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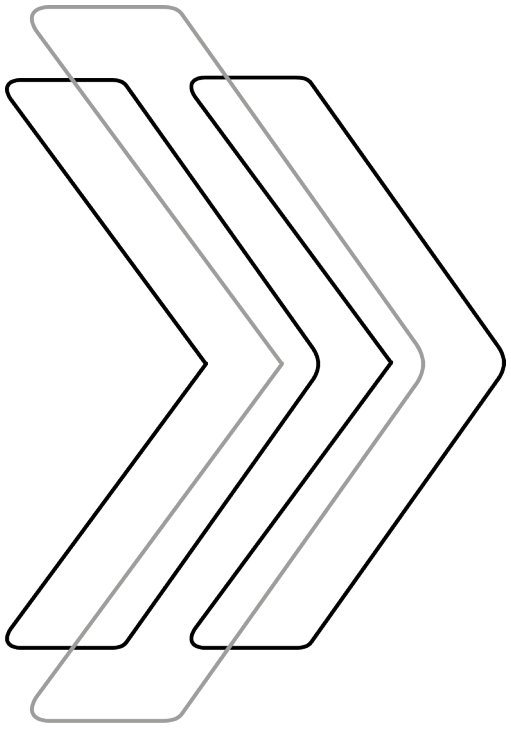
Ideas that change health and care

Innovation and improvement in the Cardiff and Vale health and care system



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The Cardiff and Vale University Health Board commissioned this independent report. The views in the report are those of the author and all conclusions are the author's own.

The King's Fund is an independent charity working to improve health and care in England. We help to shape policy and practice through research and analysis; develop individuals, teams and organisations; promote understanding of the health and social care system; and bring people together to learn, share knowledge and debate. Our vision is that the best possible care is available to all.

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1 Introduction

When the category 5 'Hurricane Katrina' hit the Gulf Coast of the United States (US) in August 2005, the US authorities triggered a well-established set of disaster protocols: establishing centralised decision-making, mobilising the military and parachuting in central teams. Reviews of the US government's response have been almost universally negative. The federal authorities were ill-informed, slow to react and unable to adapt to changes on the ground (Comfort and Haase 2006). Approval processes quickly created bottlenecks, as local teams waited for the central administrators to agree their actions (Takeda and Helms 2006). A command-and-control strategy proved no more effective in co-ordinating effort. One local sheriff directed evacuees over New Orleans' Crescent City Bridge to safety, only for them to be stopped at gunpoint by another sheriff's team, who fired shots in the air to force them back (Harris 2005).

When the potential scale of the Covid-19 pandemic started to become clear in the UK in spring 2020, the leadership of the Cardiff and Vale University Health Board took a different approach. Rather than establishing a tight-knit team, they invited staff across the system to participate in strategic planning. Rather than waiting for direction, senior leaders encouraged frontline staff to start planning the changes they would need to deliver effective services. One group of clinicians started to develop a pathway of care for Covid-19 patients. Others worked on a programme to train staff across services to move into Covid-19 treatment services. And a group of staff highlighted the long-term impact of cancelling cancer operations and commandeered the main private hospital in the area as an elective surgery 'green zone' site (Covid-19 free). These initiatives later informed national guidance on the preferred approach.

In May 2020, The King's Fund highlighted a set of principles from research on disaster response for leadership and management in a crisis. These included the importance of two-way sharing of information, maintaining an 'open tent', avoiding decision-making bottlenecks and giving frontline teams unambiguous freedom to test and apply changes in how they do their work (Collins 2020). Like

some other health systems during the pandemic, this seems to be the approach Cardiff and Vale adopted.

The Cardiff and Vale University Health Board commissioned this report, which describes the Health Board's emerging approach to encouraging, enabling and supporting improvement and innovation, and to spreading effective practices and approaches to delivering services, since the publication of its strategy for transforming care, *Shaping our future wellbeing*, in 2015 (Cardiff and Vale Health Board 2015).

The report is based on interviews with 20 leaders from across the health and care system, including executive and non-executive leaders at the Health Board, senior managers and clinicians, frontline staff delivering services and staff delivering support services. We also spoke to partners from outside the health system, including other public services, the voluntary sector, advisers, contractors and patient representatives. (Where we cite individual interviewees, we have gained their agreement to do so.) The report is the companion to a separate King's Fund report describing the Health Board's approach to leadership and the wider development of its health and care system.

The ability of a complex system to pursue innovation and improvement depends on many factors, including among many others:

- the attitude and approach of senior leaders
- the broader culture of the system
- the degree of connectedness within the system and with external partners
- the tangible and intangible resources that the system can deploy to support innovation.

This report celebrates the progress that staff across Cardiff and Vale have made in putting this infrastructure in place. It also celebrates the astonishing range of successful innovations that staff have delivered, in particular during the extremely testing past 12 months. It does not, however, make any assessment of how the system's performance, including its response to the Covid-19 pandemic, compares to that of other health systems. In the concluding section,

the report makes some suggestions on where the system might prioritise its efforts and potential seams of innovation and improvement in the future.

