

TREATMENT OF STAPHYLOCOCCUS AUREUS BACTERAEMIA: A REGIONAL AUDIT

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BACKGROUND

- *Staphylococcus aureus* bacteraemia (SAB) is a significant cause of morbidity and mortality in patients across most hospital specialities.¹
- There were over 4,000 episodes of SAB in the UK in 2007, with approximately 30% of those being MRSA.²
- To reduce the clinical burden of these infections, it is therefore important that the duration of antibiotic treatment is adequate and any local focus of infection is eradicated.³⁻⁵

STANDARDS

- National guidelines (British Society for Antimicrobial Chemotherapy - BSAC) recommend a minimum of 14 days treatment for uncomplicated SAB.⁶

OBJECTIVE

- The aim of this audit was to assess the compliance of 5 hospitals in the East Midlands with national guidelines during periods before and after advice regarding the duration of treatment was added to laboratory reports of SAB.

METHODS

- Retrospective analysis by microbiologists of case notes of patients with a positive blood culture for *S. aureus* who survived ≥ 14 days after the positive culture.
- Two separate 3 month periods audited :
 - ◊ 01/01/02 to 31/03/02
 - ◊ 01/01/08 to 31/03/08
- Exclusion criteria :
 - ◊ if notes incomplete/unavailable
 - ◊ if patient transferred to another hospital or
 - ◊ if died <14 days after positive blood culture
- Data gathered included :
 - ◊ Patient demographics
 - ◊ Blood culture result of methicillin-sensitive *S. aureus* (MSSA) or methicillin-resistant *S. aureus* (MRSA)
 - ◊ Dosage of antibiotics (adequate dose: $\geq 4g$ flucloxacillin daily; vancomycin/teicoplanin levels in therapeutic range)
 - ◊ If other antibiotics were prescribed (e.g. erythromycin) their appropriateness and dosage was assessed by the microbiologist
 - ◊ Duration of antibiotic treatment (iv and po)

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RESULTS FROM 2002 AUDIT

- Total of 131 SABs : 77 (59%) SABs analysed and 54 (41%) excluded
- 51 (66%) MSSA bacteraemia
- 26 (34%) MRSA bacteraemia
- 34 (44%) of those were treated with an appropriate antibiotic for ≥ 14 days (table 1)

Table 1

	Mean treatment duration (iv and oral) in days	Range of treatment duration (iv and oral) in days	Number (%) of patients treated for ≥ 14 days with adequate dose of antibiotics (iv and oral)
MSSA	11.0	0-42	23 (45)
MRSA	12.0	0-42	11 (42)
Total SAB	11.6	0-42	34 (44)

iv = intravenous

CONCLUSIONS FROM 2002

- This audit period highlighted non-compliance with national recommendations on duration of treatment of SAB.

RECOMMENDATIONS FOR IMPROVEMENT

1. Introduction of extra text to laboratory reports of SAB :
 - "Minimum two weeks antibiotic treatment required. Source of infection should be investigated"
2. Education of clinicians at induction and maintenance of close liaison between microbiologists and clinical teams
3. Re-audit after implementation

RESULTS OF 2008 RE-AUDIT

- Total of 120 SABs : 77 (64%) SABs analysed and 43 (36%) excluded
- 64 (83%) MSSA bacteraemia
- 13 (17%) MRSA bacteraemia
- 45 (58%) of those were treated with an appropriate antibiotic for ≥ 14 days (table 2)
- Advice regarding the length of treatment was found on 72 of 76 laboratory reports (95%)

Table 2

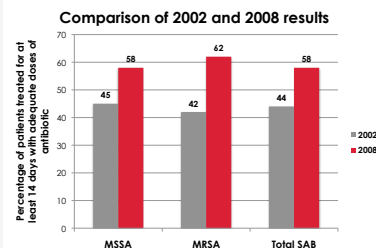
	Mean treatment duration (iv and oral) in days	Range of treatment duration (iv and oral) in days	Number (%) of patients treated for ≥ 14 days with adequate dose of antibiotics (iv and oral)
MSSA	13.3	6-37	37 (58)
MRSA	14.2	0-42	8 (62)
Total SAB	14.2	0-42	45 (58)

iv = intravenous

2002/2008 COMPARISON

- There was an increase in compliance with the BSAC recommendation of a minimum of 14-days antibiotic treatment of SAB from 44% to 58%.
- This compliance was noted in both MSSA (45% versus 58%) and MRSA (42% versus 62%) bacteraemia (figure 1).

Figure 1



CONCLUSIONS FROM RE-AUDIT

- Our results showed an increase in compliance with the national recommendations on antibiotic therapy for SAB from 2002 to 2008.
- This audit demonstrated that a relatively simple intervention was effective in improving the standard of treatment of SAB in the East Midlands hospitals.

ACTION PLAN

- Possible strategies to improve compliance :
 - ◊ Laboratory computer system to automatically add the extra text to the SAB report
 - ◊ Continue education and maintenance of good relations between microbiology and the clinical teams through :
 - Induction seminars
 - On-line antibiotics guidelines
 - ◊ Establish a **BACTERAEMIA TEAM** :
 - To assess and follow-up all SAB patients
 - To facilitate antimicrobial stewardship in line with local guidelines
- Plan to repeat audit in one year

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