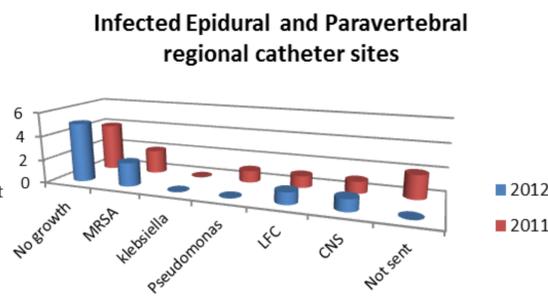
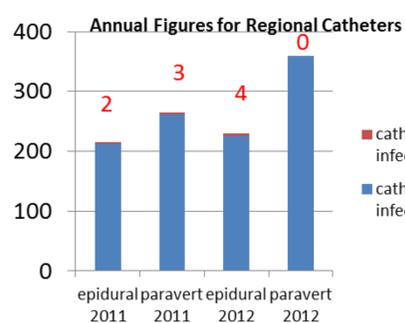


Reducing the Risk of Infection with Regional Anaesthetic Catheters : The Regional Infusion Catheter Score (RICS)

Background

Liverpool Heart and Chest Hospital (LHCH) provides a thoracic and upper GI service to Merseyside, North Wales and the Isle of Man. Our use of epidural analgesia postoperatively for thoracic patients has declined over the last few years, favouring the less risky technique of surgically placed paravertebral infusions combined with Morphine IV PCA; overall clinical outcomes and length of stay indicate little difference compared with epidural analgesia **Scarci , Joshi and Attia (2010)**. However upper GI patients (oesophagectomies & gastrectomies) still receive epidural analgesia for up to 5 days post op (6 days from insertion). All regional catheter sites are routinely monitored daily by the Acute pain team and on each shift by the nursing staff. In 2011-2012 we experienced an increase of localised infections at both epidural and paravertebral catheter sites. Over the two year period a total of 7 patients out of 1,069 (0.65%) required antibiotic therapy and 4 patients developed MRSA infections at their regional catheter sites. Root Cause Analyses were conducted revealing a number of learning points and areas for improvement. All possible contact points were reviewed and improvements were made in each area to reduce the risks of developing infection at these catheter sites.

Infection rates



Regional Infusion Catheter Score (RICS score)

Site appears healthy and dressing intact	0	No action, continue to monitor on each shift
Dressing bloody, rolled up or leakage under dressing	1	Replace dressing clean with 0.05% aqueous chlorhexidine using aseptic technique, continue to monitor
Erythema around site but not raised or painful	2	Call APNS to review Check WCC and temperature, if either raised, anaesthetist or surgical team to review
If two or more of the following Erythema, raised, painful at site, backache , Pyrexia or raised WCC	3	Call for urgent review from APNS, anaesthetist or surgical team Catheter to be removed as soon as possible (check heparin time for epidural). Prescribe alternative analgesia Send tip and site swab for C & S Consider antibiotic therapy

Strategies and Improvements

Theatre

Epidural insertion The policy was reviewed, and changes made:-
All epidural insertions must be carried out in anaesthetic room, full asepsis and minimal staff allowed in the anaesthetic room during procedure.
(At the time all our paravertebral catheters were inserted under direct vision by our surgeons under theatre conditions)

Skin prep We changed to a Chloraprep lollipop (allowing adequate alcohol drying time before needle insertion)

Dressing The dressings used were evaluated; although we continued to use a Tegaderm sterile dressing we added re-enforcement with flexi fix clear roll dressing to border the Tegaderm dressing to prevent the dressing rolling up

WARD

Dressing The dressing technique developed for theatre was also used if the dressing needed replacing on the ward.
The dressing packs used for epidural and paravertebral catheter sites were also reviewed; it was found that the sterile gloves contained within the pack were difficult to apply using a sterile non-touch technique therefore additional separately packed gloves are now used.

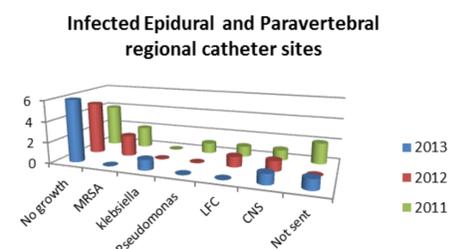
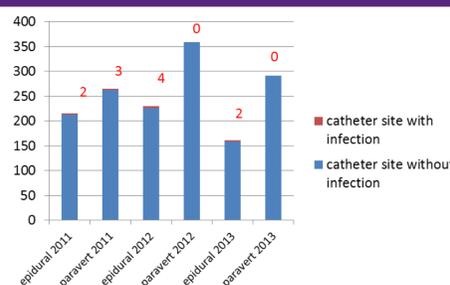
Documented site observations As part of the standard clinical observations the nursing staff on each shift would visibly check the site to ensure the dressing was intact and there were no signs of infection, marking the observation chart with a tick. We decided that this was not sufficient. Taking our inspiration from the Visual Infusion Phlebitis score (VIP) developed by Andrew Jackson RGN

(1998) we developed a 0-3 scoring system for our regional anaesthetic Infusion sites called the Regional Infusion Catheter Score or (RICS). This scoring system, like the VIP score includes appropriate management if signs of infection are present. Along with the daily assessment by the acute pain team, good nursing monitoring and appropriate timely management we felt this should reduce the risk of developing an epidural abscess which could potentially lead to permanent harm.

Discharge information As suggested in the NAP 3 report (2008) we developed a discharge information leaflet to give to patients on discharge after epidurals were used as part of there post operative pain management, should any symptoms occur following discharge.



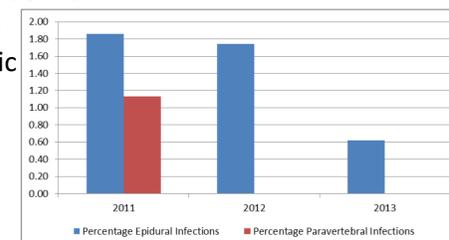
Discussion and Conclusion



During 2013 following the introduction of the RICS score and our improvement program only 2 epidural sites were found to be infected out of 452 patients (0.44%) of which only one required antibiotic therapy (compared with 4 patients requiring antibiotic therapy in both 2011 and 2012.)

No patients developed an MRSA infection (compared with 2 patients who developed this infection in 2011 and 2012). None of the patients during the three years developed any of the signs of meningitis but were closely monitored in hospital until discharge (with a epidural discharge information sheet). The majority were diagnosed as a superficial site infection; one patient had MRSA present at the paravertebral site and was subsequently found to have MRSA in the thoracotomy wound and went on to develop a MRSA bacteraemia.

2013 was the beginning of a continual decline in the use of epidural analgesia for our thoracic patients; taking this into account we have seen a reduction in the infection rates From 2.64% in 2011 to 0.62% for epidural catheters in 2013 and 1.13% to 0% for paravertebral catheters in 2012 and 2013.



The reductions in infection rates appear to be a result of the combined improvements made with the help of the medical and nursing staff to look after these patients in theatre and on the wards. Having a clear monitoring system which includes appropriate management appears to ensure timely management hopefully reducing the risks of developing more serious complications.