Overview of the Cardiff and Vale health and care system

The Cardiff and Vale University Health Board is responsible for overseeing and delivering public health care services for a population of around half a million people in Cardiff and the Vale of Glamorgan in Wales. The Health Board manages an annual budget of around £1 billion as well as overseeing capital investment in health services. It delivers the following services:

- the University Hospital of Wales, a major 1,000-bed teaching hospital in Cardiff
- the University Hospital of Llandough, a district general hospital with around 500 beds in Penarth
- the Noah's Ark Children's Hospital for Wales, a specialist children's hospital with around 200 beds in Cardiff
- eight hospitals delivering community, mental health and dental services
- 14 health centres delivering a wide range of community-based care, including screening, diagnostics, paediatrics and support for people with long-term conditions
- district nursing, acute response and other services delivered within people's homes.

The Health Board also commissions and oversees primary care services from 60 GP practices, 107 community pharmacies, 70 NHS dentists and 66 optometric practices.

2 Senior leadership support for innovation

In our discussions with Len Richards, the chief executive of the Cardiff and Vale University Health Board, we talked in detail about the range of innovation projects across the system. Len described how frontline staff had developed new models of partnership between physiotherapists, mental health practitioners and primary care, which have now been established across the primary care system . Charles Janczewski, the chair of the Health Board, focused on new cluster models and innovation in hospital services during the Covid-19 pandemic. Other executive leaders highlighted innovative practices in mental health and community services, as well as the infrastructure being established to support innovation.

Other staff described a senior leadership team that was now firmly committed to system-wide innovation as the primary mechanism for improving care and managing costs. Rachel Gidman, an assistant director of organisation development at the Health Board, described a shift in what senior leaders were talking about in recent years: 'In the past, it was very target oriented and focused on the money. Now senior leaders are talking a lot more about innovation, as well as staff welfare and patient experience.' Karen Pardy, a GP leader, also described a cultural shift in favour of system working for improvement: 'It's impossible to over-estimate Len's impact on the culture. In the past, we [primary care] were never invited. Now we are active partners in improvement.'

Based on our interviews, we can point to a number of important roles that senior leaders in Cardiff and Vale are playing to support innovation and improvement:

- helping to direct staff attention to innovation and improvement
- helping to create a receptive environment for change
- giving staff permission and encouragement to innovate

- acting as champions for individual innovation projects
- providing resources
- helping to overcome obstacles.

Senior leaders told a common set of stories about successful innovation in the system, in particular celebrating examples of frontline staff making changes without waiting for permission or approval. These leaders have also made significant investments in infrastructure to support innovation and improvement.

It might seem self-evident that senior health care leaders should play the roles outlined here. However, our research has highlighted that this is not systematically the case (Collins 2018). Similarly, Mary Dixon-Woods' and Michael West's research on the leadership of NHS trusts in England in the mid-2010s found that boards spent almost no time discussing patient-centred innovation or improvement, focusing instead on immediate operational challenges, performance targets and financial concerns (Dixon-Woods *et al* 2014). Over the past few years, there appears to have been a revolution in senior leadership thinking in Cardiff and Vale on the importance of innovation as a solution to the operational and financial challenges of the health system, similar to the rethinking that took place in Canterbury, New Zealand and Jönköping, Sweden in the 2000s.

Transforming access to urgent care

Early in the Covid-19 pandemic, it became clear that Cardiff and Vale would need to make significant changes to how it delivered urgent care. It was no longer possible for people to queue in crowded emergency department waiting rooms. Instead, staff needed to decide who could be treated virtually and bring in people who needed face-to-face services in a safe, managed way.

Haydn Mayo, a senior Cardiff GP, brought together clinicians from across primary care and hospital services to devise a new 'phone first' access route into urgent care – CAV 24/7. As he explained, 'we didn't start the project by developing a hundred-page business case. Neither did we try to devise a

perfect model on paper.' Instead, the broad approach was to define the problem, agree general principles for the preferred approach, put in place a new way of doing things quickly, and test and refine the approach from then onwards.

Under the new arrangements, people are encouraged to call the CAV 24/7 number rather than walking into accident and emergency. People who call the number receive an initial assessment followed by a clinical triage assessment. If they need to attend an emergency department or minor injuries unit, the CAV 24/7 clinicians book a scheduled appointment with the right service.

Abigail Harris, the executive director of strategic planning at the Health Board, described aspects of how the new system works:

> *If you think your child has a fractured wrist, you call the number and are triaged quickly through to a clinician who makes a decision whether it is best to go to your GP practice in the morning, whether to book in an emergency department appointment, or whether [to] provide pain relief and book in an X-ray the next day.*

Haydn Mayo explained some of the challenges staff faced as they got the system up and running:

> *You might be triaging an older person with head injuries who is taking warfarin. Do they need to come in immediately for a CT [computerised tomography] scan or can they avoid waiting in the emergency department and be streamed to an appointment in radiology the following morning?'*
>
> *One key feature of the system is that clinicians on the CAV 24/7 can connect directly with urgent care consultants to discuss these types of cases.*

The project team first started writing ideas on a white board in May 2020. They launched the new service nine weeks later in August 2020. The service has received an average of 207 calls a day since it started, with 64 per cent of patients being booked in to a scheduled appointment at the emergency department or minor injuries unit. The team is now planning a strategy to encourage younger people who still walk into emergency departments to use the service.

