

CASE STUDY

The Safer Patients Initiative

Critical care in practice: Royal Free Hospital and the University Hospital of Wales

1. INTRODUCTION

In late 2004, the Health Foundation funded the Institute for Healthcare Improvement (IHI) (based in Cambridge, Massachusetts) to begin an initiative aimed at making United Kingdom (UK) hospitals safer for patients. Called the Safer Patients Initiative, this four-year project (spread over two phases) was designed to reduce harm to patients receiving healthcare within inpatient settings.

Throughout the initiative, 24 hospitals across the UK worked collaboratively with the Health Foundation and IHI to test, implement, and spread the success of 29 different interventions. These interventions had an established and accepted evidence base in the UK and were in five workstream areas:

- medication management
- general ward
- perioperative care
- critical care
- leadership.

Interventions were implemented concurrently, along with improvements in hospital infrastructure, measurement systems, and leadership support. As a result of this work, the participating hospitals began working on reducing their adverse events and mortality rates.

The work of both phases of the Safer Patients Initiative helped spread patient safety principles and improvement throughout the UK – improvement that has continued following completion of the programme. Although phase two of the Safer Patients Initiative concluded on 30 September 2008, it has helped establish patient safety as a priority for the participating hospitals and set the stage for further work in improving the safety of patients.

2. BACKGROUND

Critical care was one of the five workstream areas that all hospitals in both phases of the Safer Patients Initiative focused on. Here, organisations tackled several issues that posed safety risks to patients including, but not limited to, complications from mechanical ventilation and central lines (such as infections).

To help drive improvement work in critical care, the IHI and the Health Foundation set specific goals for the critical care workstream. These goals included:

- eliminating central line bloodstream infections (CLI), or having at least 300 days between incidents
- eliminating ventilator-associated pneumonia (VAP), or again, having at least 300 days between incidents.

The Health Foundation and the IHI also recommended implementing multidisciplinary rounds to improve communication.

This case study focuses on the improvement work within the critical care workstream of phase two of the Safer Patients Initiative of two organisations: Royal Free Hospital and the University Hospital of Wales.

About Royal Free Hospital

Royal Free Hospital is an acute care facility located in London, England. Affiliated with Royal Free Hampstead NHS Trust, the hospital provides a variety of tertiary and specialty services. At the time of phase two of the Safer Patients Initiative, the hospital had approximately 900 beds, including 24 intensive care beds across two critical care units.

Royal Free Hospital began its Safer Patients Initiative (phase two) journey because its leaders felt that it was valuable to refocus work on patient safety. 'In the preceding year, much of our work had been focused on cost reduction and improving efficiency,' said the divisional medical director and executive lead for the critical care workstream at Royal Free Hospital. 'We also saw the results of the first phase of the Safer Patients Initiative and felt they were quite impressive. Although we thought that not all aspects would be applicable to our organisation, the central line bloodstream infections and methicillin resistant staphylococcus aureus (MRSA)/bacteraemia work were particularly attractive.'

About the University Hospital of Wales

The University Hospital of Wales is the largest hospital for the Cardiff and Vale University Health Board (formally Cardiff and Vale NHS Trust). The hospital is located in a suburban setting two miles from the Cardiff centre. At the time of phase two of the Safer Patients Initiative, the hospital had more than 1,000 beds and provided a variety of acute services, including tertiary and specialty services.

The University Hospital of Wales pursued a place in the Safer Patients Initiative (phase two) because its leaders recognised the need to improve quality and safety across the organisation.

'We wanted to address the challenges we faced in patient safety,' said the hospital's clinical director of critical care during the programme. 'We had the will

and we had the ideas, but we needed the specific suggestions for process improvement. The Safer Patients Initiative offered that.'

3. WHAT WE DID

Tackling central line bloodstream infections

Both Royal Free Hospital and the University Hospital of Wales achieved significant success in their work to eliminate central line bloodstream infections. While the two organisations used many of the same interventions, they approached them slightly differently.

