AN ANALYSIS OF THE RESPONSE TO SUSPECTED PATIENT HARM ASSOCIATED WITH IMPLANTED PORTS

BACKGROUND
Between June and December 2015, Huber needles used to access a specific low profile implanted port in children were found to have perforated the plastic base of the device on 7 occasions (16%) at the Canterbury DHB. There was no identifiable correlation between the time of port insertion and time of perforation. It was noted that cases only appeared following the introduction of a new brand of Huber needle. Port perforation in children has been described before [1–3], but was not encouraged previously at our organisation. The introduction of the new needle was in response to safety concerns with the previous product. Extension tubing connected to the needle was splitting where it joined with a side port, leading to blood loss and risk of air embolus. This poster describes our response to a newly perceived problem, and the efforts made to minimize the risks to patients.

THE IMPACT AND RESPONSE
Recognition of leakage of fluid or medication from the needle insertion site resulted in a prompt response.

Action 1: Determination of extent of problem. All patients with the port and access needle in question were reviewed. Four of the seven perforated ports were confirmed on a dye study. In these, the usual pressure exerted on injection of the dye did not reveal the complication, whereas dye injected using greater pressure revealed the perforation.

Action 2: Modification of imaging technique. This resulted in an improved technique that was communicated to Interventional Radiology staff to ensure the technique was used consistently where perforation was suspected so that the perforations could be identified and reduced false negative studies.

Action 3: Replacement of perforated port where a port was still required. Children with perforated ports and an ongoing need for a port - had their ports removed and replaced under general anaesthesia. No child has suffered adverse local complications as a result of extravasation and replacement under general anaesthesia.

Action 4: Analysis of needles and ports. Preliminary investigation focused on the characteristics of the implanted port and the needle used, staff needle access technique and the procedures around training. The vulnerability of the base of the port to needle perforation compared with metal base factors.

Action 5: Communication with the device manufacturer and other jurisdictions e.g. MedSafe. Additional advice has now been incorporated in the training on the actual depth in millimetres of the device prominence a subcutaneous port is positioned and the coverage of tissue over the top of the device.

Action 6: Communication with staff. A Patient Safety Alert was disseminated to clinical staff locally and throughout New Zealand describing the complication, associated signs and symptoms, possible contributing factors and strategies to minimise the risk of port perforation.

Action 7: Keeping patient and family informed. This was critical, and taken very seriously. Parents of all children identified as having plastic low profile ports were informed. The meeting was used to further explain the complication and determine the best option to manage the device for each child.

Action 8: Plan to reduce future harm. Ongoing consultation between the paediatric surgical team, paediatric physicians, nursing and quality personnel established short and long term strategies to prevent further perforation events. A trial of three different needles was set up to determine the most appropriate match with the low profile plastic based port to minimize the risk of future perforation.

Action 9: Change of port to metal base. Only implantable ports with metal bases are now inserted.

Action 10: Root Cause Analysis. The RCA is currently being finalised.

Action 11. Ongoing surveillance. Work continues to monitor and maintain a list of the cohort of affected children. As children have their ports removed, the paediatric surgical team inspect the base of each device for evidence of perforation or near perforation.

Action 12. Training of staff. Refinement of Central Venous Access Device (CVAD) education and training around access technique.

Action 13. Design improvements. Medical device manufacturers and distributors continue to be lobbied for a sufficient range of safe access needles and to include risk of perforation with the plastic port product in the product bulletin.

WHAT WE HAVE LEARNED
The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation. The multicentre DHR response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation.

CONCLUSION
The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation.

Examples of perforation and near perforation

References

Amanda Lyver, Paediatric Oncologist; Spencer Beasley, Paediatric Surgeon; Becky Conway, Child Health Nurse Educator; Graeme Webb, Quality Coordinator, Child Health, Christchurch Hospital, Christchurch, New Zealand Becky.Conway@cdhb.health.nz

The first perforated port detected, area of needle penetration highlighted in black circle

The same perforated port shown in Fig A showing fluid flowing through the base

A Patient Safety Alert was disseminated to clinical staff locally and throughout New Zealand describing the complication, associated signs and symptoms, possible contributing factors and strategies to minimise the risk of port perforation.

Meetings and written communication have provided CDHB clinical staff with ongoing updates regarding the progress of the RCA and evolving strategies to minimise perforation risk.

CDHB clinical areas and affiliated shared care centres were informed of this children who continue to have the at-risk device to ensure extra caution and vigilance when caring for these children.

Parents and caregiver counselling
Parents need a clear understanding about what is a safe level of activity for their child during times when the subcutaneous port is accessed.

Policy and training
The existing CDHB policy and training offers guidelines on choice of needle length based on how a permanently a subcutaneous port is positioned and the coverage of tissue over the top of the device. Additional advice has now been incorporated in the training on the actual depth in millimetres of the device which could further help practitioners to ascertain correct needle length.

The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation.

Amanda Lyver, Paediatric Oncologist; Spencer Beasley, Paediatric Surgeon; Becky Conway, Child Health Nurse Educator; Graeme Webb, Quality Coordinator, Child Health, Christchurch Hospital, Christchurch, New Zealand Becky.Conway@cdhb.health.nz

The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation.

Amanda Lyver, Paediatric Oncologist; Spencer Beasley, Paediatric Surgeon; Becky Conway, Child Health Nurse Educator; Graeme Webb, Quality Coordinator, Child Health, Christchurch Hospital, Christchurch, New Zealand Becky.Conway@cdhb.health.nz

The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation.

Amanda Lyver, Paediatric Oncologist; Spencer Beasley, Paediatric Surgeon; Becky Conway, Child Health Nurse Educator; Graeme Webb, Quality Coordinator, Child Health, Christchurch Hospital, Christchurch, New Zealand Becky.Conway@cdhb.health.nz

The multidisciplinary DHB response around this cluster of events was rapid, transparent and effective, minimizing risk to children, their families and to the reputation of the service/organisation. The overarching aim was to minimise risk to children, their families and to the reputation of the service/organisation.