Patients undergoing surgery for spinal injuries are susceptible to surgical site infection so one hospital used a patient group direction to reduce infection rates

Using PGD to reduce surgical infection risk

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Patients with spinal injuries are at increased risk of surgical site infection due to increased numbers of comorbidities and prolonged surgical procedures. This article describes the impact of a patient group direction that was used in a pre-operative assessment clinic to provide Staphylococcus aureus decolonisation to patients with a spinal injury who required prophylaxis. A post-implementation audit revealed that, in the main, staff and patients adhered to the direction, and infection rates were reduced.

Surgical site infection (SSI) occurs when a wound becomes infected after an invasive (surgical) procedure. These infections account for up to 16% of healthcare-associated infections (HCAIs) and are the third most common HCAI (National Institute for Health and Excellence, 2013a). Nearly 8% of patients undergoing a surgical procedure develop an infection (Health Protection Agency, 2012), although this rate may be a lot higher when taking into account infections that present after patients are discharged from hospital. SSIs have a negative impact on patient care, place a socioeconomic burden on all involved and are associated with:

- Significant clinical, social and financial cost;
- Lost bed days;
- Morbidity (Gibbons et al, 2011; Graves et al, 2007).

In financial terms SSIs cost the NHS around £700m per year (HPA, 2012). Reducing their incidence in hospitals could save £2,100–£10,500 per SSI, although complex surgery can result in costs of up to £20,000 per SSI (NICE, 2013a).

Patients with a spinal injury are at increased risk of SSI due to an increased number of comorbidities and long surgical procedures. Following surgery, patients may be required to lie on their back. This leads to increased pressure, which compromises blood supply to the wound and can cause dehiscence. Sweating and lack of ventilation to the back following surgery can also increase the risk of infection.

Spinal SSI rates can range from 0.7% to 1.9% based on the complexity of the surgery (Schimmel et al, 2010).

SSI reduction strategies take a zero-tolerance approach. At the Royal National Orthopaedic Hospital, the spinal SSI rates were 2.6% for January-December 2013 and 1.7% for the 2013/14 financial year ending in March; based on data from Public Health England (2014), this was three times higher than national average.

We used a patient group direction (PGD) to provide Staphylococcus aureus, decolonisation treatment in our pre-operative assessment (POA) clinics for patients with a spinal injury, which they self-administer at home.

5 key points

1. A patient group direction allows health professionals to administer medication without the prescriber seeing each one.
2. Healthcare staff should be given adequate information and training to understand the rationale for PGD.
3. Health professionals should ensure patients subject to the PGD understand what it means.
4. A decolonisation PGD can help to reduce surgical site infection rates.
5. If a PGD reduces SSI rates in patients undergoing spinal surgery it can be used to in other patient groups.

A Patient's guide to Staphylococcus aureus decolonisation

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Implementing the PGD

A PGD is a written instruction for the supply and/or administration of a named licensed medicine for a defined clinical condition. It allows a range of specified registered health professionals to supply and/or administer a medicine directly to a patient without having to see a prescriber. The health professional using the PGD is responsible for assessing patients and ensuring they fit the criteria set out in the direction (NICE, 2013b).

Box 1 outlines our decolonisation regimen. We wanted to find out whether the PGD could reduce spinal SSIs.

Intervention participants

Patients with a spinal injury who attend POA clinics were given the PGD and participated in the decolonisation regimen. Those with MRSA were subject to the PGD as well as their normal decolonisation regimen.

The PGD was started in the POA clinics because 85% of patients undergoing spinal surgery attend the clinics.

Patients were excluded if they:

» Did not have a spinal injury and were undergoing surgery;

» Had a spinal injury but did not attend the POA clinic;

» Had a spinal injury but were not undergoing major spinal surgery.

A PGD protocol, patient information leaflet and implementation presentation were written in collaboration with the pharmacist, microbiologist, spinal surgeon, infection prevention and control (IPC) team and the POA team. The antimicrobial pharmacist and the IPC lead nurse trained staff in how to implement the PGD.

Implementation started in June 2014. POA staff marked each patient’s electronic computer record to indicate recipients of the PGD; in this way, adherence and distribution of the PGD could be monitored.