Before engaging in any improvement work, Royal Free Hospital first acknowledged the problem of central line bloodstream infections and agreed upon a universal definition for the organisation.

'Several people from our intensive care and microbiology departments worked together to establish this definition and agreed to apply it universally across the organisation. Once that was done, we turned our attention to implementing the IHI's care bundle,' said the hospital's clinical lead for the critical care workstream.

At the beginning of its central line bloodstream infections work, the University Hospital of Wales focused on gaining full engagement from front-line staff.

'With regards to reducing infections, you are only as good as the bedside nurse,' said a consultant nurse for critical care at the University Hospital of Wales. 'After we, as leaders, returned from our first learning session with IHI, our workstream team organised a one-day meeting with front-line staff to share what we learned. We explained plan, do, study, act (PDSA) methodology and how we would be using it to affect change in the critical care unit, specifically with regards to central line infections.'

'Initially we focused on PDSA as a mechanical process,' said the executive director of finance, who was the executive lead for critical care at the University Hospital of Wales. 'I was unsure whether front-line staff members would actually use the methodology. However, they took to it like ducks to water. Through PDSA, they could come up with the best solution to a problem. They saw immediate results to their efforts

and could directly see how they were improving outcomes. PDSA helped give voice to staff perspectives and empowered them with a method to actually change practice.’

Both Royal Free Hospital and the University Hospital of Wales used PDSA to implement different elements of the IHI Central Line Bundle related to central line insertion and maintenance.¹ This bundle offered checklists that organisations could use to ensure that all elements of a central line insertion or maintenance effort were completed.

‘We started week one with our 11-bed critical care unit and used the PDSA methodology to incorporate the central line insertion checklist into practice,’ said the clinical lead for the critical care workstream at Royal Free Hospital. ‘At first we tested with one intensive care physician and one nurse. We then expanded the test in a stepwise manner to more physicians and nurses. Eventually, we spread change to our 13-bed critical care unit as well.’

In addition to implementing the checklist, both Royal Free Hospital and the University Hospital of Wales created and rolled out a central line insertion kit that included all the equipment necessary to insert a central line properly. Royal Free Hospital and the University Hospital of Wales also used dedicated trolleys to house the central line insertion kits, and developed warning stickers to serve as reminders to complete the checklists. Royal Free Hospital placed the stickers on the outside of the kits, while the University Hospital of Wales put them in the patient notes.

As the two organisations implemented the different elements of the IHI bundle, the workstream teams also provided education and publicity on the importance of the work to nursing staff, senior doctors, and junior doctors. Royal Free Hospital placed posters in staff break rooms and other areas where staff could read information about the initiative. The University Hospital of Wales provided coaching and just in time training. Both organisations hosted briefings in which they engaged nursing staff members to make sure they really felt a part of the work.

‘We also incentivised the work. We let staff know that if we were successful in implementing the bundle, we would not only reduce central line bloodstream infections, but would also celebrate this success,’ said

the Safer Patients Initiative project manager at Royal Free Hospital.

Both Royal Free Hospital and the University Hospital of Wales collected data about their central line bloodstream infection rates (outcome measures) and whether the different elements of the IHI bundle were being completed (process measures).

‘We shared these data graphically in real time,’ said the clinical lead for the critical care workstream at Royal Free Hospital. ‘This allowed us to highlight what was working and see where improvements could be made.’

Tackling ventilator-associated pneumonia

For Royal Free Hospital and the University Hospital of Wales, the work on ventilator-associated pneumonia fit well with the central line bloodstream infection work.

‘It continued the infection control theme and was instrumental in changing the culture of the critical care unit with regards to infection,’ said the clinical lead for the critical care workstream at Royal Free Hospital.

The organisations again used PDSA to implement the different elements of IHI’s ventilator-associated pneumonia bundle.² For example, Royal Free Hospital focused on ensuring that the head of the patient’s bed remained at a 45 degree angle throughout the care episode. For each patient on a ventilator, a nurse would record the bed position on a chart every hour. If the bed was not at a 45 degree angle, the nurse would fix it.

