Web Report
August 2016

Innovating for Improvement

Surviving Major Surgery
Protocolised pathways to meet individual need

York Teaching Hospital NHS Foundation Trust

The Health Foundation

About the project

Project title:

Surviving Major Surgery: Protocolised pathways to meet individual need

Lead organisation:

York Teaching Hospital NHS Foundation Trust

Project lead/s:

Dr David Yates and Dr Simon Davies

Authors:

Dr David Yates, Sara Ma, Kate Shaw, Dr Simon Davies

Project Team:

Dr David Yates, Dr Katie Ayyash, Dr Jamie Biddulph, Dr Muthuraj Kanakaraj, Mrs Sara Ma, Dr Jonathan Redman, Miss Kate Shaw, Dr Michael Stone, Dr James Walkington, Dr Jonathan Wilson, Dr Simon Davies.

Contents

About the project 2
Part 1: Abstract 3
Part 2: Progress and outcomes 6
Part 3: Learning from your project 9
Part 4: Sustainability and spread 13

Part 1: Abstract

Why Protocolised Pathways?

Major surgery is associated with significant post-operative complication rate[i]. Whilst mortality rates after major surgery have reduced steadily over the past three decades, morbidity rates have not significantly improved[ii]. In addition patients undergoing major elective or emergency surgery also consume significant amounts of health care resources[iii].

Effective post-operative management of patients is essential to improving outcome, however in this critical period patients are frequently managed by junior members of the surgical team despite this being when the majority of complications occur.

Picture 1: Nurse led haemodynamic optimisation protocols that standardise and improve care

To address these issues, we have established a Perioperative Medicine service delivering a suite of interventions including an enhanced preoperative risk assessment with early referral to smoking cession, physiotherapy and dieticians for pre-operative optimisation. In addition daily Consultant led ward rounds providing a comprehensive post anaesthetic review and nurse-led haemodynamic optimisation protocols guide fluid and blood pressure management utilising advanced cardiac monitoring equipment.

The project aims were to:

- Improve surgical outcomes and reduce complications.
- Ensure co-ordinated care throughout the surgical journey.
- Triage patients to an appropriate post-operative location and improve patient flow.
- To implement and develop protocolised pathways that enable nurses to make safe, effective and timely clinical decisions.

A new way of working

The service is managed by a group of eight Consultant Anaesthetists and two Nurse Specialists working alongside the existing Surgical and Allied Health Professional teams including Critical Outreach, Pain Management, Pharmacy, Physiotherapy and Dietetics.

As far as we are aware, this is the first time an organisation is known to have introduced such an intensively protocolised approach to the immediate post-operative management of patients. The protocols have been derived from the critical care environment and this innovative approach involves rolling out advanced treatments and technologies to the ward environment. With extensive training and Consultant level support, ward nurses have adopted this innovation safely and effectively.

Picture 2: Daily Consultant Anaesthetic Led Ward Rounds

Through implementation of a new Perioperative Pathway booklet we have been able to capture clinical data contemporaneously and we have analysed this against a comparable data set. Results have been positive and we have seen reductions in both length of hospital stay and complication rates.

Feedback obtained through nursing satisfaction surveys has been positive and our work has been welcomed by colleagues at a national and local level. We have also been well received within the small but growing social media perioperative arena through our Periop-Nurse blog. Patients have been complimentary of the team, regrettably we did not collect any formal measure of patient satisfaction and this would be top of our agenda for any future projects.

Some of our greatest achievements have stemmed from our greatest challenges. This included the integration of a new team and way of working onto the surgical ward and the up-skilling of the surgical staff nurses. The impact of the Perioperative Medicine Ward round has extended beyond the cohort of major colorectal surgery patients we intended to initially focus upon as well as contributing to improved patient flow through the department.

'This service has the potential to transform the way we care for high risk surgical patients'.
ICU Lead Sister

We have overcome a number of unexpected challenges. This has included difficulty with recruitment causing delays in starting, a lack of input from industry which was initially promised and a period of staffing volatility making training difficult. Unexpectedly, the most problematic area for protocol compliance was Critical Care despite managerial support and optimism for the project. We attributed this to a number of other external pressures on the area and a low volume of our patients making it difficult for the team to make this a priority. Finally we underestimated the requirement for out of hours cover that would be required. These issues were managed through regular multi-disciplinary meetings, clear feedback to departments giving some flexibility to deadlines and utilising input from other teams within the hospital, in particular the Critical Care Outreach service.