3 Developing the system's innovation capabilities

Another striking feature of the development of the system over recent years has been a set of changes designed to increase the system's innovation capabilities. These include the skills, perspectives, partners and networks that the system can draw on to identify and implement new ways of doing things.

One strand in this strategy has been to bring in senior staff with unusual skill sets and experiences to complement existing staff. These include senior staff with experience of supporting innovation and improvement in international health systems, senior staff with expertise in international development and leaders from banking, steel and other industries. We know from a broad range of research across industries that creating more diverse senior leadership can help to stimulate innovation, provided this is combined with collaborative processes that allow different voices to be heard, precisely because people from outside the system see the problems and opportunities in slightly different ways (Hamel 1996).

Another strand has been a concerted effort to broaden Cardiff and Vale's health system's connections with local and international partners. Within Cardiff and Vale, these include closer partnerships with local authorities, voluntary sector organisations such as Action for Mental Health and the housing association Hafod, Life Sciences Hub Wales and Cardiff University. Beyond Cardiff and Vale, they include a strategic partnership with the Canterbury District Health Board in New Zealand (discussed below), , joint work with Health Innovation Manchester and links to academic institutes and think tanks. Jonathon Gray, the Director of Innovation and Improvement, has played a key role in developing new international partnerships, including with the Billions Institute in the US and the Singapore health system. Again, research highlights the importance of these connections with external partners as a source of inspiration and creativity (Greenhalgh 2005).

Other activities within the health system have aimed to identify and harness the power of opinion leaders, champions and change agents and broker new partnerships between staff across the system to support innovation. Before the Covid-19 pandemic, the Health Board brought together 80 leaders to develop plans for service change as part of its Amplify project. Leaders specifically focused on selecting participants who were connectors and influencers rather than simply hierarchical leaders in the system. Amplify and other initiatives such as the Cardiff and Vale Convention (discussed below) aim to bring together people who might not otherwise spend time together, but whose interactions might lead to 'lightbulb moments' where they see opportunities to serve their communities differently.

The Health Board needed to pause some of these projects when the Covid-19 pandemic hit. The plan for the future is to use programmes such as Amplify and the Convention to enlist a growing body of enthusiasts for innovation and deepen connections across the system, including through engaging with people who might not normally participate in these sorts of activities. Another priority is to broaden engagement with younger leaders and the community in innovation and service transformation.

Partnership with Canterbury District Health Board, New Zealand

Soon after Len Richards became chief executive of the Cardiff and Vale University Health Board in 2017, Cardiff and Vale established a strategic learning partnership with the Canterbury District Health Board in New Zealand. At the time, Cardiff and Vale had developed a coherent strategy but was struggling to put it into action. As Len Richards explained: 'I needed to show some frontline clinicians a system where the model did work, where the philosophy had channelled through to changes in services.'

In 2017, an initial group of six staff visited Canterbury for a few days. Alun Tomkinson, one of the participants on the trip, described the impact it had: 'Going there and talking to people was something else. I witnessed first-hand

how ideas I had even had myself could be operationalised. We came back thinking if it is possible in New Zealand, it ought to be possible here.'

Following this first visit, the chief executive and director of operations of the Canterbury District Health Board visited Cardiff to present on the Canterbury model. Another five small teams visited Canterbury to see things first-hand. And a small team of staff from Canterbury visited Cardiff to help implement Canterbury's model of standardised health pathways for primary and secondary care.

As Alun Tomkinson explained, the approach was not generally to mimic the Canterbury approach but to adopt some ideas and principles and see how they might be applied in a different health system:

> *For example, if we want to wrap services around the patient, we need teams that involve primary and secondary care practitioners making plans for how patients move through the system, so we do what's best for them and don't waste their time. We think about the money but we don't talk about it until the end. The right thing for the patient generally turns out to be the most cost-effective solution.*

Charles Janczewski described the partnership with Canterbury as having revitalised the Cardiff and Vale system. It has acted as a 'spark for so much creativity and innovation'. It was what 'allowed the system to move from having a strategy to being able to put it into operation'.

4 Empowering frontline staff

One important feature of senior leaders' approach over the past few years has been to explicitly encourage frontline staff to lead their own service transformation projects. Like the leaders of the Canterbury District Health Board in the 2000s, Len Richards actively gives staff across the system 'permission' to change services. Senior leaders also actively celebrate those staff across the system who are at the forefront of innovation and improvement, for example by sharing stories about their projects and providing resources for adoption and spread.

As well as giving permission, senior leaders have also made resources available to support improvement projects. As Jonathon Gray explained, 'Part of the strategy is to find, support and celebrate bright spots of innovation. It's an approach I first used in Ko Awatea [the centre for health system innovation and improvement in Counties Manukau in New Zealand]. We aim to bring people together, create new connections, and invest time and money to support their innovation work'.