‘The success of this part of the initiative was directly tied to the fact that we were actually measuring how consistently the bed was elevated,’ said the clinical lead for the critical care workstream at Royal Free Hospital. ‘It’s that old adage; you can’t change what you don’t measure. By recording bed elevation we could immediately see when the bed wasn’t elevated and fix that.’

The University Hospital of Wales focused on standardising the care for ventilator patients.

‘This was one of those circumstances where we thought we were doing all the things that were in

the bundle. However, when we started measuring everything, it became clear that we were not,' said a consultant nurse for critical care at the University Hospital of Wales. 'For example, before this point we had not really conducted sedation vacations with any consistency. As a result of the Safer Patients Initiative work, the shift coordinators began doing sedation vacations on every ventilator patient unless a designated person said not to. This sedation vacation was documented on the patient's observation chart.'

Multidisciplinary rounds

While both organisations did similar central line bloodstream infection and ventilator-associated pneumonia work, their work on multidisciplinary rounds differed.

'Probably our easiest critical care initiative to implement was multidisciplinary rounds,' said the clinical lead for the critical care workstream at Royal Free Hospital. 'We were practicing these types of rounds already and so did not need to alter our practice that much. We used PDSA to incorporate the checklists for ventilator-associated pneumonia and CLI into the rounds, but that was pretty much all we did in this area.'

The University Hospital of Wales however spent considerable time on this issue and is still working on consistent implementation. The hospital began doing multidisciplinary rounds every morning and used PDSA to implement a checklist into these rounds to help communication and flatten hierarchies across the organisation.

4. OUR LEARNING

Reducing central line bloodstream infections

Both organisations found the use of the checklist, insertion kit and having the right equipment in place was one of the key change initiatives to reducing central line bloodstream infections.

'The insertion kit was critical because it helped get all the supplies for a central line insertion in one place,' said a consultant nurse for critical care at the University Hospital of Wales. 'Before this, nurses had to travel the ward picking up different equipment for a central line insertion. This was time consuming and sometimes the nurse would forget a critical element.'

The kit helped make sure everything was in the same place and ready for use.'

'You can't expect people to do what they should without the right equipment,' said the clinical lead for the critical care workstream at Royal Free Hospital. 'It seems obvious now. Inserting a central line is like any surgical procedure, and you wouldn't start surgery without all the necessary tools in place.'

Although staff members at the two hospitals could see the benefit of reducing central line bloodstream infections, they were initially sceptical that completely eliminating these types of infections would be possible.

'As more and more staff started using the central line bloodstream infection kit and checklists, and a downward trend in our CLI rate began to occur, staff became even more engaged in the process,' said the Safer Patients Initiative project manager at Royal Free Hospital. 'The kit modified staff's behaviour and this, coupled with the positive CLI data, began to change the culture of the unit toward one of prevention and elimination of central line bloodstream infections.'

The University Hospital of Wales also found that using a dashboard to communicate results was also critical to the success of their work.

'Dashboards provide very clear, up-to-date information in real time,' said a consultant nurse for the critical care area at the University Hospital of Wales. 'Using dashboards helped move our CLI efforts from being just an initiative we were working on, to being part of the day-to-day function of the unit.'

Reducing ventilator-associated pneumonia rates

Both Royal Free Hospital and the University Hospital of Wales encountered several issues that impacted on their success in reducing ventilator-associated pneumonia rates.

'The challenge we had with ventilator-associated pneumonia was that there was not universal acceptance of a VAP definition among our physicians,' said the clinical lead for the critical care workstream at Royal Free Hospital. 'Consequently, several of our physicians were sceptical that the interventions we were implementing would truly make a difference in eliminating this type of infection.'

The University Hospital of Wales also had some challenges with eliminating ventilator-associated pneumonia, including disagreements about what constitutes an infection.

‘Although we did see a few months with no ventilator-associated pneumonia infections, this was still a challenging area for us. With that said, the reduction we did see helped change the attitude of staff towards this type of infection,’ said the clinical director of critical care during the Safer Patients Initiative programme at the University Hospital of Wales.

