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Case Study: Hospital at Night – Portsmouth Hospitals NHS Trust

In 2014 Portsmouth Hospitals NHS Trust introduced Nervecentre's mobile technology-enabled Hospital at Night software to drive safety and quality improvements in the out of hours care for patients. A year later, overnight red and amber alerts signalling potential harm to patients had halved and there had not been a single death from an adverse incident. The project so far has delivered over £140,000 in cost savings and increased productivity in the first year and will deliver a return on the initial £170,000 investment within two years. In 2015 the trust won the EHI award for "best use of IT to support patient safety" after demonstrating measurable safety improvements made as a result of implementing the Hospital at Night software.

THE CHALLENGE

Portsmouth Hospitals is a large trust with over 1000 inpatient beds at the Queen Alexandra Hospital and a call volume of 200-300 calls per night, of which around one in ten is urgent. When senior doctors and nurses reviewed the trust's existing Hospital at Night processes they found significant room for improvement in a system that relied on phone, pager bleeps and handwritten notes. A review of adverse incidents at night identified common themes such as errors in communication, patients not being tracked, no escalation and poor recording of the intervention. Senior nurses working as Hospital at Night co-ordinators were largely deskbound by the need to be near a telephone, dealing with hundreds of calls per shift, rather than using their extended skills and knowledge reviewing patients and supporting the ward staff.

The trust wanted an effective technology solution that would have an immediate impact on staffing and patient safety and chose Nervecentre as its technology partner. Changing the out of hours system was not simply a matter of introducing a technology solution but one of changing existing processes and reviewing staff roles that would require clinical buy-in and engagement.

PROJECT OVERVIEW

The task at hand was to:

- Transform Hospital at Night processes
- Develop a bespoke mobile IT solution that could help meet the objectives of improving patient safety over night while making best use of the clinical teams on duty
- Ensure the existing wifi and IT infrastructure was able to support a new system
- Integrate the new solution into existing IT systems
- Manage the transition between the old and the new Hospital at Night systems safely and achieve strong clinical engagement.

This was a clinical project supported by IT. Project manager Caroline Chapman, nurse consultant for Hospital at Night, worked with a small team of clinicians, including Dr Howard Buchan, clinical director for acute Medicine, and IT staff. Together, they led a transformation process, consulting with everyone who would be affected by the change. A pilot scheme proved the case and this was followed by a series of learning and training events before the mobile Nervecentre Hospital at Night solution was rolled out across all wards in 2014.

The trust was supported by a £170,000 grant from NHS England's Nursing Technology Fund. The contract with Nervecentre was signed in March 2014 with roll-out starting in May 2014.The system was up and running in medical wards by July 2014 and in surgical wards by September 2014.

MOBILE HOSPITAL AT NIGHT

Nervecentre's Hospital at Night solution is an electronic task management platform that provides visibility of the tasks requested and completed, their urgency and the staff available to complete them in real time, right across the hospital. It can be adapted to suit workflows and processes in individual trusts.

It works like this. Ward nurses requiring support enter a request onto the online software. Hospital at Night co-ordinators receive the request electronically via a PC or tablet, triage for urgency and skill required and assign the task to the relevant doctor, nurse or technician within seconds. Previously this may have taken 20 to 30 minutes using the bleep process.

The mobile software contains real-time information about which clinicians are present in the hospital, their skill set, where they are and how busy they are. The software enables Hospital at Night co-ordinators to allocate the most suitable and available person to each task. The clinician receives the request electronically on a mobile device, accepts the request with a single click and clicks again once the task is completed. This ensures that all tasks have individual ownership but with visibility to the coordinators who view them on a hospital-wide scale. By using this information to coordinate requests from wards, Portsmouth Hospitals is gaining significant benefits both in efficient use of scarce medical resource and patient safety.

