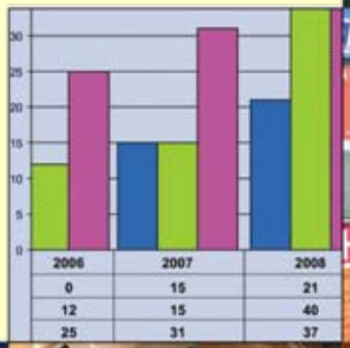
Reducing Surgical Site Infections in the Paediatric Neurosurgical Patient

October 2008

Creating Better Experiences for People Using Health Services



2008 NSW Health EXPO

Prepared by Dr Ray Chaseling, Gabrielle O'Grady, Ahmed Jamal, Elizabeth Harnett

Children's Hospital Westmead

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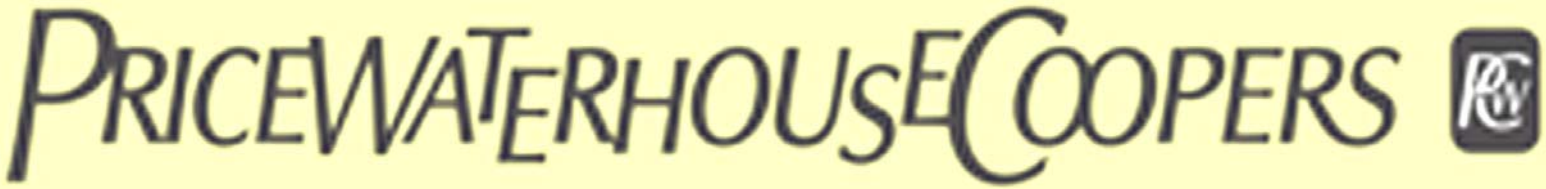

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Aim

To reduce surgical site infections in the paediatric patient admitted for insertion of VP shunts and EVDs from 7.5 % to zero % within 12 months.

Nature and Extent of the Problem

- Surgical Site infections are the second most common type of adverse event occurring in hospitalised patients (Brennan et al. 1991)
- In the baseline period (July to December 2006) the surgical site infection rate in children admitted to CHW for insertion of VP shunt and EVDs was 7.5 %. These patients were readmitted for a total of 149 days, requiring 17 unplanned returns to theatre.

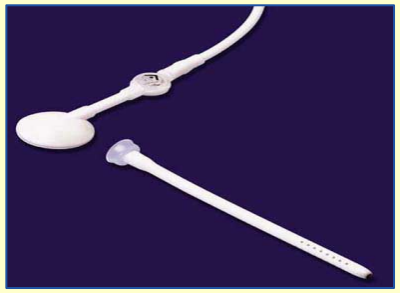
Strategic Importance

- NSW Health Strategic Direction - ***"Creating better experiences for people using health services".***
- Reduce the risk of infection in healthcare settings.
- Reduce unplanned/unexpected hospital readmissions.

Planning & Implementing Solutions

Review of the medical literature highlighted the following evidence to practice gaps:

- Use of appropriate prophylactic antibiotics
- Hair removal in anaesthetic bay
- Double gloving by surgeons
- Wound irrigation with hydrogen peroxide
- Soaking of shunt in Gentamicin prior to insertion
- Insertion of bactiseal catheters in high risk patients
- Strict dressing protocol