Successful leadership and management

Both organisations indicate that the enthusiasm and support of the senior leadership team was another key to success in critical care.

‘Our CEO and medical director made it very clear that this was important work for our organisation,’ said the clinical lead for the critical care workstream at Royal Free Hospital. ‘They also made sure that each workstream, including critical care, was completely locally owned. This made sure that the people most familiar with the work were actually driving improvement.’

In both organisations, leaders played an active role in the improvement work.

‘By having an executive presence at front-line team meetings, leaders truly showed their support and commitment to improvement,’ said the executive director of finance for the University Hospital of Wales. ‘This gave the opportunity to praise improvements while at the same time listen to and address obstacles. By making this connection with front-line staff, we were able to engage in work that was meaningful to both leaders and the people interacting directly with patients.’

‘I think the main reason for our success is that critical care staff members seem to be suited to this type of work,’ said the clinical director of critical care during the Safer Patients Initiative at the University Hospital of Wales. ‘This is a smaller microsystem of the hospital that was used to working as a team. Providers in this area were accustomed to collecting data, following processes, and communicating about time sensitive material. Plus, they were very

motivated to make improvements as the safety issues in this area were very obvious.’

5. IMPACT

For both organisations, critical care was one of the most successful workstreams.

Successful reduction in central line bloodstream infections

As a result of all this work, both Royal Free Hospital and the University Hospital of Wales eliminated their central line bloodstream infections within a year of starting phase two of the Safer Patients Initiative.

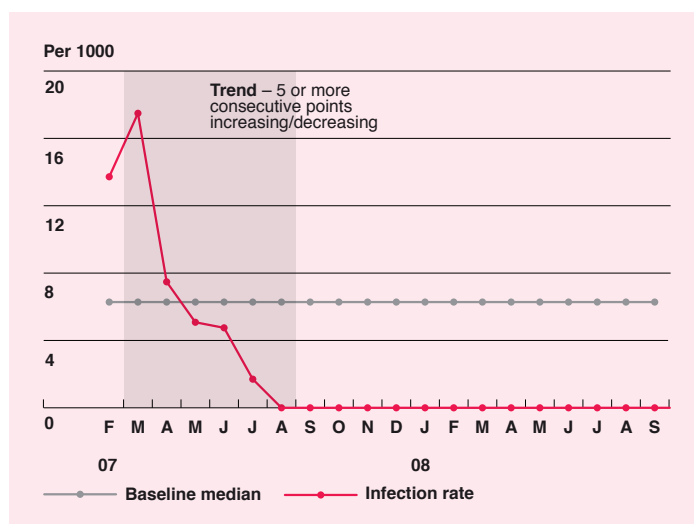


Figure 1.1: CLI rate at Royal Free Hospital, Royal Free Hampstead NHS Trust

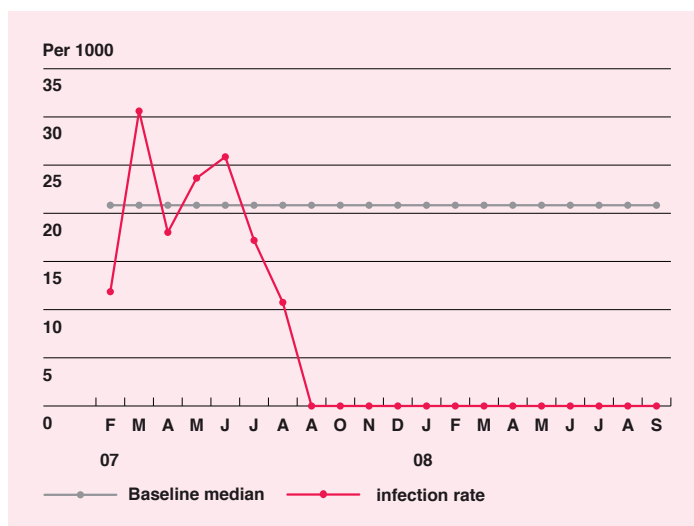


Figure 1.2: CLI rate, the University Hospital of Wales, Cardiff and Vale NHS Trust

Reduction in ventilator-associated pneumonia rates

Although both Royal Free Hospital and the University Hospital of Wales did not meet the goals of the Safer Patients Initiative with regards to ventilator-associated pneumonia reduction, both hospitals were successful in reducing their ventilator-associated pneumonia rates.