In general, these resources are quite small. Clea Atkinson, a palliative care consultant, was given some time and just a few thousand pounds as seed funding for work to improve end-of-life care for patients with severe heart failure (see below). What is striking is just how far giving people permission and small amounts of time and money can go in unleashing creativity and innovation. As Ruth Jordan, the head of improvement and implementation at the Health Board, put it: 'We have given people a little support, access to some knowledge and skills but mainly we have given them confidence and trusted them. People like Karen Pardy [a GP leader] and Clea Atkinson are now absolutely flying.'

The next phase in the journey is to create an environment where a large majority of staff across the health system spend some of their time actively engaged in innovation and improvement. Like Virginia Mason in the US and Jönköping in Sweden, the ambition is that everybody should have two jobs: the

day job and improving the day job. One option being considered is to create new 'fellowship roles', which allow staff to take some time off each week to work on innovation and improvement projects.

Despite efforts to empower staff, there is more work to do to simplify decision-making processes and give staff more autonomy over their work. Staff delivering improvement projects highlighted the complexities of managing approval processes and engaging with committees on their projects. Charles Janczewski highlighted 'obstacles and roadblocks' that staff needed to navigate and reflected on what further changes would be needed to enable staff to take things forward: 'Currently staff still worry about who will stand in my way. We need to switch things round so that they know that others will support them.'

A partnership model for patients with severe heart failure

In 2016, Clea Atkinson, a palliative care consultant, and Professor Zaheer Yousef, a heart failure specialist, began work on a new model of multidisciplinary care for patients with severe heart failure. It is well known that these patients often have a poor quality of life. Clea's and Zaheer's hypothesis was that they could improve people's care if they established closer joint working between heart failure and palliative care services.

Clea and Zaheer created a new heart failure supportive care team, bringing together cardiologists, palliative care consultants and specialist heart failure and palliative care nurses. At the outset, they did not have a clear plan for how they would work together. In Clea's words:

> *We kept saying that the focus needed to be rapport and compassion. Patients with severe heart failure are often very frightened. They may have thought they would die many times. We said that if we started with compassion, we would be ok. We could be fluid in supporting patients and adapt the service when we see what's working.*

Bringing cardiology and palliative care specialists together in a combined team delivered important benefits. Like other NHS staff, heart failure consultants and nurses are deeply committed to their patients. One reason why they may be reluctant to refer patients to palliative care services is the feeling that they are letting them down or will lose control over their care. Working together has allowed staff to build trust and better understand what different specialisms can offer patients. Patients can also be sure that they will not lose access to specialist support. The cardiologists remain involved in the patients' care and can intervene whenever needed.

Staff now have earlier discussions with patients on the limits of prognosis, have earlier discussions on advanced care planning and end of life and make earlier interventions to recognise and palliate patients' symptoms. Before the service was set up, 80 per cent of patients with severe heart failure died in hospital. Now only 37 per cent of patients do so. The team is also preventing patients bouncing in and out of hospital in their last years of life. There was an average reduction of 41 bed days in hospital per patient referred to the service in 2020 compared with 2019, equating to a cost saving of £21,000 per patient. Ninety per cent of patients would recommend the service (Atkinson and Yousef 2019). Three additional health boards in Wales and one health and care system in England are now implementing the supportive care model. Clea is now helping to adapt the model for other patient groups and specialisms in the Cardiff and Vale system.

5 Creating a learning system

Alongside these changes in leadership, culture and ways of working, the system has made a series of investments to build some of the common infrastructure needed to support systematic learning and improvement. These include a small central improvement and implementation team and the formation of a new 'Dragons Heart Institute' to support leadership, improvement and innovation.

Ruth Jordan, the head of improvement and implementation at the Health Board, described how her team of 17 project managers and improvement advisers approached their work. The team brings together staff with a wide range of improvement experiences, whose focus is on supporting others in the health system to deliver improvement rather than leading projects themselves. While previous approaches had focused on quality improvement tools, the team focuses more on leadership and relationships. 'We have a toolkit which we can pull out and teach people. But the main focus is on leadership styles, relationships and ways of working on improvement projects'. Cardiff and Vale has also recently completed a call-off procurement so that staff can access a range of external experts to help develop their own skills while supporting improvement projects.

Martin Driscoll, until recently the executive director of workforce and organisational development at the Health Board, described Cardiff and Vale's broad strategy for developing this central infrastructure:

> *We wanted to avoid building a large central team that would have a hierarchical relationship with services. Instead, we wanted to create a light-touch structure, a small team whose role was to support and enable others in the organisation. We wanted to have people flowing in and out of it. You could spend six months in a central team and then take your experience back to your services.*

As Martin Driscoll explained, the aim of these initiatives is to build a cadre of talented staff, focusing in particular on young leaders, who have been 'dipped' in a particular way of thinking and working.

One of the limitations of seconding staff out to institutions or programmes to support innovation and improvement is that they struggle to gain traction and get frustrated when they return to their home organisations. As Martin Driscoll explained: 'Over time, the aim is to build a critical mass of staff with a common set of learning and experiences who can form a network.' A related objective of these different initiatives is to develop and embed a common language and set of working methods, a 'Cardiff and Vale Way', which will make it easier for staff across different services to work effectively together on improvement.