Nervecentre's Hospital at Night software also generates an overview of activity that gives the trust an accurate picture of what is happening across the hospital at night over time. This feeds into a wide range of activities that support safety, quality and resource allocation. For example, the overview reporting allows the trust to plan the workforce, build the rotas, plan for training and education, monitor the workload and types of task performed overnight, and manage risk.

RESULTS

Since the implementation of this mobile Hospital at Night at Queen Alexandra Hospital in Portsmouth, out of hours patient care is measurably safer. The out of hours teams are able to identify urgent calls instantly and prioritise them so that patients with the most acute need are prioritised. If ward staff detect that a patient is deteriorating rapidly, they can notify the on-call registrar immediately with information about the patient and who is reviewing the situation.

In a seven-month period prior to introducing Nervecentre's Hospital at Night software, the trust recorded 16 red incidents (where there is a risk of severe permanent harm to the patient) and amber incidents (risk of moderate harm). In the same seven-month period in the year after its introduction this halved to just eight. Over the same period, the number of deaths following adverse incidents fell from one to zero.

Under the telephone and bleep system, senior nurse hospital at night coordinators previously spent nearly all their time answering the phone, chasing bleeps, locating clinicians and seeking information about patients. This meant they were largely desk bound and unable to spend time in the wards, supporting patients and ward staff. The new system has released them from this so they can now spend more time caring for patients, supervising and learning. Ward staff have also seen their time freed up as they no longer have to wait by the phone for an answer to a bleep. The Hospital at Night team estimate that using the software has released 10,000 hours a year collectively from co-ordinators, ward nurses and doctors.

RETURN ON INVESTMENT

Nervecentre's Hospital at Night has delivered a return on investment within a year, with cost savings and increased productivity totalling £140,500 in 2014/15 and an expected £213,838 in 2015/16.

Non-cash benefits include:

- An improved audit trail for clinical incidents
- The ability to provide hard management information about workload and task allocation to the trust and the Deanery [responsible for medical education]
- Freeing up sufficient nurse co-ordinator/practitioner time for these band 7 nurses to undertake nurse practitioner and independent prescribing training
- Closing the loop between the trust's vital signs observations system and Hospital at Night to ensure that patients whose condition is deteriorating are attended to quickly and appropriately
- Shorter handover times for doctors who are able to concentrate on the more complex cases only in their verbal handover
- Fewer interruptions for on call staff who are now able to differentiate audibly between urgent calls and non-urgent calls
- Data-driven intelligence to support workforce planning.

IMPLEMENTING THE CHANGE

Senior doctors and nurses at the trust had been working on developing a new solution for some time. They recognised that there was a safety issue with the telephone, bleep, paper and pen system and had argued that a technology enabled solution would provide a safer system as well as an audit trail in any safety incidents. Portsmouth Hospitals already use a technology-enabled system for recording vital signs, so nurses were accustomed to using technology-enabled care tools, and had invested in wifi infrastructure to support this.

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The key enablers in taking the Hospital at Night project forward to implementation were:

- Identifying the need to improve patient safety and provide an audit trail of incidents at night
- Gaining buy-in from IT by inviting a senior IT manager to spend part of a night shift with the Hospital at Night team
- Meeting with the trust's research director to identify alternative streams of funding
- Working with IT and research directors to develop a business case and grant application
- Winning an award of £170,000 from the Nursing Technology Fund
- Working with procurement and IT to ensure the project progressed quickly to meet timelines imposed by the Nursing Technology Fund award.

A pilot project showed the system could work and was robust. Full roll out was staged in two phases across the hospital with medical wards going live first and surgical wards second.

THE FEEDBACK

Out of hours staff say that this system saves them time, gives them clear referrals, reduces their anxiety around adverse incidents and is enabling them to deliver better quality, safer care.

