Reducing rates of surgical site infection in orthopaedic patients

Royal Liverpool and Broadgreen University Hospital used NICE guidance to reduce rates of surgical site infection (SSI) in their trauma and orthopaedic surgery units. The hospitals carried out several innovative measures to significantly reduce rates of SSI, and audited the results to ensure continual improvement.

“Our project has surpassed expectations – we’ve managed to bring surgical site infection down below national averages, evolve care, and improve the overall patient journey.”

William Harrison, Core Surgical Trainee, Royal Liverpool and Broadgreen University Hospitals

Audit reveals unexpectedly high rates of SSI

Surgical site infection is where an infection occurs in, around or deep to a wound after a surgical procedure. SSIs make up around 20% of all healthcare-associated infections. Approximately five percent of patients undergoing surgery subsequently develop an SSI.

The Royal Liverpool and Broadgreen University Hospitals Trust were aware that rates of SSI on the orthopaedic wards were higher than expected. Management of SSI was under-resourced. In addition, both patients and primary care professionals voiced concerns regarding communication with the surgical teams when following up wound problems. Routine data collection for mandatory surveillance of SSI revealed varying infection rates resulting in increased readmission rates.

The hospitals consequently used NICE guidance to conduct a comprehensive review of the patient journey looking at causes of SSI to help redesign their pathway. They aimed to gain an accurate picture of SSI rates; raise awareness of the factors influencing SSI; develop an approach for dealing with them; reduce readmission rates; and improve overall patient outcomes.

An organisation-wide approach to change

An assessment showed rates of SSI and readmission were up to four times higher than the national average, contributing to delayed discharge and higher readmission rates.

Reasons for this included lack of communication between microbiology, surgeons and nurses; inaccurate data collection and interpretation often resulting in ‘non-infections’ being labelled as ‘infections’; and non-implementation of NICE guidance on pre-operative antibiotic prophylaxis.

Consultant leads for SSI were appointed in the orthopaedic and microbiology units with a multidisciplinary team led by two full-time specialist nurses. Every SSI was reviewed to confirm accurate data submission to Public Health England, and complex cases discussed in a fortnightly multi-disciplinary meeting.

The elective orthopaedic wards were ring-fenced from non-elective admissions and made antibiotic-free zones. Nurses redesigned a wound dressing protocol, direct ward access was given to patients and healthcare professionals, and an outpatient wound clinic was initiated.

The orthopaedic lead ran a teaching program, which included best-practice advice on hand washing and theatre etiquette as recommended by NICE. NICE guidelines on antibiotic prophylaxis were also implemented.

Significant improvements in several areas

Data from both hospitals were collected and analysed following the new measures. Infection rates fell below national averages in several areas:

- Total hip replacement infection rates fell from 1.9% in 2010 to 0.2% in 2013
- Hip fracture surgery infection rates fell from 5% in 2010 to 1.6% in 2013
- Readmission rates fell to below national averages, helped through establishment of the new wound clinic
- Recommended prophylactic antibiotic rate rose from 60% to 95%

The creation of defined SSI leadership roles in both orthopaedics and microbiology improved communication between the teams, instigated coordinated action in reduction of SSI, and educated junior doctors and nursing staff. The multidisciplinary team approach allowed continuous review of the patient journey, exposing shortcomings, and allowed timely intervention to maximise patient care.

This project was not initially funded, rather roles were reallocated, and once improvement was shown, extra funds were made available to support the changes.

Implementing this approach has significantly improved SSI rates and readmission rates, and potentially reduced overall costs.

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