Cultural change across the organisation

Through the elimination of central line bloodstream infections and reduction in ventilator-associated pneumonia rates, the Safer Patients Initiative had a positive impact on changing the culture within both organisations.

‘Staff members across the critical care units now see these infections as possibly preventable and not just an unfortunate consequence of critical care,’ said the clinical director of critical care during the Safer Patients Initiative programme at the University Hospital of Wales.

‘Between the central line bloodstream infections work and ventilator-associated pneumonia work, our critical care units became very focused on infection control. This cultural shift was probably the biggest benefit of the Safer Patients Initiative in critical care because it helped our critical care units focus their attention on reducing unnecessary events that could significantly harm patients.’

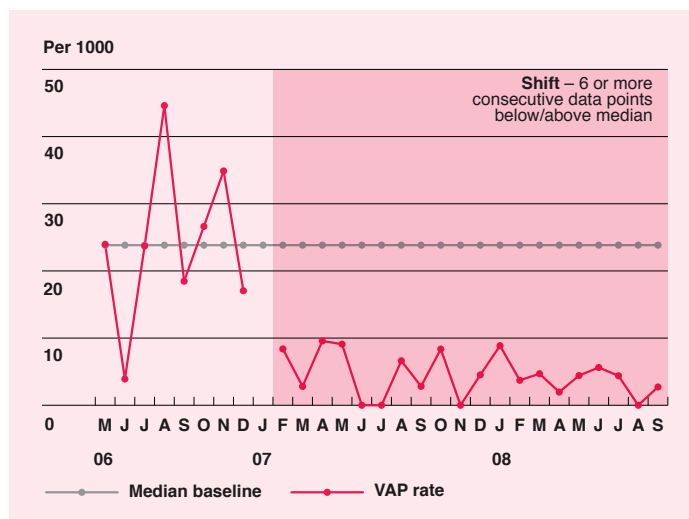


Figure 1.3: VAP rate, Royal Free Hospital, Royal Free Hampstead NHS Trust

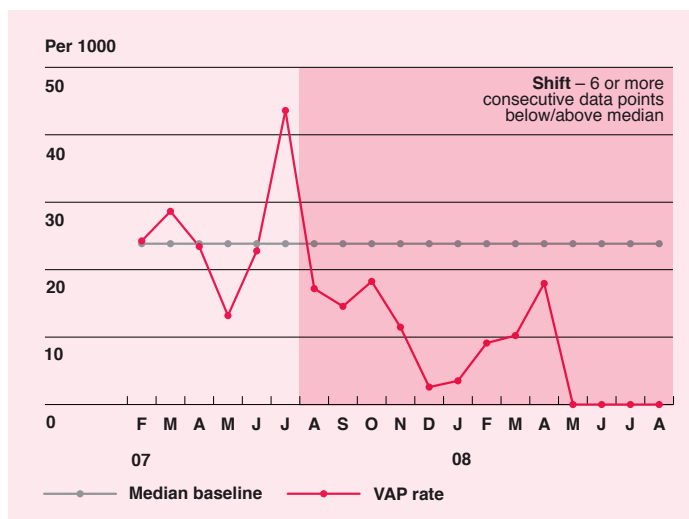


Figure 1.4: VAP rate, the University Hospital of Wales, Cardiff and Vale NHS Trust

1 5 Million Lives Campaign. Getting started kit: Prevent central line infections how-to guide. Cambridge, MA: Institute for Healthcare Improvement; 2008.

2 5 Million Lives Campaign. Getting started kit: Prevent ventilator-associated pneumonia how-to guide. Cambridge, MA: Institute for Healthcare Improvement; 2010. Both are available from: www.ihl.org