All patients continued to be screened for MRSA so they could be isolated if they tested positive. Those who tested positive received the standard MRSA decolonisation regimen along with the PGD.

Evaluation

A post-implementation audit and review of the PGD was carried out from June to December 2014, in which patients were identified using an electronic data capture system. We wanted to find out:

» How many patients received the PGD;

» Why some patients who should have received the treatment did not;

» Whether infection rates fell in response to this innovation.

All eight POA clinic nursing staff were interviewed to help us understand the implementation process and difficulties encountered. Semi-structured interviews included 15 questions on patient adherence with the PGD, implementation process and difficulties encountered. Staff were free to ask questions during the interview, which took about 20 minutes to complete. One staff member did not distribute the PGD because her patients did not meet the inclusion criteria, so the results are based on seven people.

We carried out surveys using questionnaires with 30 patients to understand how they used it in practice.

Results

From June to December 2014, 613 patients with spinal injuries were seen in the POA clinic and 791 spinal operations took place (Table 1). Overall, 56.8% of those who had a spinal operation received the PGD and 43.2% did not. The number of patients who received the PGD increased as staff became accustomed to distributing it. Fig 1 shows the reduction in SSI rates; they fell from 2.4% in April to June 2014 to 0.6% in January to March 2015.

Staff feedback

Staff said no patients objected to the PGD, although one patient was identified as having a peanut allergy and did not receive the PGD because Nascoptin nasal cream contains arachis [peanut] oil.

All seven staff who distributed the PGD said they:

» Used the patient leaflet to inform patients about the PGD;

Tested positive for MRSA so they could be isolated if they were written in collaboration with the leaflet and implementation presentation for MRSA so they could be isolated if they performed the PGD; in this way, adherence and distribution of the PGD could be monitored.

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» Explained its purpose;
» Asked patients to use the products in the PGD on all areas of the body.

They all asked whether patients needed help as part of the usual assessment process, and said the training on implementing the PGD was sufficient. Some patients were confused about the number of days or times per day when the PGD was to be used, but staff ensured they reviewed the product leaflet with these patients and that they received a booklet with the schedule of when the decolonisation product should be used.

### Patient feedback

Thirty questionnaires were distributed to patients on the ward and 20 were returned. In total, 17 patients said they understood the importance of the PGD, 15 were satisfied with the advice given and 17 felt they had the opportunity to ask questions about the PGD.

Seventeen patients said they had no problems applying the products but five said they could not reach all areas of their back. Some said the chlorhexidine body wash dried their hair and that no staff checked they had used the products on admission to hospital for their surgery. All ward nurses now check that patients undergoing spinal surgery who have received a PGD packet have used it. They now document the patient responses on the admission sheet.

### Other SSI measures

Other SSI reduction measures implemented since October 2013, such as embedding antimicrobial stewardship, sterile techniques and staff training on preventing SSIs, may have also contributed to the reduction in these infections. For example, in October 2013 the surgical prophylaxis for orthopaedic procedures was changed from cefuroxime to teicoplanin and gentamicin.

### Recommendations

It is important that staff provide patients with the PGD and information about how to use it in the POA. Staff are advised to tell patients who cannot reach their back to use a long brush or sponge or ask a relative or carer to help them apply the body wash to their back to ensure effective application.

There is a time lag with confirmation of SSIs, as patients usually take a few weeks or longer to develop infection, making it difficult to assess the true impact of implementing the PGD. SSIs present up to one year after surgery so patients should be followed up for one year.

We are considering whether a standard decolonisation regimen is warranted for all orthopaedic patients before surgery and how to include those who cannot attend POA clinic. We will review the possibility of delivering the regimen on admission to those patients who do not attend the POA clinic. It is recognised that patients who do not have a POA before admission or who are asked over the telephone will otherwise always be omitted from the protocol.

### Conclusion

Evidence-based policies, strategies and standards for SSI prevention, care, control, monitoring and implementation aim to improve infection monitoring and management processes to ensure better outcomes after surgery by reducing infection rates and the pain associated with them. Evaluation of the impact of the PGD on SSI rates in patients with spinal injuries can be used to help to meet these aims.

### References