

The Power of Innovation

A health care system to meet our needs
NSW Health
 Symposium Oct 2012

The Liverpool Hospital *Staphylococcus aureus* Bacteraemia (LivSAB) Project: Reducing health care-associated infections (HAIs)

Introduction

Staphylococcus aureus bacteraemia (SAB) is a serious, often preventable complication of healthcare, responsible for increased length of stay, readmission, significant morbidity and mortality, and direct financial costs estimated at \$21,000 per SAB.

At Liverpool Hospital, healthcare associated (HCA) SAB rates were frequently above target. 75% of HCA SABs were reported as source 'unknown', therefore there was limited potential to prevent future cases.

Aims

- To reduce the average rate of Liverpool Hospital-associated SABs by 50% within 2 years
- To maintain rates below the COAG target of 2/10,000 occupied bed days

Method

LivSAB, an enhanced surveillance program, investigates every SAB as a sentinel event.

The multidisciplinary team reviews the patient and the patient's notes to determine the source of and factors contributing to the SAB.

Findings are fed back to the doctors and nurses responsible for the patient.

Feedback (figure 1) is timely, formal and identifiable, linking a real person to the event. Recommendations for preventing future cases are provided.

LivSAB has developed and implemented original, effective initiatives for common causes.

Results

Over the 18 month intervention phase, LivSAB achieved:

- A 37% reduction in HCA SABs (figure 2)
- A 50% reduction in inpatient SABs
- 39 SABs prevented
- Savings of approximately \$819,000 for the hospital.
- Immeasurable savings to patients and their families

LivSAB identified the sources of SABs (figure 3):

- Vascular access devices (VADs) are the major source
 - 22% of SABs from peripheral intravenous cannulae (PIVCs)
 - 15% of SABs from dialysis catheters
- Only 7% are 'unknown'

Interventions:

- Quarterly ward feedback (figure 4) and newsletters
- Improved and standardised cannulation trolleys
- PIVC insertion and management bundles under trial (figure 5)
 - The proportion of PIVC associated SABs reduced from 25% (establishment phase) to 20% (intervention phase)

Conclusion

LivSAB has achieved significant reductions in SAB rates, increased the quality of data collected, launched effective interventions to reduce poor practice and raised the profile of SABs throughout SWSLHD.

The LivSAB model is being adapted to other HAIs.

LivSAB has been adopted by Fairfield and Bankstown Hospitals, with plans for Campbelltown and Camden Hospitals later this year.

We're achieving our goal of making Liverpool Hospital safer for our patients.

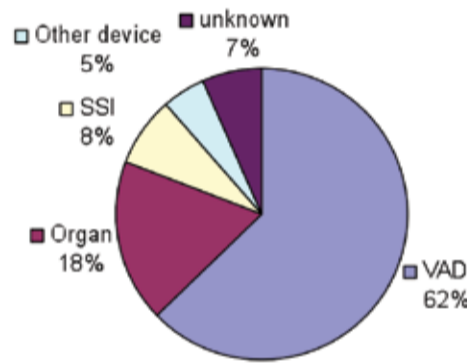


Figure 3: Sources of *Staphylococcus aureus* since the LivSAB project began

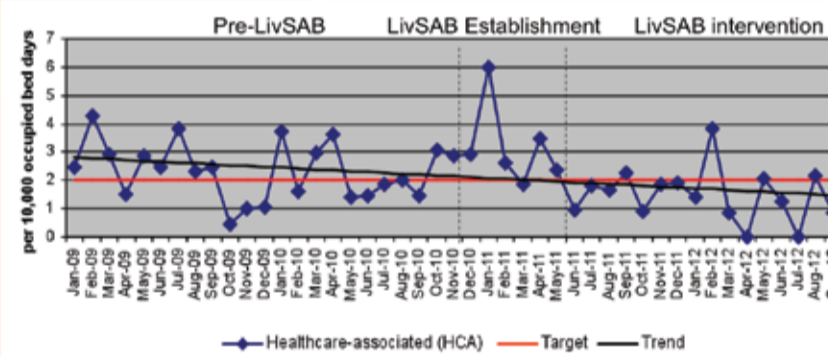


Figure 2: Rate of *Staphylococcus aureus* bacteraemia at Liverpool Hospital

Notification

DATE: Day Month, Year

TO: NRM Ward A, Rm 10/11, Head of Unit Dr B, Specialty

FROM: LivSAB Intervention Unit

Staphylococcus aureus bacteraemia (SAB) is a serious sentinel event at Liverpool Hospital. The following patient was identified having acquired a LivSAB attributed to your ward/department.

