	
Reported performance impact		<ul style="list-style-type: none"> Staff skills enhanced, leading to greater confidence in carrying out mental capacity assessments. Contributed to decrease in length of stay by an average of 10 days. Average time from establishing the need for a mental capacity assessment to organising a 'best interest' meeting for the patient reduced by 6 days on average. Greater confidence in accuracy and completeness of mental capacity assessments reduced the number of patients needing a best interest meeting. Improvement rolled out across the local health board (LHB) area. 	
Resources added?	Yes	Process change?	No

Project focus	Improved flow into emergency department and back to community		
Improvement aim	<ul style="list-style-type: none"> To improve patient flow for emergency care through a whole-system approach to analysing blocks to patient flow and addressing these to speed up flow through the system. 		
Flow issues identified	<ul style="list-style-type: none"> Inappropriate patient care. Patients in the wrong part of the care system. Delayed assessment. Prolonged stay in hospital over 20 days. Lack of focus on discharge. Lack of system-wide ownership for timely care processes. Delays in many care processes. 		
Improvement actions	<ul style="list-style-type: none"> Multiple interventions implemented across the system with attention to cultural change, coordination and organisation-wide implementation where appropriate. Organisation-wide escalation review. Development of department escalation triggers and actions. Communication of escalation status. Change in management structure. System-wide engagement of staff. 		
Reported performance impact	<ul style="list-style-type: none"> Reduced delays in handover of patients from ambulance to hospital. Redirecting patients to the minor injury unit instead of accident and emergency, where appropriate. Improved social care support to facilitate timely discharge from hospital. Embedding improvements across hospital care. Extending improvements to community care services across the LHB area. 		
Resources added?	Yes	Process change?	Yes

The programme certainly provided a framework for staff to identify issues where there were delays and inefficiencies. However, in many cases, these were then addressed through fragmented improvement projects, each addressing a specific part of a process to improve local efficiency. In half of the reported projects, additional resources targeted the root of the delay – for example, negotiating additional transport from the British Red Cross to ease pressure on existing patient transport and ambulance services.

In terms of methods, the Big Room was a useful and popular approach, aiding collaboration and bringing staff together across disciplines and departments, enabling people to voice concerns and interact with others who could help to address the issues raised. The Big Room meetings helped project teams to develop solutions with collaboration across departmental and, in some cases, organisational boundaries.

The LHBs have built on the experience gained during the programme. The importance of data, measurement and analysis was recognised, in that improving flow requires information systems that provide meaningful, accurate, timely data that is readily available to improvement teams. This has led to some investment within the LHBs to increase data analysis capabilities. Some of the programme projects are now embedded and continue to run. There has been some replication in new areas of interventions that demonstrated improvement, but this has not been at the scale and pace that the national programme aspired to achieve.

What lessons can we learn from the programme's implementation?

Providing sufficient resources and infrastructure to support the programme

The evaluation findings indicate that the design of the 1000 Lives Improvement Patient Flow Programme was misaligned with the hoped-for results. To deliver the programme aim of national improvement across the health and social care system, and to significantly reduce the strain on unscheduled care services and the distress of people receiving an unsatisfactory service, would have required a different magnitude of resources in terms of the time, staffing and tailored support provided.

Timescale: The programme's 2-year timescale was not sufficient to address systemic issues and build the trust and collaborative relationships needed across organisational boundaries to implement joint improvement work. In this respect, it did not take account of the many studies and reports that emphasise the long-term nature of such work.

Staffing: The staff resources for delivery of the 1000 Lives programme – two senior improvement managers with support from senior staff – were insufficient to provide ongoing and responsive support across the six LHBs. It was roughly equivalent to the level of resource used to deliver the original Flow Cost Quality programme in England, which involved just two NHS trusts. The improvement managers and the expert consultant struggled to get to all the LHB improvement teams in a timely manner to deliver the workshops as scheduled. This was exacerbated by difficulties within the LHBs in getting all the right people together for each session. This resulted in delays in implementation and meant that improvement teams were left to their own devices for large stretches of time.

Tailored support: The standardised support (including the workshops) delivered to the six LHBs did not allow for any adaptation to take account of the local context of the LHBs (particularly their varied size and scope), or of the staff and other resources each was able to commit to the programme. The LHBs also varied in their levels of experience of improvement work and the extent to which the organisation was already focusing on improvement.