Since his arrival in 2019, Jonathon Gray has played a leading role in developing this new infrastructure to support learning and improvement. One key plank in this work is to establish a new Dragon's Heart Institute, to be launched in 2021, which will bring together leaders from across public services, business, the VCSE sector and communities to enable radical collaboration for innovation and improvement. Staff from across the health and care system will be able to participate in shared learning, work together on innovation projects and draw on support from improvement experts, a change hub and a centre of expertise on spread and scale.

The 'Cardiff and Vale Convention'

Clinical leaders across the Cardiff and Vale system are currently developing a new ongoing programme, the 'Cardiff and Vale Convention', to support clinician-led quality improvement. Based on the Canterbury District Health Board's 'Canterbury Initiative', the programme brings together clinicians across primary, community and secondary care to develop pathways of care that work for staff and support patients during their health care journey.

The programme is being led by a senior leadership team of two GPs (Karen Pardy and Haydn Mayo), a surgeon (Alun Tomkinson), a consultant in Emergency Medicine (Katja Empson), and a small group of other primary and secondary care clinicians. This core team is now working with a larger network of colleagues from cardiology, ear, nose and throat services and neurology, among other services.

Groups of staff participating in the programme receive funding to support their improvement projects. For example, GPs are paid for their time. The core team also offers expertise and support. It is currently developing a set of methodologies to support this type of improvement work, for example how to use data to define the problem and test solutions, and how to structure improvement projects.

One insight from Cardiff and Vale's partnership with Canterbury so far is that there are limited benefits from simply copying pathways of care developed in other health systems. Groups of staff from across services need to work together to devise a pathway that they own and works in the local context. The relationships that staff across services form during this type of improvement work, and the sense of joint accountability this helps to create, are also just as important as the technical outputs. An immediate objective is now to recruit a wider group of clinicians, so that the Convention is a vehicle for broader relationship building and the spread of ideas across the system.

6 New approaches to service redesign

The Cardiff and Vale University Health Board's investments so far have focused on embedding proven approaches to innovation and improvement from other health systems, in particular Canterbury's approach to pathway redesign.

Over the past year, however, staff at Cardiff and Vale have adapted these methods and developed innovative new approaches to service redesign of their own as they responded to the Covid-19 pandemic. This seems most apparent in their approach both to establishing the Dragon's Heart surge hospital and to transforming access to urgent care and restructuring elective surgery (*see* the case study in the box at the end of this section).

There is a common pattern to how staff approached these projects. For example, Jonathon Gray described an extremely inclusive process at the start of these projects. Anybody who wished to participate was encouraged to get involved. This often meant large meetings rather than the tight-knit teams we usually associate with fast, efficient projects.

Those teams focused initially on developing a clear definition of the problem they were trying to address and the most important service requirements. For example, the surge hospital needed to have 2,000 beds and to be ready in four weeks. Early on they also focused on establishing the minimum requirements or parameters of an acceptable solution, for example, the beds in the surge hospital needed to be oxygenated, but they did not need Intensive Care Unit support.

After this initial scoping, Jonathon Gray described an iterative approach to managing the projects, which drew in part on his experience of delivering major projects with the Billions Institute and the Institute for Healthcare Improvement in the US. What is striking is the lack of detailed planning before the teams

started implementing their new models. Staff identified workstream leads and teams and put down their proposals on a few slides. However, there were no business cases, detailed project plans or Gantt charts. Instead, staff responsible for different strands of work met two or three times a day to update each other on what they had done, what they needed to do next, what challenges they were facing and what support they needed.

The biggest difference between this and traditional service transformation planning is a shift from planning the detailed specifications and operation of a new service in advance, possibly with a pilot phase, to a model iteratively designing, testing, refining and modifying modules until the new edifice is up and running. The approach to managing independencies was to get staff in the same room on a regular basis rather than trying to identify and mitigate them in advance.

Other obvious differences are the resources provided and the pace of the projects. While most improvement projects in the NHS are done on a shoestring, by staff carrying out a full day job, the system allocated the staff with the strongest capabilities full time to these projects. Jonathon Gray described the battle rhythm that he helped to put in place for construction of the Dragon's Heart surge hospital. The team members solved problems in real time rather than pausing the projects to complete new analysis, bringing everybody needed together face to face to address the issues. This has similarities with Toyota's and Alcoa's 'swarming' method, where everyone with potentially useful expertise swarms a production line to fix a problem (Spear 2009).

None of these ways of working is compatible with a traditional model of senior oversight of major projects, with regular updates and approval of decisions. Instead, the staff leading the projects took much greater direct responsibility for decision-making, albeit within a model of teamworking that provided a different form of oversight and challenge. For example, staff would make decisions on significant expenditure that senior managers outside the team would normally need to approve.

