

Ashford and St. Peter's Hospitals NHS Foundation Trust (ASPH) is the largest provider of acute hospital services in Surrey, serving a population of over 380,000 people in North West Surrey, parts of Hounslow and beyond.

Over 3,300 highly trained doctors, nurses, midwives, therapists, healthcare scientists and other support staff make up the workforce, providing a wide range of services across two hospitals: Ashford in Middlesex and St Peter's in Chertsey.

They also run many specialist clinics in the community at local community hospitals and other healthcare facilities.

The Trust wanted to improve patient safety and reduce length of stay. This innovative project was set up to implement an electronic track and trigger system throughout the organisation in all adult inpatient areas, Maternity and the ED. Nursing and other clinical teams were issued with mobile handheld technology to provide the means to record patient observations and other critical metrics electronically. Amongst a range of other benefits, this technology facilitates the provision of immediate escalation of deteriorating patients to clinical teams. This includes auditable response times and automated further escalation in the event of non-response or unavailability of clinicians via the Careflow Connect clinical communications application.

The Solution

The Trust engaged with suppliers to find a solution that would help with their workload and that fitted in with their processes and values; a solution that all nursing staff would see as an improvement to their working practice.

Added to this was the potential merger with the Royal Surrey County Hospital (RSCH). The project team looked at the implementation and use of VitalPAC at RSCH, where it had been implemented across the whole hospital site (excluding Maternity & Paediatrics and ED). Implementation of the same solution at ASPH was considered to be a first step towards nursing staff using the same solutions and benchmarks.

The nursing staff have led the project and are fully supported by an experienced project and change management team. Senior nursing time was released to lead the project and there was good engagement and interest. A demonstration event was widely attended and nurses came forward as champions of the new solution.

As the chosen solution was already in use in many other Trusts, ASPH was able to build on the Lessons Learned from their implementations. Staff visited a

similar Trust and were impressed with the improvements they had made and felt like the time was right to introduce this solution to ASPH.

As well as the Acute setting, a community setting could also benefit, particularly if VitalPAC moves to a Cloud-hosted platform in the future; Careflow Connect is already hosted in the Cloud.

Feedback from staff

"It is much more efficient than I had imagined and it is so quick and easy to use. Instead of taking observations from every patient at set times during a day, VitalPAC prompts us when it is the optimal time to take them from each patient, based on their individual condition"

"Easier to pick up deteriorating patients seeing the EWS on the big screen"

"Easier to check trends for patients"

"I love it! Would never go back to paper"

"Much better visibility of the sick patients having it on the big (42" TV) screen"

"Excellent to take on the drug round as we have the observations and blood results in one place"

AT A GLANCE

Solution: VitalPAC / Careflow Connect

Implementation: Phased-Ward by ward deployment

Funding: Tech Fund Matched Funding

Benefits: VitalPAC prompts for observations to be taken at the optimum time, leading to better patient care and a contribution to reduced Length of Stay

There is full visibility of compliance across all adult inpatient wards, Maternity and the ED, which is supporting Quality Improvement initiatives

There have been significant reductions in late observations and increased observations at night
Early Warning Scores calculations are now always accurate

Time saving for nursing staff

Time saving for clinical audit staff

“Having it on the big screens leads your eyes to any red messages (e.g. obs overdue) – this helps to drive observations being carried out on time”

“Since our on-call doctors also have this information at their fingertips, wherever they are in the hospital, we get their advice more quickly and they can focus their time on the patients most in need of their attention. I don't know if the patients know that, but I think they would be pretty pleased that their doctor is keeping an eye on them all the time, even if they are not stood at the end of their bed”

Resulting benefits

Reduced Length of Stay (LoS)

Contribution to reduced LoS for non-ICU admissions (c£23K in Year 1)

Contribution to reduced LoS for ICU patients, general and acute beds (c£179K in year 1)

Contribution to reduced LoS for ICU patients, ICU beds (c£206K in year 1)

Efficiency/Productivity

Time saving for Clinical Audit staff (c£8K in Year 1)

Time saving for nursing staff (c£48K in Year 1)

Observations compliance

Prior to VitalPAC the Trust had no effective means of auditing compliance but it was known that charts were often incomplete and contained Early Warning Score (EWS) calculation errors. Since VitalPAC was implemented the Trust now has full visibility of compliance across all adult inpatient wards, Maternity and the ED. This visibility now supports Quality Improvement initiatives (e.g. Observations on time and Observations at night)

Quality Improvements

Because the Trust had a paper-based system and arbitrary observation intervals, there was no means of establishing a baseline. This has made it almost impossible to measure the improvements to Patient Safety & Experience. However, based on audits and anecdotal evidence, it was known that the EWS was not always calculated accurately and that observations were often late, incomplete and not being done at night. The visibility of VitalPAC has completely changed this situation, allowing Quality Improvement initiatives to take place. The data from VitalPAC has shown significant reductions in late observations and observations at night since its introduction.