Online training: 1000 Lives used online training (FISH) to familiarise staff in LHB improvement teams with the principles of flow techniques. A major change in the method of delivery from the initial work in England was the introduction of online training to cover the principles of flow techniques. Improvement team members' responses to the evaluation indicated they found the online-only approach problematic, while the linear way in which modules had to be undertaken was inflexible and did not cater for those who already had some knowledge of improvement (from having done the national Improving Quality Together training) or experience in flow management.

For many staff, the FISH modules did not meet their training needs on technical aspects of flow management. While online training offers many benefits, it does not suit everybody. In the context of the NHS, where few staff have protected time for training or easy access to online systems, it meant that many staff had to do the training in their own time. Comments suggest that a blended learning approach would be more suitable for training on technical aspects of patient flow, combining some online work with more traditional classroom or face-to-face learning and coaching. Although many staff did complete some or all of the FISH online modules, there was little evidence that they were able to use simulation, forecasting and planning methods to identify fluctuations in demand and design end-to-end process flow in their improvement work.

Requirements for a collaborative model

The 1000 Lives programme design was influenced by the IHI's breakthrough collaborative model, but in practice implementation departed from the model in significant ways. A key difference was that this programme was pitched at LHB level. Research evidence suggests that the collaborative model seems to work best when it is applied at the level of the clinical team, who make their own decision to join.¹⁴

Opportunities for shared learning: Although the IHI model stresses the importance of shared learning, exploration of issues and collaborative experimentation with solutions,¹⁵ the collaborative learning events did not include sufficient time for learning exchange between LHB teams. There was also no formal infrastructure that encouraged networking, advice or discussion among LHB improvement teams outside of the national learning events. This seems easier to achieve when teams have strong connections with the work in other organisations, when they can identify peer professionals and when there is a sense that they are working on very similar projects. For example, this was seen to work very effectively in the Michigan Keystone project, to reduce central line infection rates.¹⁶

Lack of a programmatic approach: The LHBs and the programme improvement teams were all working on different projects to tackle patient flow. This meant there was little motivation to exchange ideas and learning derived during implementation. The initiative was labelled a programme but the design and method of delivery was not programmatic – that is, it did not have clear objectives on how the LHBs would tackle flow issues. Although the improvement methods for implementation were set out and training was provided on these, the programme did not identify specific aspects of patient flow for LHBs to focus on. The timeline for the programme set out milestones for delivery of support components but not milestones for delivery of flow interventions.

The need for central coordination: While it was important for each LHB to adapt the approach to respond to priority issues in its own area, there was a lack of central coordination of the programme. Each improvement team came up with its own issues and then decided how to tackle them. The programme did not facilitate a joint analysis – involving all the LHB teams – of the issues around unscheduled care, which could have determined common factors. Had these been identified, there would have been an opportunity to agree some key programme actions and approaches, which could then have been adapted and customised to local circumstances.

Working at the system-wide level: The 1000 Lives programme design did not take account of research evidence on the importance of working on flow at a system-wide level, across organisations and professions, taking account of end-to-end flow along the patient pathway.¹¹ Improvement teams were charged with identifying and selecting areas for improvement. While this meant that there was local ownership and commitment to the work, the opportunity was missed to try to tackle flow along the whole unscheduled care pathway, across the LHB patch. Improvement team members came to the Big Room meetings with ideas based on their own perspective of a part of the patient pathway where there was a bottleneck or an inefficient process, and a project was then agreed to tackle those specific issues. Projects were developed through iterative processes, using PDSA cycles on small tests of change, with data collected and reported through the Big Room A3 charts (see Box 3 and Figure 2). While many of these projects demonstrated some improvement, the impact on patient flow and reducing the pressure of unscheduled care overall was limited, as almost none of the work was approached from the system perspective. The disparate projects did not align with each other, or with LHB strategic objectives.

Leadership, communication and accountability

The evaluation interviews revealed significant variation in programme engagement and leadership support within each LHB. To be sustained, improvement work needs support from management at all levels of the organisation.¹⁷ The two sites where senior leaders worked directly with the local improvement team had clear lines of communication and accountability.

In other LHBs, the senior teams did not appear to link the work on patient flow with wider strategic and operational plans, even though these included a focus on unscheduled care. There was a lack of clarity around responsibility for leading, reporting on and owning the programme and its local projects.