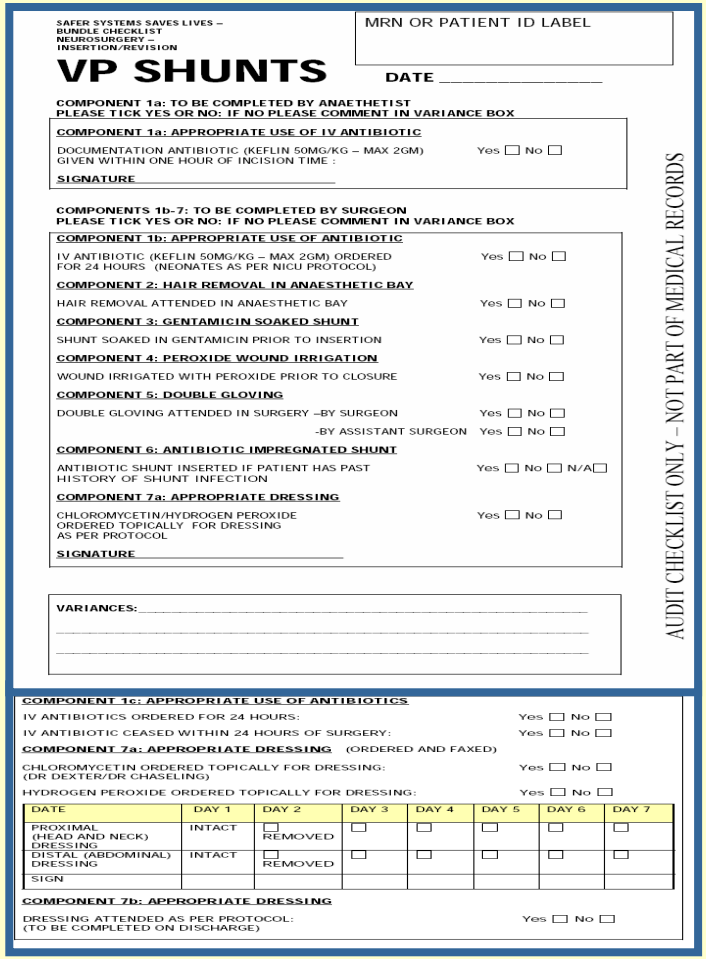


Planning & Implementing Solutions

- Engagement of stakeholders.
- Extensive consultation with expert departments.
- Consultation with peer hospitals in the USA.
- Agreement on components of bundle of care.
- Development of an agreed protocol.
- Staff education to ensure their understanding of the protocol.
- Implementation of the protocol.
- Compliance monitoring.

Planning & Implementing Solutions

The evidence based protocol checklist - Each stakeholder follows the protocol checklist at various stages in the patient journey.



SAFER SYSTEMS SAVES LIVES –
BUNDLE CHECKLIST
NEUROSURGERY –
INSERTION/REVISION

MRN OR PATIENT ID LABEL

VP SHUNTS

DATE _____

COMPONENT 1a: TO BE COMPLETED BY ANAETHETIST
PLEASE TICK YES OR NO: IF NO PLEASE COMMENT IN VARIANCE BOX

COMPONENT 1a: APPROPRIATE USE OF IV ANTIBIOTIC

DOCUMENTATION ANTIBIOTIC (KEFLIN 50MG/KG – MAX 2GM) GIVEN WITHIN ONE HOUR OF INCISION TIME : Yes ☐ No ☐

SIGNATURE _____

COMPONENTS 1b-7: TO BE COMPLETED BY SURGEON
PLEASE TICK YES OR NO: IF NO PLEASE COMMENT IN VARIANCE BOX

COMPONENT 1b: APPROPRIATE USE OF ANTIBIOTIC

IV ANTIBIOTIC (KEFLIN 50MG/KG – MAX 2GM) ORDERED FOR 24 HOURS (NEONATES AS PER NICU PROTOCOL) Yes ☐ No ☐

COMPONENT 2: HAIR REMOVAL IN ANAESTHETIC BAY

HAIR REMOVAL ATTENDED IN ANAESTHETIC BAY Yes ☐ No ☐

COMPONENT 3: GENTAMICIN SOAKED SHUNT

SHUNT SOAKED IN GENTAMICIN PRIOR TO INSERTION Yes ☐ No ☐

COMPONENT 4: PEROXIDE WOUND IRRIGATION

WOUND IRRIGATED WITH PEROXIDE PRIOR TO CLOSURE Yes ☐ No ☐

COMPONENT 5: DOUBLE GLOVING

DOUBLE GLOVING ATTENDED IN SURGERY –BY SURGEON Yes ☐ No ☐
-BY ASSISTANT SURGEON Yes ☐ No ☐

COMPONENT 6: ANTIBIOTIC IMPREGNATED SHUNT

ANTIBIOTIC SHUNT INSERTED IF PATIENT HAS PAST HISTORY OF SHUNT INFECTION Yes ☐ No ☐ N/A☐

COMPONENT 7a: APPROPRIATE DRESSING

CHLOROMYCETIN/HYDROGEN PEROXIDE ORDERED TOPICALLY FOR DRESSING AS PER PROTOCOL Yes ☐ No ☐

SIGNATURE _____

VARIANCES: _____

AUDIT CHECKLIST ONLY – NOT PART OF MEDICAL RECORDS

COMPONENT 1c: APPROPRIATE USE OF ANTIBIOTICS

IV ANTIBIOTICS ORDERED FOR 24 HOURS: Yes ☐ No ☐
IV ANTIBIOTIC CEASED WITHIN 24 HOURS OF SURGERY: Yes ☐ No ☐

COMPONENT 7a: APPROPRIATE DRESSING (ORDERED AND FAXED)