Part 2: Progress and outcomes

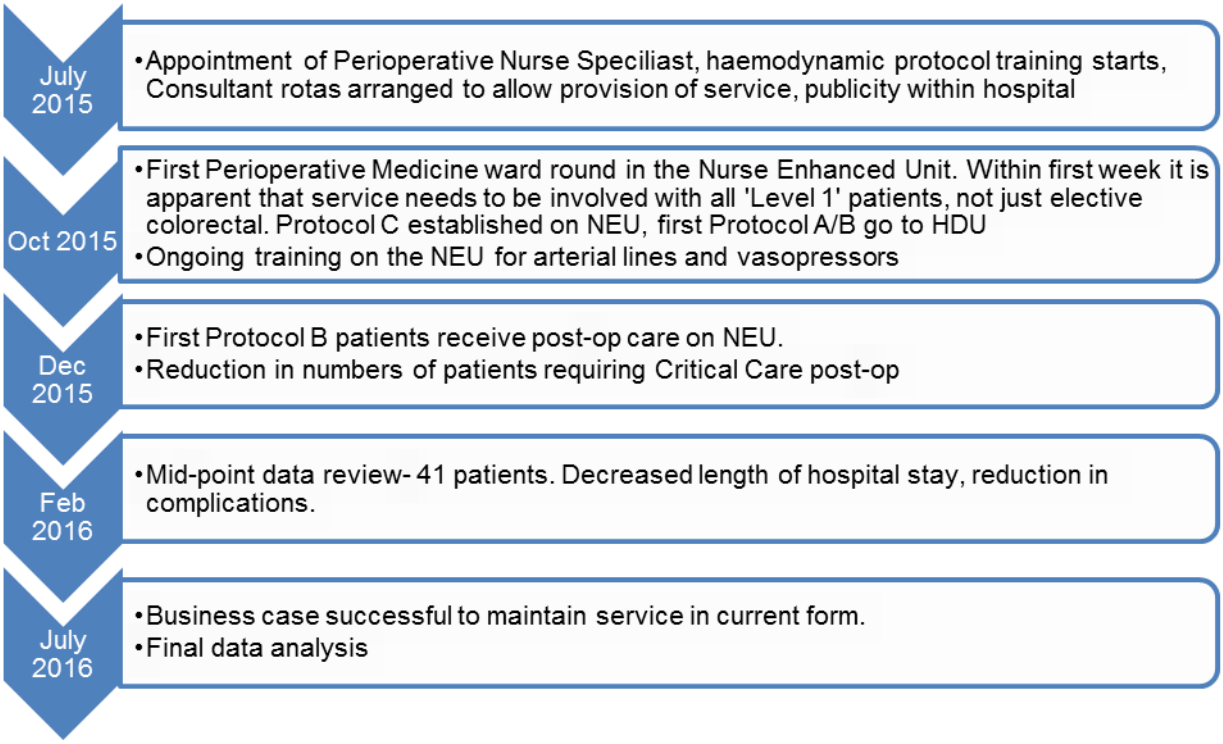
This project has comprised of two main strands:

1) The introduction of standardised, haemodynamic protocols to manage derangements in a patient's physiological parameters in the immediate postoperative period. This has involved a siginficant amouint of staff training as we have taken principles of nursing and medical care that are normally only seen in a Critical Care Unit (CCU) and introduced them onto the ward.

2) The introduction of a Perioperative Nurse Specialist and a Perioperative Medicine Consultant of the Week to assist, teach and oversee the running of the protocols on the general surgical ward, as well as providing specialist medical and nuring input.

Both of these components have been achieved and are now embedded within the standard pathway for our major colorectal surgery patients. We have collected data during the introduction of this service to help us build a business case which has been supported by our Executive Board.

We have successfully introduced the use of arterial lines and peripheral vasoactive drugs in a ward area and have not had any adverse events associated with this. Strict governance processes were immplemented to assure adequate training was delivered on the haemodynamic protocols. This necessitated a staged introduction and this has meant that our final cohort of patients who have experienced our new service was reduced from the expected 200 to 116.