Senior clinicians report that they now have hard data about the number and type of tasks different grades of staff undertake and the numbers of hours they work. This is supporting their workforce planning and reporting requirements. The system provides an audit trail, which can support learning from incidents. Sufficient nurse co-ordinator time has been freed to allow these senior nurses to undertake advanced practitioner and independent prescriber training, making these jobs more attractive to highly experienced nurses.

CAROLINE CHAPMAN, NURSE CONSULTANT FOR HOSPITAL AT NIGHT, SAYS:

"We have now had one year's experience with the new system and the difference is amazing. I had not anticipated all the benefits we have seen.

"We started with a very careful change management process. We used saturation training to make sure we reached everyone concerned and when we implemented the system we had IT ward walkers on duty, going ward to ward to make sure everybody knew how to use the new system.

"The nurses were surprised at how quickly they got a response using the new system, with a member of the out of hours team on the spot sometimes within five minutes. The doctors are keen on the safety aspect and being able to see a list of patients and how serious the needs are.

"Our new system is very pro-nursing. It puts nurses at the centre of improving patient safety. Our co-ordinators, who are very senior and experienced staff, are no longer tied to a desk answering the phone and chasing bleeps. They are seeing patients, treating patients and leading nursing.

"We are seeing fewer adverse incidents on the wards both because doctors can attend to the most urgent needs first and partly because ward nurses are no longer waiting by the phone when they need support. Now that nurses can stay with patients we have found there is less risk of falls, for example.

"We are now making much better use of the staff too. Doctors' handover in the morning is now much quicker with the doctors able to concentrate on the fewer sicker patients. The Deanery is now able to see exactly what tasks doctors are carrying out to ensure that they are doing tasks appropriate to their skill and role.

"For the first time, we are able to generate hard data to demonstrate what we are doing over night. It's data the trust can't argue with. We have been able to employ another technician at night and been able to demonstrate where work that should be done by day is spilling into the night shift and vice versa.

"Our next step will be to look at how we can make even more use of the system developed with Nervecentre and we will be looking at how we can implement it over weekends."

DR HOWARD BUCHAN, CLINICAL DIRECTOR FOR ACUTE MEDICINE, ADDS:

"When we implemented the system we made sure we had IT support in place ready to fix any potential glitches immediately. I was on duty overnight with Caroline, introducing the system and helping our clinical teams to explore how it worked. They found it simple to use and immediately understood how it could help them. Nurses like it because they get a quick response when they call for help and doctors because it helps improve safety.

"Everybody using the system loves the fact that they can now work uninterrupted. With the old bleep system, there was no way of telling whether a call was urgent so every bleep had to be answered as if it was urgent. With the new system, an urgent call has a different chime so doctors know when to drop what they are doing and react quickly.

"The ward nurses no longer have to wait by the telephone for an answer to their call. The new system has given everyone the sense that they are all freed up to look after patients.

"We have created enough time for our Hospital at Night co-ordinators, who are all senior nurses, not only to support their nursing colleagues on the wards at night but also to undertake nurse practitioner training. What was at risk of becoming a hard to fill and demoralising job is now a very exciting career opportunity for nurses.

"We have been able to look at how Hospital at Night works with our existing system for electronically collating patient's vital signs and warning clinicians when patients may be about to deteriorate rapidly. When co-ordinators can also see these scores and alerts, it gives us an extra safety net.

"It is also giving us an audit trail that we never had before. Previously all we could record was the time of the call and that we responded. Now we have all the details and can start to learn from any incidents that do arise.

"We have been able to gain hard information about the number of hours our junior doctors are working at night and at what tasks they are carrying out. We now know that our doctors are treating sick patients, not putting in cannulas.

"We are beginning to get some real intelligence from the system about who is doing what, where and when that we simply did not have before. It is the start of making an intelligent approach to workforce planning."

Conclusion

Implementing Nervecentre's Hospital at Night software was a clinical transformation underpinned by information technology. It has improved patient safety at night and made clinicians' working lives easier by removing delays in the system and creating space for them to do what they do best – care for patients.