CHLOROMYCETIN ORDERED TOPICALLY FOR DRESSING: (DR DEXTER/DR CHASELING) Yes ☐ No ☐
HYDROGEN PEROXIDE ORDERED TOPICALLY FOR DRESSING: Yes ☐ No ☐

DATE	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
PROXIMAL (HEAD AND NECK) DRESSING	INTACT	☐ REMOVED	☐	☐	☐	☐	☐
DISTAL (ABDOMINAL) DRESSING	INTACT	☐ REMOVED	☐	☐	☐	☐	☐
SIGN							

COMPONENT 7b: APPROPRIATE DRESSING

DRESSING ATTENDED AS PER PROTOCOL: (TO BE COMPLETED ON DISCHARGE) Yes ☐ No ☐

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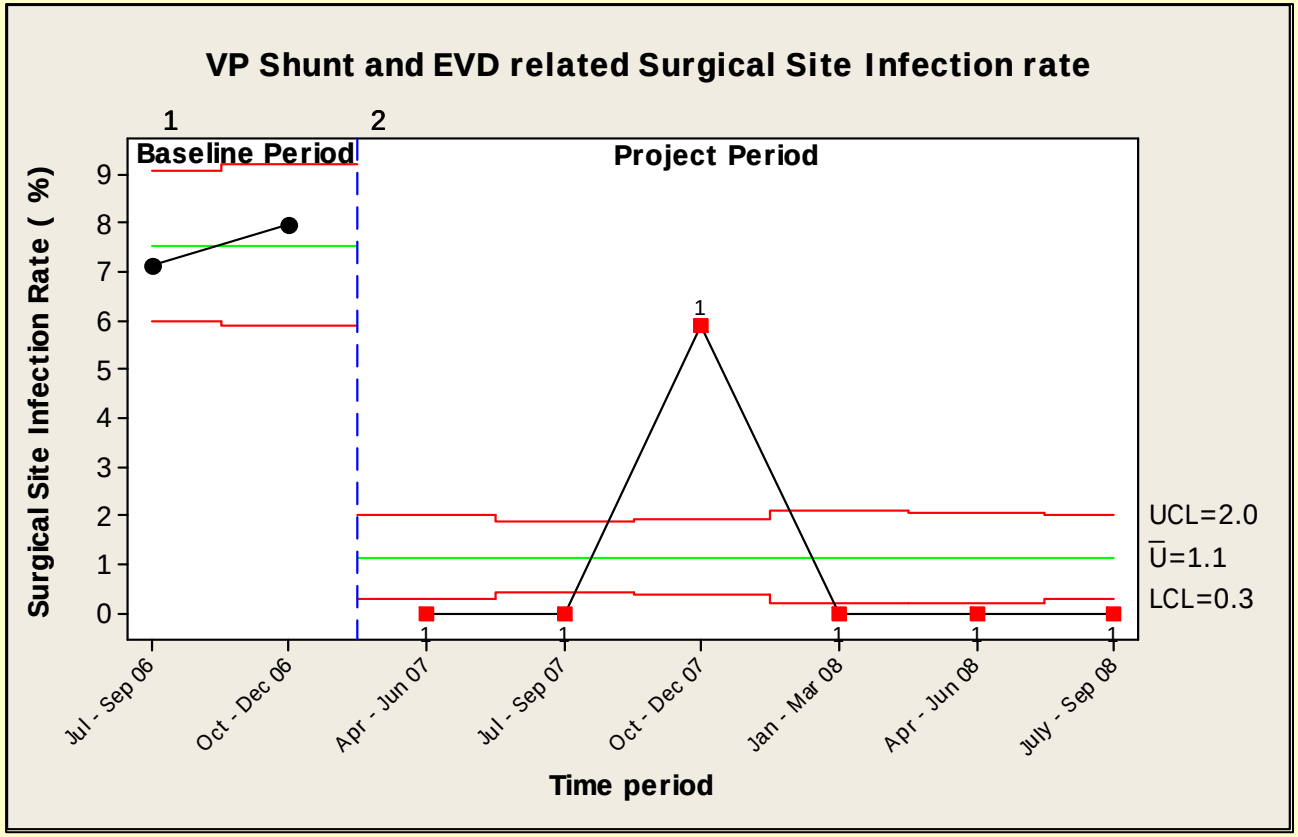
Outcomes & Evaluation