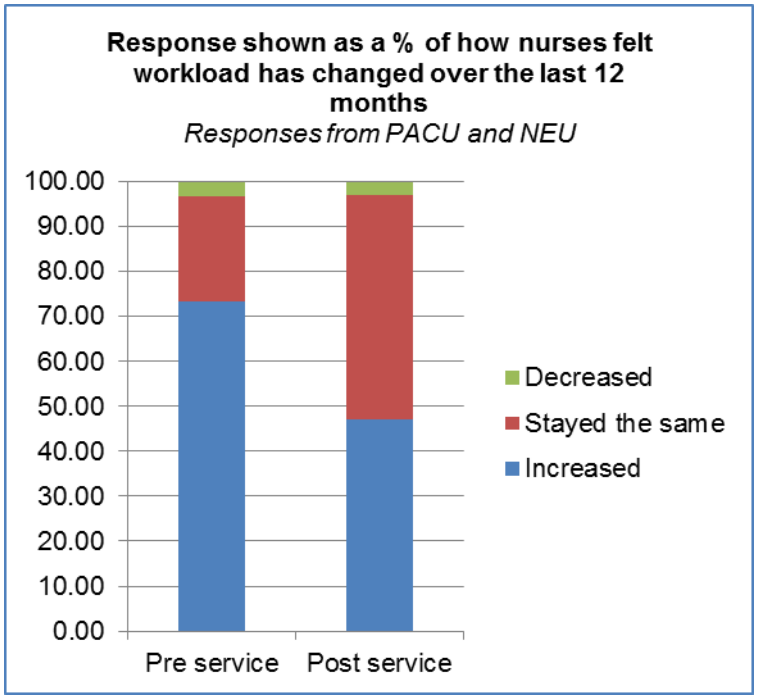


Patient Outcomes

We have seen a reduction in length of stay and complication rates, both major and minor. Data has been submitted for publication and will be avaliable shortly.

Nursing Satisfaction:

A potential risk for our project was that already stretched nursing staff were being asked to deliver even more complex care on the Nurse Enhanced Unit. We have carried out questionnaire surveys of ward nursing staff who have been invovled in the delivery of the protocols. Fifty seven nurses returned surveys prior to the intervention and 49 returned surveys after the intervention.



The overwhelming message has been positive with over half of respondants believing that the new service has improved patient care whilst not increasing workload significantly.

'[The Perioperative Medicine Service] has been a really useful addition to our Ward round system and patients outside of the protocols have benefited. We feel that this in particular is enhancing our care and patient progress'

Nurse Enhanced Unit Sister

Patient Experience:

Unfortunately, we did not formally investigate patient perceptions. Partly this was due to the fact that we did not have such data from our baseline group and secondly because it was overlooked in our original planning – something for us to learn from. However, we did receive positive verbal and written feedback from our patients throughout the period.

'From start to finish the Perioperative Medicine Team were absolutely magnificent. The care that I received was outstanding.'

Patient A

'You filled in the gaps for me and you don't know how important that was.'

Patient B

Picture 3 – A Perioperative Pathway Patient

Part 3: Learning from your project

The success of the project over the last year has been largely the result of persistence, patience and engagement from various members of the multidisciplinary team.

Picture 4: Staff training took much longer than initially anticipated.

At the beginning of the project we realised fairly quickly that implementation of the protocols was going to require significantly more time than initially planned. We had to acknowledge that introducing the project in stages would ensure we achieved the best outcome in terms of compliance and safety. The protocols have been relatively challenging concepts for ward nurses to grasp especially as the majority had no experience of working in a high dependency area. The nurses needed time to observe and practice the new skills required and transition from being novice to competent. We are now at a stage where the nurses are confidently managing these patients and appropriately assessing a patient's cardiovascular status. Many staff have commented that they enjoy looking after patients on the protocols and would like to see more of their patients managed in a similar way.

The perioperative nurse took on the majority of the training and support of the nursing staff. However, out of normal working hours we relied on support from the critical care outreach team and nursing staff from the intensive care unit. They acted as telephone support and also attended the ward to troubleshoot issues when a member of the perioperative team was not available. The outreach team were true enablers of the project and their expertise to ensure the project ran out of hours was invaluable. We involved the outreach team from the start, inviting them to planning meetings and updating them regularly on the progress of the project. This ensured that they felt involved and valued as part of the team.

The senior staff on the Nursing Enhanced Unit were also key players in ensuring our project a success. Their enthusiasm and willingness to take on new skills in management of arterial lines and advanced cardiac output monitoring was vital to getting 'buy-in' from the other members of staff on the ward.

There have been a number of challenges that we have had to overcome and lessons we have had to learn along the way. The challenges we faced can be categorised into Staffing and training, Administration and Team Integration and Communication issues as detailed on the following pages.