Mechanisms for two-way communication: The programme design did not include a formal mechanism for two-way communication between LHB teams and the 1000 Lives programme staff, either to monitor progress or provide distance support. There was also a lack of regular, systematic reporting on the programme, tailored to the needs of different stakeholders (improvement teams, LHB executive teams, clinical leads, the Welsh Ambulance Service and the NHS Wales Unscheduled Care Programme Board).

Technical expertise to support data analysis and interpretation

To enable the LHB teams to successfully tackle patient flow issues across the health and social care system, it was essential that they had access to high quality data and the expertise to interpret and act on the data. Most of the teams had some access to IT and expert data analytics support, but it tended to be very limited. Improvement team members were busy managers and clinicians and did not have the high-level data analysis skills needed to interpret performance data and use it to design interventions to improve patient flow (or even to develop appropriate metrics to measure progress).

This deficiency is not unique to NHS Wales; research has shown that the NHS has underestimated the contribution that IT systems and data analytics can make to improving efficiency and quality of care. Yet there remains a chronic shortage across the UK of experienced data analysts in the health service.¹⁸

Conclusion

Common barriers to improvement work

The experience of the 1000 Lives Improvement Patient Flow Programme illustrates many points that have previously been noted in evaluations of improvement interventions.¹⁹ These include the insufficient timescale for such an ambitious programme, the need to build collaborative relationships, and the need to formally test, monitor and track improvements to patient flow at system level, over time. It also illustrates the challenges involved in scaling up an improvement approach whose impact has been influenced, to a large extent, by the relationships, behaviours and ways of working that have been carefully and painstakingly fostered over time between diverse and complex institutions, often working in very different contexts.

The evaluation noted that changes in personnel at every level of the organisations involved hampered progress and made continuity of project work challenging. These changes are a common feature of the NHS and are unlikely to change – improvement programmes need to consider how to maintain continuity of purpose and effort when key people leave the programme.

For a national programme, local ownership of projects needs to be balanced with clear national programme coordination, focused on achieving the overarching goal that is aligned with national policy. While the 1000 Lives Improvement Patient Flow Programme had been conceived in response to national issues and policy priorities, at local level the link to LHBs' strategic plans to tackle unscheduled care was, for the most part, missing.

The LHB that demonstrated significant impact in improving flow had already been working on this prior to the 1000 Lives Improvement programme. The improvement team in this LHB used the training opportunities and resources they felt were helpful but did not allow the new initiative to destabilise the local ownership and commitment that had been steadily gaining momentum. This highlights the importance in any national programme of understanding the context of local sites and building on the improvement activities and behaviours that are valued and already having an impact on performance and outcomes.

Support considerations for scaling up programmes

The implementation support for the programme was under-resourced in comparison to the level of input per hospital trust that was deployed in the Sheffield and South Warwickshire sites. The available resources were thinly spread across the country. Even with sufficient support resources available, these need to be responsive to the individual context of the participating organisations. 1000 Lives Improvement supported the roll out of the programme across six very different LHBs, but the support was delivered through a one-size-fits-all approach that did not take sufficient account of the local context. It is useful for a scaling up programme, covering many participating organisations, to have a minimum level of support per organisation, with additional flexible resources to be deployed as needed.

Understanding the improvement approach

Reproduction of a successful intervention from one setting to another sometimes fails because the superficial aspects of the approach were adopted but not the underlying systems and processes that were responsible for the improvement.²⁰ The adopting organisations need support to understand what was achieved in the original programme and also how it was achieved, together with training on the approach and time to adapt the programme to their own context.

A very thorough analysis is needed to understand the core components and ‘active ingredients’ of the intervention. This will help make clear what should be adapted to the local context and what are the fixed elements, which if modified will result in a significantly different intervention. Research has illustrated the importance of understanding the effect of context when implementing improvement interventions.²¹

To achieve sustainable improvement, organisations need to have infrastructure in place for continuous process improvement. Where teams come together for a project and are then disbanded, as happened in several of the LHBs, it is hard for gains to be sustained as the work does not outlive the project.

Particular lessons for flow approaches in health care

The 1000 Lives Improvement Patient Flow Programme provides important learning for approaches to improve patient flow as a means to reduce waste, increase efficiency and improve patient experience. Unscheduled care needs to be considered at the system level and across organisational boundaries – from pre-hospital care to the point of unscheduled entry, through diagnosis and treatment to discharge – considering all aspects of blockage, delay and disruption of flow. Fragmented projects are unlikely to achieve end-to-end flow along patient pathways.