- The surgical site infection rate has reduced significantly from 7.5 % to 1.1 %.
- In 2008, the rate of SSIs currently stands at zero

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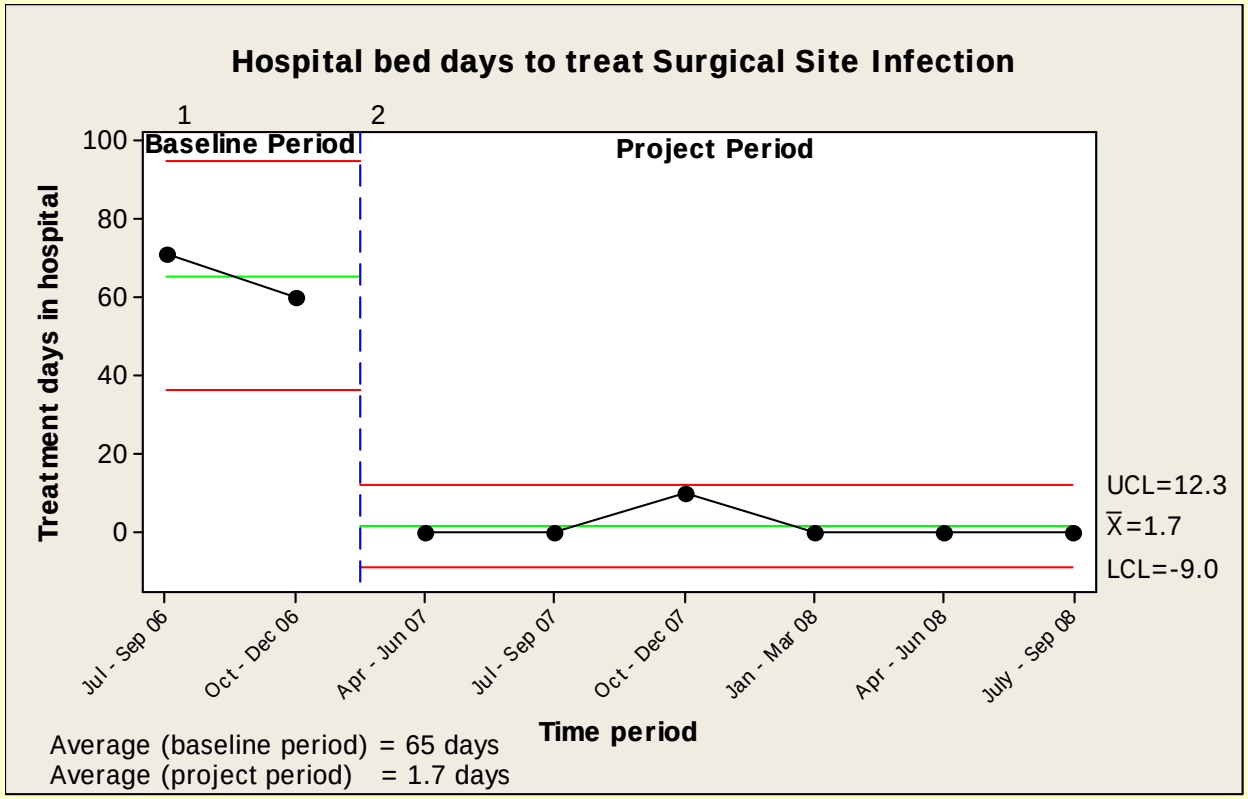
Outcomes & Evaluation



The average number of bed days to treat neurosurgical SSIs has reduced from 65 days to 1.7 days/ quarter.