Staffing and training

- Initially there were issues in recruiting the perioperative nurse specialist which caused a delay in starting the project.
- We did not receive the promised staff training time from a commercial partner which meant that training took a lot longer than we initially expected.
- Planned staff rotation between Critical Care and the Nursing Enhanced Unit to facilitate training and improve the confidence of the ward nurses in their new clinical skills did not materialise due to poor levels of staffing over the winter months.
- An influx of newly qualified nurses onto the ward extended the timeframe we had original allocated to training and also meant there was a dilution of clinical experience on the ward.
- It was challenging to complete the training of nursing staff who only worked night shifts.
- Understandably there was some apprehension and anxiety from ward staff about the potential increase in their workload in the midst of challenging staffing circumstances.

Despite all of these issues we persisted with training and ensure clear visibility of the Perioperative Medicine Team. We covered some out of hours to ensure we were able to train the night staff. We front loaded the project in regards our own paid time to cover the deficit from the commercial partner. We also liaised closely with bed managers and matrons to ensure nurses weren't sent to other wards to help with staff shortages which allowed the protocol patients to be cared for safely.

Administration

- We initially had the protocol pathway documentation produced by external printers which ended up being an expensive and time consuming process.
- We found it challenging to maintain the perioperative blog due to increasing clinical and data collection pressures

We realised that producing and designing the booklets in house was cost effective and allowed for minor amendments on a regular basis. Accounting for some administrative assistance within our original application would have been of great benefit to the project and will be something to consider moving forward.

Team integration and communication

In the initial set up phases of the project we encountered protocols not being followed properly if a member of the perioperative team was not on site. We found that the nursing staff wanted the perioperative nurse to run the intervention and were reluctant to take ownership of the protocols.

Unexpectedly, the most problematic area for protocol compliance was Critical Care despite managerial support and optimism for the project. We attributed this to a number of other external pressures on the area and a low volume of our patients making it difficult for the team to make this a priority.

We received feedback from nursing staff that they occasionally felt confused after ward rounds as they would get contradicting advice from the surgical and perioperative team in regards to intravenous fluid management.

We found that with training and persistence the Nurse Enhanced Unit became more confident with initiating and running the protocols on their own. However, we still experience resistance from staff on the High Dependency Unit. This demonstrates that to embed the project and keep the motivation going it is vital that the perioperative team have overall oversight of these patients.

To streamline the two ward rounds the Perioperative Nurse Specialist and Surgical Care Practitioners would liaise after the perioperative ward round to feed back any changes we had made to the surgical plan. This improved multidisciplinary working and we found this approach could also be adopted and used with the pain team.

Our learning from introducing an innovative intervention

One of the key ways we identified and rectified these issues was through having regular team meetings. These were vital to building relationships within the department and allied health professions. They also gave us the opportunity to receive feedback and gain advice and experience from a variety of backgrounds. During these meetings we presented case studies and made action plans on how to would tackle and improve challenges we came across. We have now amalgamated these meetings with the enhanced recovery team to form a wider collective group. This has increased the number of individuals involved in discussions and we hope this will continue to improve our work.

Gaining colleagues opinions and feedback was definitely vital to the project's success. In addition to doing this through the MDT we also displayed feedback posters in clinical areas for staff to document questions or concerns they may have about the project. Nurses also had the opportunity to complete a satisfaction survey to give them an opportunity to feedback anonymously about how they felt about the

introduction of the perioperative team and pathways. We found that by spending a considerable amount of time on the nursing enhanced unit assisting with day to day nursing tasks placed us in a good position to provide training and support having established ourselves as members of the clinical team. It was evident that building positive working relationships with the nursing and medical staff was essential to the running of the project.

The perioperative nurses found it was very useful to discuss challenges with senior nursing staff in the early days of the project. It was constructive to be open and honest about difficulties and formulate constructive action plans. We asked the senior clinical nurse educator to peer review the training documents produced to ensure we achieved maximum effectiveness. In hindsight we would have liked to have done this with protocols, observation charts and preassessment documentation to reduce the amount of amendments we had to make throughout the first few months of the project.

A key area of learning for the team was that the project could not be rushed. We had to commence the training in a staggered approach in order to not overwhelm the staff. Giving the nurse's time to achieve competency in their new skills guaranteed the success of the project in the long term even though it meant an extended set up phase.

The final area of learning was in regard to data collection. We found it easier to collect data in 'real-time' rather than trawling through notes retrospectively. Our focus was clinical data but since writing the business case we have realised that it would have been beneficial to collect data that showed not just an improvement in quality but also cost efficiency. Therefore we would suggest that any other teams looking to set up a new service may want to carefully consider the wider aims of the NHS Trust. This would ensure that the project and any aligning data may support the application of any future funding.