As a consequence of these improvements, the Trust entered the project in the HSJ Patient Safety Awards for 2017 under the category of “Information Technology to Improve Patient Safety”

Lessons learnt

Resources under-estimated: insufficient trainers were trained to support the roll-out and no business as usual support was planned for in the business case. Each ward requires its own trainer during roll-out. At least 1 WTE is required on a permanent basis to support on-going training (clinical and technical), some system administration tasks (e.g. managing upgrades) and troubleshooting, but large organisations should consider additional support

Organisational readiness: the project proceeded rapidly as per the contractual arrangements with the supplier and hence there was insufficient time for adequate preparation (e.g. replacement of local MEWS charts with NEWS charts, creation of training guides and records, etc., a Business Continuity Plan, an Operational Policy, resources, robust communication of the rollout plan to affected areas). However, the project team was able to overcome these challenges and deliver the first phase of the project successfully and on time

Super-users: the “super-user on the ward” concept was ineffective because of the lack of training and resource to support them during the roll-out and post go-live (e.g. simple tasks such as PIN resets and user account creation for agency staff, particularly at night and at weekends). This was exacerbated by the high turnover of staff. The concept would be more effective with support from a permanent resource. This resource would be visiting the wards to deliver regular training, for general users and the Super-users

Hardware: ownership and responsibility for the ward hardware inventory should have been delegated to the wards to ensure that kit was looked after locally. Devices need to be counted, cleaned and the software maintained in its standard configuration. Business as usual support resource is also required to ensure these responsibilities are undertaken effectively. Security has been a minor issue, with less than 5% of devices either missing or damaged after 1 year. The biggest issue has been the loss of charging cables from the Griffin charging cabinets, which do not have any specific cable security. The cabinets are lockable but most wards leave them unlocked for convenience. This was eventually resolved by the IT Department, which modified the cabinets. Finally the Griffin iOS device cases are not as robust as required. These will be replaced with Otterboxes over time as the Griffin cases fail

Approach to roll-out - Big Bang v Ward by Ward: both approaches are viable but the big bang would require significant additional lead time and resource to train all the trainers to a high standard on every ward; this makes it a high risk option requiring careful mitigation such as additional support (e.g. floor-walkers). A ward by ward roll-out is less resource intensive, easier to manage and is likely to be more effective. However, careful planning is required to

ensure that the solution is deployed to the receiving areas before the sender areas

Ward structure: before deployment, a consistent ward configuration across the organisation is desirable in terms of naming conventions. However, in reality this may be unachievable. Consistent naming conventions simplify hospital structure in VitalPAC (and probably other systems) and avoids anomalies, such as oddly named escalation beds and the use of "0" (zero) for bed numbers, which VitalPAC cannot support

Closing the Loop: early on in the project it became apparent that none of the 49 existing customers at the time had successfully implemented automatic alerts and escalation. This was identified as a risk and the Trust decided against closing the loop with the existing software. This was due to the high sensitivity of the system and excessive alerting, thus creating "alert fatigue". The issue is expected to be resolved in 2017 with the introduction of the Careflow Connect application. It is recommended that Careflow should be included in all future procurements of VitalPAC if automatic alerting and escalation is required

Spotlight on staff competency levels: although a positive aspect of the project, organisations must be prepared to accept that the introduction of VitalPAC will shine a spotlight on areas of weakness, particularly regarding training, ward processes and clinical practice (e.g. manual pulse checks, AVPU scoring, etc.). This is particularly problematic where less experienced Health Care Assistants are relied upon to carry out patient observations

Visibility and auditability: this important aspect of the VitalPAC solution has enabled Quality Improvement (QI) initiatives that would not have been achievable in the past (e.g. observations at night and observations on time). Although out of scope for the Vital Signs project, separate QI projects have been instigated using the new data

Visibility of alerts: other improvements have been made possible in the areas of Acute Kidney Injury (AKI) and Sepsis, which again were not in the original scope. Alerts are highly visible as they are displayed on large TV screens on each ward. The screens were already in place for another system but are now used almost exclusively for displaying VitalPAC. This helps avoid late observations and provides highly visible alerts. TV screens are therefore recommended, although a Privacy Impact Analysis is required as the screens cannot be anonymised currently. This Trust concluded that the benefits to patient safety greatly outweighed the risk to confidentiality. National IG guidance states that "patient safety is paramount" and this was the overriding consideration since improving patient safety is the primary purpose of VitalPAC

Observations driven by the EWS: VitalPAC makes a significant change to clinical practice by driving the observations intervals according to the patient's Early Warning Score, rather than the traditional arbitrary patterns set by the wards. This ensures that observations are taken at a time appropriate to the condition of the patient and is a major contribution to patient safety.

Recommendations from ASPH's project team

The Lessons Learned should all be addressed before commencing the project. In particular, organisations should plan for robust business as usual support for training and system management. All too often a project team is disbanded at closure leaving the system and its benefits vulnerable. Organisations should also take account of the lessons learned regarding the management of the hardware

Interfaces to Pathology and Radiology for results should be included in the specification for procurement. These are the "killer apps" in VitalPAC from the doctors' point of view and will encourage them to use the mobile devices without the need for significant change management and training. The doctors were shown briefly how to use VitalPAC and knowledge was transferred by word of mouth amongst the clinical teams. Viewing of observations and diagnostic results is now done predominantly using the VitalPAC mobile devices

It is recommended that as many assessments as possible are put into VitalPAC - e.g. dementia, VTE, alcohol and cannulas. Assessments are best held in one electronic system along with observations. This simplifies training and creates a single repository for the data

Future Plans

As noted previously, the Trust intends to complete the original project scope by introducing fully automatic alerting and escalation of deteriorating patients, which was one of the main objectives of the project. This will be done using Careflow Connect and will greatly improve patient safety.

Careflow Connect will also improve clinical communications and so the scope of the original project will be widened significantly. This is expected to make significant improvements to processes for handovers, internal referrals, task management, alerting and escalations.

The project team has already extended VitalPAC coverage by deploying in Maternity and the ED. Paediatrics is also under consideration but will require additional investment.

The Chronic Respiratory Early Warning Score (CREWS) was introduced to the Respiratory ward in Dec 2016 with release v3.3. This will be rolled out more widely during 2017.