All improvement work needs to pay sufficient attention to the data and measures that can monitor progress and support continuous improvement. This is vital when trying to improve flow, because success depends on having reliable, near real-time data on capacity, service use and length of stay.

Appendix: Projects submitting information to the evaluation study

LHBs and hospitals	Project name
LHB1 – Hospital A	Minors flow in emergency department project
	Referral of surgical patients from GP via emergency department project
	Occupational therapist project
	Frail elderly unscheduled care flow project
	Nursing assessment project
LHB1 – Hospital B	Maintaining the momentum of medicine project – take home process
	Maintaining the momentum of medicine project – medicines reconciliation
	Frail elderly unscheduled care flow project
	Community resource team project
	Chemotherapy project (Part 1)
LHB1 – Hospital C	Choice policy project
	Family delays project
	Community resource team projects
LHB2 – Hospital A	Sunday Welsh Ambulance Services NHS Trust Emergency Department bypass to Medical Assessment Unit
	Physician response unit project
	Front-of-house clerking optimisation project
	Weekend team working project
	Ward board rounds
	British Red Cross transport home from emergency department
	Elderly frail unit project
	Integrated working at the backdoor project
	Re-template medical beds project
	Radiology referral process mapping, project to reduce time taken for x-ray in the emergency department, e-referral for radiology project
	Symphony print to radiology for emergency department
	Overnight divert project between hospitals, 20.00 to 8.00
	INR referral process project

LHBs and hospitals	Project name
LHB2 – Hospital B	<p>Emergency assessment unit delays project</p> <hr/> <p>Green patients on complex list project</p> <hr/> <p>Critical care delayed transfer of care project</p> <hr/> <p>Community resource team communication project</p> <hr/> <p>Timely discharge pharmacy project</p> <hr/> <p>Timely transport – British Red Cross project</p> <hr/> <p>Emergency assessment unit ward board development project</p>
LHB3	Acute stroke project
LHB4 – Focus on flow project	<p>'Phone First!' and redirection to minor injuries unit</p> <hr/> <p>Phase 1 acute care physicians coverage and ambulatory care – rapid/hot clinics, clinical decision unit/medical decision unit redesign, increase in short-stay surgery beds</p> <hr/> <p>Therapy assessment teams</p> <hr/> <p>Site-based, twice-daily flow meetings, daily deep dive by senior team, daily board rounds, >40 day length-of-stay project, live bed management system, criteria-led discharges, discharge before midday, change in nursing hierarchy for more site-based approach</p> <hr/> <p>Zero tolerance to ambulance delays – offloading ambulances, 'Explorer' pilot project with Welsh Ambulance Services NHS Trust</p> <hr/> <p>Welsh Ambulance Services NHS Trust pathways and operational efficiency measures, local authority preparedness, @home services, robust implementation of choice protocol, nursing homes interventions, GP access group, discharge lounges on district general hospital sites</p>
LHB5 – Hospital A	<p>Introduction of the medicines transcription and e-discharge project (MTed)</p> <hr/> <p>Board rounds project</p> <hr/> <p>Frequent emergency department and acute medical unit/rapid assessment unit re-attendees project</p> <hr/> <p>Point of care testing in emergency department/acute medical unit/surgical assessment unit project</p>
LHB5 – Hospital B	<p>GP medical admissions project</p> <hr/> <p>Board rounds project</p>
LHB6	<p>Discharge letters project</p> <hr/> <p>Mental capacity assessment project</p> <hr/> <p>Front door project</p> <hr/> <p>Advance care planning project</p> <hr/> <p>Stroke improvement meetings</p> <hr/> <p>Community/acute calls project</p>