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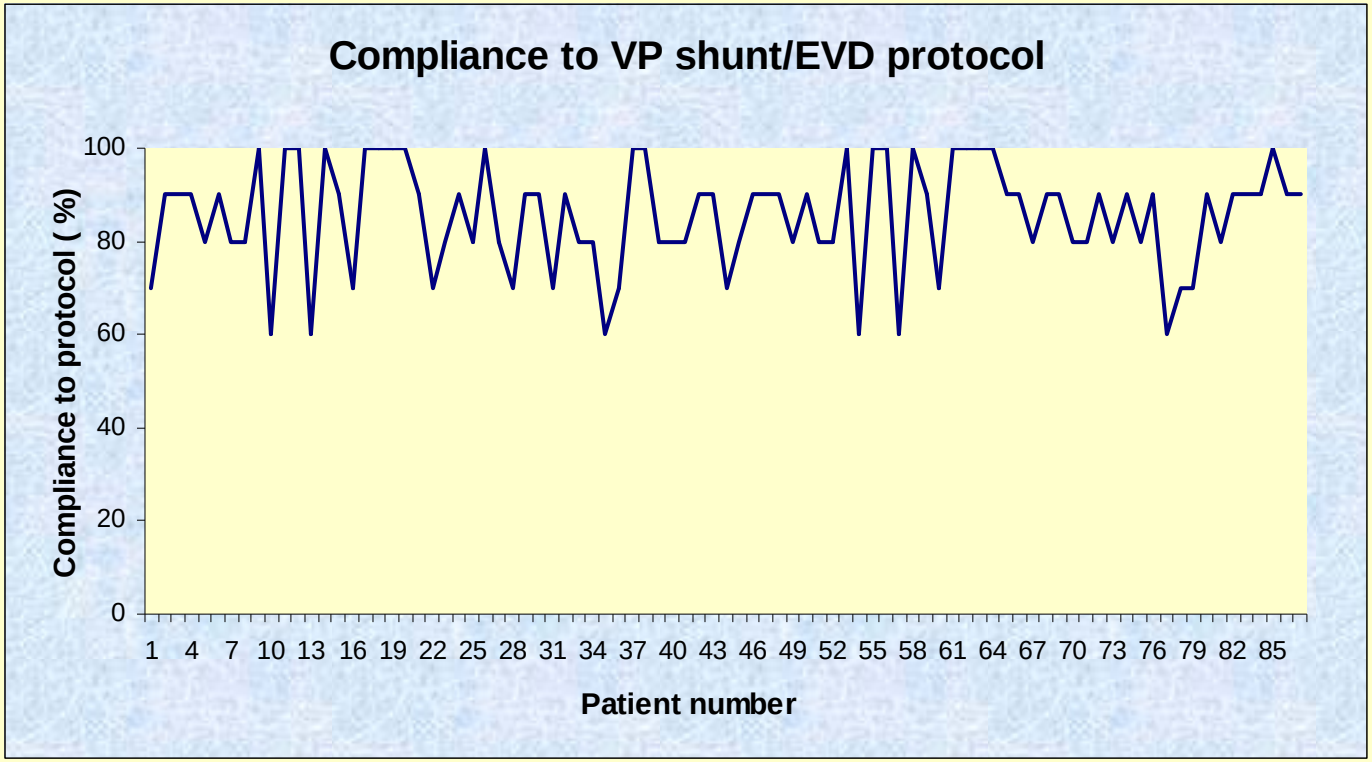
Outcomes & Evaluation



Overall compliance to the protocol has been over 85 %.

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Sustaining Change

- The protocol is now embedded into regular practice.
- Any non-compliance is discussed at the Neurosurgical Team Meetings.
- An information brochure has been designed for all new staff members, outlining the main aspects of the project.
- The Neurosurgical Department is currently looking at implementing the protocol as policy.

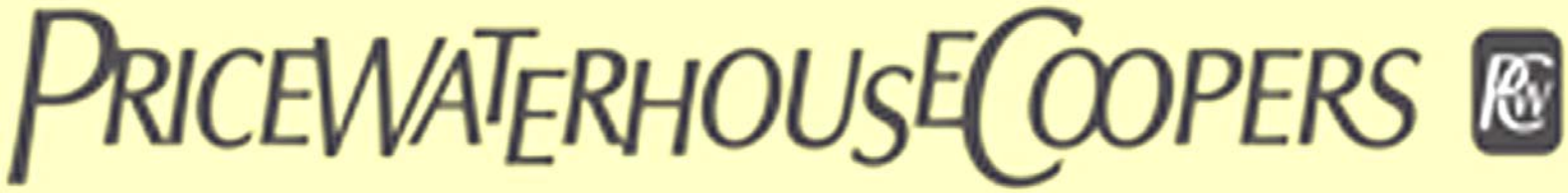
Lessons Learned

- Strong clinical leadership is essential to drive change.
- Evidence based bundle of care approach is effective in achieving desired outcomes.
- Outcome data helps in engaging broader clinician community for replication of methodology to other services.

Future Scope

- A project following the same methodology has recently commenced in the Cardiac Surgery Department.
- The Orthopaedic Department has also agreed to implement a similar project for spinal surgeries.
- This protocol could also be applied to any other healthcare settings.

With thanks to:



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