Part 4: Sustainability and spread

Maintaining momentum

To ensure the service was continued we began developing a business case for its continuation just 6 months in. This was only possible because we had been able to undertake a mid-point outcome analysis and demonstrate positive impact.

Picture 5

The local process of applying for funding involved an initial meeting with both the Chief Executive and Director of Finance. Following this and with support from our Directorate Manager we proceeded in building a strong case for the continuation of the service. It was essential to carefully consider quality improvement and evidence over the domains of Quality and Safety, Access and Flow and Finance and Efficiency. This process clearly displayed the disparities in what clinicians and managers view as valuable 'data'. Although our data showed favourable clinical outcomes, it was challenging to demonstrate cost savings. It was essential for us to revisit our population and collect information not originally considered relevant to us such as the cost of total parental nutrition for our patients. Once this was achieved we were able to submit the proposal to the Business Case Panel which we attended for a 'confirm and challenge' discussion. Following this our case was recommended to proceed to the panel of Corporate Directors for approval and was successful.

Prospective adjustments and expansion

Although the Trust has granted continued support for the service there are still a number of challenges to ensuring the innovation is truly imbedded in local practice. Firstly, in the forthcoming year the service will be reviewed at 3, 6 and 12 months. This means that the data collection and analysis will need to continue in its current arrangement, which unfortunately does diminish the clinical time and therefore impact of the Nurse Specialist. We envisage that eventually this data will be automatically generated from the electronic patient records system. Unfortunately, our current system does not have this capability and adapting it would require a vast sum of funding and input from the information systems team that is currently not cost effective.

We plan to undertake a review of our documentation, protocols and training packages. Having explored this year's challenges and outcomes we believe that the protocols and pathways can be adapted to improve user friendliness and

transferability. We would also like to amalgamate some of our documentation with pre-existing surgical documentation to reduce replication. We plan to apply for further funding to develop a web-based training package that is accessible to rotational staff such as junior doctors and we also hope to develop sophisticated simulation packages to allow staff to test and apply their skills safely. Unfortunately, clinical commitments have meant that the development of the 'periopnurse' blog and twitter account has been limited and we hope to revive this during the forthcoming year.

Initially, funding has been granted for the continuation of the service as it stands with the addition of a full time Clinical Fellow who will aid in covering the Anaesthetic rota, Perioperative Ward Rounds and data collection. We believe that in order for the service to reach its maximum potential further expansion is required. This would include out of hours support, administration and data management support and dedicated allied professional time. Up scaling of the team would also allow us to cover other surgical specialities including vascular and urology. Our long term aspiration is to see the team cover elective and acute admissions and the expansion of the nurse enhanced unit in order to further reduce Critical Care utilisation for the immediate post-operative period.

Promoting our work

- During the course of the project we have attended a number of conferences and meetings to discuss the work we are doing. These include:
- Integrating care throughout the patients surgical journey – The Kings Fund.
- Yorkshire Society Of Anaesthetists meeting
- York Hospital Patient Safety Conference
- Steering group meeting of the national and regional clinical leads for Perioperative Medicine.
- Presented at Bradford Royal Infirmary and Harrogate District Hospital clinical governance meetings.
- Hosted visits from Scarborough General and Bradford Royal Infirmary.

Spread

As we refine our service locally, it is becoming apparent that the concept of utilising advanced cardiac monitoring and protocolising the initial post-operative haemodynamic management of patients is replicable in other Trusts. The idea of an enhanced preassessment and perioperative medicine team is already being adopted by other Trusts and we believe there is the potential to collaborate with others working in the field to develop a 'Perioperative Toolkit' that would enable hospitals to adopt such an approach.

References

[i] Yates DR, Davies SJ, Milner HE, Wilson RJ. Crystalloid or colloid for goal-directed fluid therapy in colorectal surgery. *British Journal of Anaesthesia*. 2014 Feb;112(2):281-9

[ii] Findlay G et al. Knowing the Risk; A review of the peri-operative care of surgical patients. London: National Confidential Enquiry into Patient Outcome and Death 2011Flynn et al Periop Medicine 2014, 3

[iii] Vonlanthen et al. The Impact of Complications on Costs of Major Surgical Procedures: A Cost Analysis of 1200 Patients Annals of Surgery 2011; 254:(6) 907-913