References

1. Health Foundation. *Improving patient flow: How two trusts focused on flow to improve the quality of care and use available capacity effectively*. 2013. Available from: www.health.org.uk/publication/improving-patient-flow
2. Merali Y, Johnson S, Joshi R, Jones H, Ross D, Mills I, Hornby D. *Evaluation of 1000 Lives Patient Flow Programme*. Centre for Systems Studies, Hull University Business School, 2017.
3. Watt T, Roberts A. *The path to sustainability: Funding projections for the NHS in Wales to 2019/20 and 2030/31*. Health Foundation, 2016. Available from: www.health.org.uk/publication/path-sustainability
4. Fillingham D, Jones B, Pereira P. *The challenge and potential of whole system flow*. Health Foundation, 2016. Available from: www.health.org.uk/publication/challenge-and-potential-whole-system-flow
5. D'Andreanmatteo A, Lega F, Sargiacomo M. Lean in healthcare: A comprehensive review. *Health Policy*. 2015;119:1197–209.
6. Radnor ZJ, Holweg M, Waring J. Lean in healthcare: The unfilled promise? *Social Science & Medicine*. 2012;74:364–71.
7. Kreindler S. Six ways not to improve patient flow: a qualitative study. *BMJ Quality & Safety*. 2017;26:388–94.
8. Silvester KM, Mohammed MA, Harriman P, Girolami A, Downes TW. Timely care for frail older people referred to hospital improves efficiency and reduces mortality without the need for extra resources. *Age and Ageing*. 2014;43:472–77.
9. NHS Institute for Innovation and Improvement. *Improvement leaders' guide: Improving flow process and systems thinking*. NHS Institute for Innovation and Improvement, 2005.
10. Fillingham D. *Lean healthcare: Improving the patient's experience*. Kingsham Press Ltd, 2008.
11. Florida hospital saves \$5.3m by adopting the principles of lean manufacturing. *Performance Improvement Advisor*. 2005;9:10–11.
12. Kenney C. *Transforming health care: Virginia Mason Medical Center's pursuit of the perfect patient experience*. CRC Press, 2011.
13. Institute for Healthcare Improvement. *The breakthrough series: IHI's collaborative model for achieving breakthrough improvement*. IHI, 2003.
14. Health Foundation. *Improvement collaboratives in health care*. 2014. Available from: www.health.org.uk/publication/improvement-collaboratives-health-care
15. Hulscher M, Shouten L, Grol R. *Collaboratives*. Health Foundation, 2009. Available from: www.health.org.uk/sites/health/files/Collaboratives.pdf
16. Christine A, Goeschel CA, Pronovost PJ. *Harnessing the potential of health care collaboratives: Lessons from the Keystone ICU Project*. In Henriksen K, Battles JB, Keyes MA, et al (eds). *Advances in patient safety: New directions and alternative approaches (Vol. 2: Culture and redesign)*. Agency for Healthcare Research and Quality (US), 2008. Available from: www.ncbi.nlm.nih.gov/books/NBK43708
17. Weiner BJ, Alexander JA, Shortell SM. Leadership for quality improvement in health care: Empirical evidence on hospital boards, managers and physicians. *Medical Care Research and Review*. 1996;53(4):397–416.
18. Bardsley M. *Understanding analytic capability in health care: Do we have more data than insight?* Health Foundation, 2016. Available from: www.health.org.uk/publication/understanding-analytical-capability-health-care
19. Dixon-Woods M, McNicol S, Martin G. *Overcoming challenges to improving quality*. Health Foundation, 2012. Available from: www.health.org.uk/publication/overcoming-challenges-improving-quality
20. Dixon-Woods M, Leslie M, Tarrant C, Bion J. *Lining up: How do improvement programmes work?* Health Foundation, 2013. Available from: www.health.org.uk/publication/lining-how-do-improvement-programmes-work
21. Bate P, Robert G, Fulop N, Øvretveit J, Dixon-Woods M. *Perspectives on context*. Health Foundation, 2014. Available from: www.health.org.uk/publication/perspectives-context

The Health Foundation is an independent charity committed to bringing about better health and health care for people in the UK.

Our aim is a healthier population, supported by high quality health care that can be equitably accessed. We learn what works to make people's lives healthier and improve the health care system. From giving grants to those working at the front line to carrying out research and policy analysis, we shine a light on how to make successful change happen.

We make links between the knowledge we gain from working with those delivering health and health care and our research and analysis. Our aspiration is to create a virtuous circle, using what we know works on the ground to inform effective policymaking and vice versa.

We believe good health and health care are key to a flourishing society. Through sharing what we learn, collaborating with others and building people's skills and knowledge, we aim to make a difference and contribute to a healthier population.

The Health Foundation

90 Long Acre, London WC2E 9RA

T +44 (0)20 7257 8000

E info@health.org.uk

🐦 [@HealthFdn](https://twitter.com/HealthFdn)

www.health.org.uk

ISBN: 978-1-911615-00-2

Registered charity number: 286967

Registered company number: 1714937

© 2017 The Health Foundation