These projects achieved service transformation in timescales that would have been considered impossible before the pandemic. The surge hospital was established in four weeks and the new arrangements for accessing urgent care were established in 11 weeks.Meanwhile, orthapaedic and trauma surgery were transferred to new sites in 3 weeks and cardiovascular surgery was transferred to new sites in 12 weeks. Before the pandemic, these types of transformation might have taken many years.

It is also worth highlighting that staff did much more than simply adapt services in response to the pandemic. They also made major improvements in quality and efficiency. Interviewees noted that the CAV 24/7 system has reduced inappropriate use of emergency departments and redirected people effectively to better forms of support. They also explained that the transformation of elective surgery has led to fewer cancelled operations, greater efficiency in delivering some operations and better patient safety on some measures. The question this leaves us with is: What aspects of these approaches to rapid service transformation during the pandemic should be retained in future?

Transforming elective surgery

Early in the Covid-19 pandemic, clinicians from the Cardiff and Vale system realised that they would have to make rapid changes to prevent the widespread cancellation of operations. It was clear that they would need to separate off many surgical operations in a separate zone to prevent Covid-19 infections.

Alun Tomkinson, the lead cancer surgeon, described how a team of staff met in a lecture theatre every morning and evening to work out how to reconfigure services. The aim was to identify problems in the morning, come up with solutions by lunchtime and present them to colleagues in the evening.

The team approached the local Spire hospital and explained that it would need its staff and operating theatres. It transferred a large number of diagnostics services, ophthalmology operations, orthopaedic operations and breast surgery and other cancer operations to the new site. It also made changes to how it

planned operations, for example ensuring that all patients arrive for surgery fully pre-assessed, changing the flow of patients through the site and ensuring that staff who enter the so-called 'green zones' (Covid-19 free) must stay there all day.

Some other types of operations were harder to separate from other services on the main university hospital sites. The team kept frail elderly patients with hip fractures at the university hospitals but as isolated as possible. It created a separate unit for cardiothoracic surgery at University Hospital Llandough, with its own anaesthetist and intensive care team. Separating the service off in this way has allowed the unit to complete surgery for two to three patients in a day, whereas previously it would only complete one.

Staff at Cardiff and Vale have now treated more than 5,000 patients in these Covid-free green zones. They have not needed to cancel cardiothoracic surgery. They have not cancelled any level 1 or level 2 cancer surgery and have completed most level 3 surgery. There have been no cases of Covid-19 or MRSA (methicillin-resistant Staphylococcus aureus) at the sites. On-the-day cancellations have fallen to 0.7 per cent because of better planning and because other services no longer disrupt elective operations. The average length of stay has also gone down.

Alan Tomkinson compared current practice with previous approaches:

> *We would invite people into the hospital and put them in an admission lounge. Then the system would tell us there were no free beds. We would stick the patient on a non-specialist ward, maybe next to a pneumonia patient. And we wonder why infection rates were high. There is no way we can go back.*

7 Unleashing radical innovation

For the past six years, many of the Cardiff and Vale University Health Board's efforts have focused on embedding systematic approaches to support incremental quality improvement within existing services. As discussed above, it has also pioneered new approaches to implementing rapid service redesign during the Covid-19 pandemic. We know from other health systems that these approaches have the potential to deliver substantial improvements in quality and efficiency.

At the same time, the system is at the early stages of testing a set of arguably radical approaches to innovation. For example, Cardiff and Vale's mental health services have worked with service users to design a new Recovery and Wellbeing College for people with mental health problems. Service users sit on the board of the college and services are designed and delivered in partnership between people with lived experience of mental health problems and health care staff.

As discussed below, primary care clusters are developing new partnerships with the voluntary sector to provide more holistic care for people with complex needs. These partnerships aim to provide more effective health care while at the same time addressing underlying causes of ill health, including loneliness, social isolation and poverty. Staff in health services have developed new partnerships with housing associations so that they can provide better combined support for people in crisis who, without rapid support, might lose their home. Staff in primary care and other health services are also developing apprenticeship schemes to attract local people from deprived communities and provide paths to rewarding careers.

There are fundamental differences between these forms of innovation and the redesign of medical services. Rather than harnessing the tools and techniques of

modern manufacturing, they tap into principles of social entrepreneurship such as the importance of:

- focusing on what really matters to people
- co-production with service users
- harnessing the power of individuals and community assets
- strengthening the connections between people to forge more resilient communities.

Unlike quality improvement, these methods are well suited to support radical rethinking of the underlying problems that people face and reveal entirely new ways of addressing them.

The projects described here provide a glimpse of an exciting new field of innovation for the Cardiff and Vale system. As in many health systems, it already has access to people with experience of these approaches, although they are more likely to be found in mental health and the voluntary sector than traditional medical services. The architects of the new Dragon's Heart Institute are thinking about how they might help to develop and spread principles of social innovation within the health system. Staff are also thinking about how they might apply these principles in major projects such as the design of the new University Hospital of Wales, which might provide a model for community regeneration and sustainability.