Field	Value	Field	Value
Patient Name	John EASTWICK	MRN	00000000
Admission Date	02-08-11	Date of SAB	02-08-11
Current Organism	MSSA	ICU/Department	ICU

Likely Source: Vascular Access Device (VAD)

Device Information: Type of access device: Peripheral intravenous cannula (PIVC); Date of insertion: 1 DD-MM-YYYY; Duration/insertion to infection: 5 days; Device location: CR130 incubator. Poor inpatient clinical notes.

Supporting History & Investigation: Liver infection with the PIVC, at the site of the SAB documented in the clinical notes. Patient history includes history of MRSA.

Possible contributing factors: PIVC appears to have been in situ for 5 days (last used 3 days prior to SAB). Poor documentation of PIVC. Possible acquisition of MRSA on ward.

Suggested Actions: PIVCs must be reviewed daily, and promptly removed when no longer required and within 72 hours. Hand hygiene is critical in preventing transmission of MRSA, not only between patients, but also between staff and patients. Patients must have hand hygiene provided with staff.

Figure 1: LivSAB investigation notification form (example)

Ward B: Feedback for April-June 2012

7 LivSAB was associated with your unit out of 8 LivSABs at Liverpool Hospital (1.3%)

Date of SAB	Causative organism	Likely source	Contributing factors
DD-MM-YYYY	MSSA	PIVC	Possible delay in recognition of PIVC site infection in patient with a previous VAD infection. Patient transferred from another hospital with PIVC in situ.

Vascular access devices (VADs), such as PIVCs and especially peripheral intravenous cannulae (PIVCs) are still the major cause of LivSABs. Patient safety begins with you. Make a difference by following these suggestions:

- Inspect the insertion site for every VAD every day; early detection of an infection may help you prevent a bacteraemia
- Document your findings clearly, even if the site is satisfactory; write the site and type of VAD
- Assess whether the VAD is still required; nursing staff should discuss with medical staff
- Remove any vascular access device no longer required immediately
 - Remove or replace every peripheral IVC within 72 hrs (48 hrs if inserted in ED or outside the hospital)
- Help educate your patients about appropriate care of their device and detecting an infection
- Follow the 'five moments for hand hygiene' every time you have contact with a patient's VAD; acquisition of *Staphylococcus aureus* can be prevented if you use hand hygiene

Figure 4: Quarterly ward feedback (example)

PIVC Insertion Bundle

- Confirm PIVC is required
- Wear **sterile** gloves
- Use 2% **chlorhexidine** in 70% alcohol to prepare the site
- Use a **transparent dressing** - make the insertion site visible
- Write the date of insertion on the cannula dressing
- Document the insertion in the patient's notes
- Change the administration set

Compliance with all bundle items is mandatory for optimal insertion.

PIVC Maintenance Bundle

- Inspect all of the patient's PIVCs
- Complete the daily VAD checklist - every patient every day
- Are all VADs still required? Discuss with medical staff
- Remove any PIVCs
 - No longer required
 - With insertion sites that are inflamed/leaking/swollen or unaffixable
 - Exceeded maximum dwell time (3 days or 2 days if inserted in ED)
- Arrange replacement of the PIVC if still required
- Perform hand hygiene before any contact with VADs or IV lines

Compliance with all bundle items is required for optimal patient care.

Figure 5: LivSAB peripheral intravenous cannula insertion and maintenance bundles being trialled at Liverpool Hospital

Acknowledgements

The success of this project has depended on the support of the staff and executive of Liverpool Hospital.