Social prescribing and multidisciplinary working in primary care

Karen Pardy, a GP in Canton, Cardiff, became director of Cardiff's South West Primary Care Cluster in 2018. Karen remembers being 'bowled over' by the range and quality of the voluntary sector organisations working in the area. There were groups growing their own food, charities supporting healthy eating, support groups for teenage mothers, walking groups, and debt and housing advice. 'We all know so much of health revolves around this. And the support was already here. So why didn't I know about it before?'

Inspired by Bromley by Bow and others, Karen and colleagues ran an initial set of workshops on social prescribing with GPs across the cluster, bringing together supporters and GPs who 'really didn't see this as any of their business'. In the meetings, GPs talked about how they connected with voluntary sector organisations to help patients they were struggling with, and the impact this had. 'By the end of the first workshop, the doubters were enthusiasts.'

The GP practices in the cluster started to build closer relationships with voluntary organisations in the area and to test a range of social prescribing projects based in and around the practices. One person was eager to start a gardening group, so the team put in a bid to establish 'grow well' projects in two of the practices. Karen explained: 'These things have a transformative effect in primary care. Staff love the community gardens. And for every visitor they change the atmosphere of the practice.'

In 2018, Karen and colleagues successfully bid for funding to develop an 'accelerated cluster model'. They developed a multidisciplinary team, bringing together primary care clinicians, district nurses, the community reablement team and social services with their social prescribing link workers and voluntary sector organisations. They did not establish any referral criteria for the team. Staff are free to discuss any patients they are struggling to help. The team members pool expertise and identify new ways of helping these patients.

The cluster has now established an integrated care hub whose specific role is to help avoid hospital admissions and support people being discharged from hospital. The team receives a list of hospital discharges for patients from the cluster, stratifies them by age and other risk factors, and phones the patients to start planning the community support they will need. The team also works on improving safety, for example reducing errors on discharge from hospital.

Interviewees explained that the nine practices in Cardiff's South West Primary Care Cluster now have a lower rate of admission to hospital than other clusters, despite serving some of Cardiff's most deprived communities. As

Karen explained, the priorities now are to put the model on a sustainable footing and to apply or adapt the model across Cardiff and Vale.

8 A model for spread that works

Cardiff and Vale has made rapid progress in embedding an approach to quality improvement and establishing a range of improvement and innovation projects. One key final piece in the jigsaw is to embed an effective approach to spreading successful new care models across the system.

A number of staff recognised that the system, like health and care systems globally, is still at a relatively early stage in doing so. There have been notable success stories, such as the widespread introduction of physiotherapists and mental health practitioners across primary care practices. However, even in this example, staff are still working out how to make effective use of these new staff across primary care clinics, for example how to integrate them effectively within primary care teams.

Successful innovators are starting to develop plans for spreading their innovations across other services. For example, as discussed above, Karen Pardy is developing plans for spreading her social prescribing model across other primary care clusters. Clea Atkinson is developing plans to adapt her integrated specialist treatment of disease and palliative care model to new services and patient groups. Both are considering how to win staff over and the underlying principles they need to transfer.

The system has already established a spread-and-scale academy to support the diffusion of innovation. Staff across the system are invited to put their innovations forward for spread, there is a shortlisting process and selected innovators receive funding to share their approach more widely.

Jonathon Gray , described how he was developing a new approach to spreading and scaling innovations drawing on his prior work at the Billions Institute in the USand establishing the Spread and Scale Academy for the South West of England. This includes:

- identifying the features of the innovation that need to be applied consistently and the areas where adaptation is allowed or encouraged
- selecting effective influencers to present the change
- large-group dialogue as a means of spreading learning.

9 Conclusion and looking to the future

This report has charted Cardiff and Vale University Health Board's considerable progress over the past six years in putting in place the conditions for system-wide learning, improvement and innovation. This work has included, among many other activities:

- refocusing leadership attention
- reallocating resources
- putting in place new ways of working and supporting infrastructure
- building broader partnerships.

These investments appear to have paid dividends during the Covid-19 pandemic. Staff across the system should feel extremely proud of the many substantial changes they introduced to keep services going and protect patients over the past 12 months.

The next few years will clearly be critical. Cardiff and Vale will need to recover from the pandemic while maintaining the pace of its ambition to become a learning system with innovation and improvement capabilities to match the best in the world. Here are some of the issues that, from an external perspective, the system might consider in the immediate future:

1) Achieving a tipping point on quality improvement

One of the challenges that the quality improvement movement in health care has faced has been the difficulties of achieving critical mass and demonstrating substantial, system-wide impact. It takes considerable leadership engagement and investment to put in place systematic approaches to improvement. However, it is only when a large proportion of staff across a system apply these approaches that the system starts to accumulate substantial benefits. Only a

relatively small number of high-performing health systems around the world – Canterbury, Jönköping and Virginia Mason among some others – have reached this tipping point, where they start to deliver significant savings each year that can then be reinvested in new services (Staines *et al* 2015).

After just a few years, the Cardiff and Vale health system inevitably still has some way to go on this journey. It seems critical to keep to the path, continuing to widen the number of staff working on improvement, and eventually creating a culture where everybody combines their day job with work on innovation and improvement. As mentioned above, there is still also some work to do to address bottlenecks that will otherwise discourage staff from embracing innovation and improvement.

2) Codifying and harnessing new ways of working

When Cardiff and Vale's Covid-19 story is written, the headlines will rightly focus on the changes that staff made to keep patients safe in the pandemic. This report mentions some of these efforts, such as transforming access to urgent care and elective surgery, although there were many more. However, the health system's innovations in ways of working were arguably even more interesting than the innovations in service delivery. Who would have thought that it would be possible to build a major new facility through iterative processes rather than detailed planning? Who would have thought that you could design and implement a new system for access to urgent care successfully in 11 weeks?

Would it now be possible to capture and incorporate these approaches in an emerging 'Cardiff and Vale Way' of delivering significant service change, drawing on your practical experience and the body of research on this topic (Dignan 2019; Spear 2009; Plsek 2001), for example in terms of open and inclusive teams, iterative rather than planned approaches, the pace of these projects and the 'swarming' approach to problem-solving? If so, this would break new ground and could become a considerable addition to what we already know about innovation and improvement from high-performing systems.

3) Embracing more radical forms of innovation

While celebrating Cardiff and Vale's progress, this report is a call for arms for the system to focus too on even more radical forms of service innovation. Established approaches to quality improvement adapted from manufacturing can help to accumulate substantial incremental gains in quality and efficiency. However, it seems increasingly clear that we also need to bring to bear a different set of tools to rethink the nature of some of the problems that health services seek to address and identify new ways of solving them. Quality improvement can reduce the need for people to go to hospital, speed up discharges, improve co-ordination and avoid wasting people's time. But arguably only the new tools of social innovation can address the most difficult problems that modern public services face, for example how to help struggling families, how to help individuals with complex health and social challenges and how to afford people a dignified and enriching old age.

4) Adapting the tools of social entrepreneurship

We can already see the green shoots of this form of radical innovation in the Cardiff and Vale system, for example in the new Recovery and Wellbeing College and partnerships between primary care, housing and other voluntary, community and social enterprise services. However, like other health systems, Cardiff and Vale has not yet developed approaches for systematising and embedding this form of innovation. In general, these new approaches to radical innovation have occurred at the margins of health systems, among voluntary organisations and social enterprises, in mental health services and in some local authorities such as Wigan, rather than at the heart of core medical services. However, the evidence is building that successful health systems need to embrace both quality improvement and these more radical approaches to addressing complex problems to achieve success.

Leaders in Cardiff and Vale are starting to think through these very challenges, including in the design of the new Dragon's Heart Institute, and developing the system's role as an anchor institution. We know that the vision and guiding principles of the system can help direct staff towards particular types of innovation. The focus on patient time in Canterbury and on patient safety and

avoidable errors in Salford provided a guiding light for efforts in Cardiff and Vale to strip out waste and improve quality and efficiency. We may need new guiding lights to help staff focus on this new form of innovation, for example a commitment to compassion, relationships and co-production.

5) Building broader partnerships for innovation

We also know that this more radical innovation depends on widening and deepening the relationships between actors who did not previously work closely together. It is when new partnerships form that 'lightbulb moments' occur, for example when mental health nurses became special constables in Bradford and started to find new ways of co-ordinating how the health system and the police work together (Collins 2019). Leaders in Cardiff and Vale are very aware of the need to deepen these cross-system relationships, building on successes during the pandemic.

We also know that this more radical innovation depends on broadening the range of voices with power and influence at the table, in particular those people currently on the periphery who bring different perspectives on problems and solutions. Here, the Cardiff and Vale system has an untapped resource at its disposal: service users who bring different perspectives to health care professionals and are often committed, engaged and willing to lend their substantial expertise. In comparison with its other innovations, Cardiff and Vale appears to have been less active in developing new ways of engaging patients and the public in its work, for example in providing leadership and oversight of the system and in actively supporting service change. One area that staff are exploring is how they can bring service users fully into the organisation as leaders, quality improvement advisers and providers of services. Staff are still at an early stage in their thinking on these approaches, which could provide a source of inspiration for innovation and improvement as the system develops.

6) Coping with complexity

Quality improvement and radical innovation do not make easy bedfellows. In other industries, organisations have often oscillated between being good at one

and bad at the other. One solution is to hive off the radical thinkers in a separate entity, a skunk works, where they can develop their own culture. The problem is that these distinct subcultures rarely manage to penetrate the host (Govindarajan and Trimble 2010). If Cardiff and Vale can complete the journey of implanting structured quality improvement, capture and embed its approach to service innovation during the Covid-19 pandemic, and foster an approach to more radical innovation across a broader range of services, it will have a model of improvement and innovation that other health systems in the UK and around the world will follow.

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11 About the author

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Before joining The King's Fund, Ben worked as a management consultant. He has advised central government and the national bodies on a wide range of issues including economic regulation, provider finance, the provider failure regime and new organisational models. He has also worked with NHS purchasers and providers on strategic and operational challenges.

In his earlier career, Ben was a fast-stream trainee and manager within central government and an adviser at the European Commission. He has academic training in industrial economics and business strategy