Introduction

• Acute bacterial skin and skin structure infection (ABSSSI) accounts for 15% of infections treated in English hospitals and causes considerable morbidity and sometimes mortality.

• Optimal infection management and responsible healthcare resource utilisation are NHS priorities.

• These priorities align with antimicrobial stewardship programs and appropriate use of outpatient parenteral antimicrobial therapy (OPAT) services.

Objectives

To describe healthcare resource utilisation in patients with complicated acute bacterial skin and skin structure infections (ABSSSI) where first line beta-lactam therapy was unsuitable in NHS hospitals across England.

Methods

Study Design

• A prospective observational study was undertaken at five NHS secondary care centres.

• The observation period extended from the date of presentation with ABSSSI (December 2015–November 2016) to date of death or 30 days after discharge from hospital care.

• Research ethics committee approval was obtained prior to study commencement.

Inclusion Criteria

• Consenting patients aged 18 or over.

• Patients with a clinical diagnosis of ABSSSI and:
  • Laboratory confirmed MRSA (Methicillin-Resistant S. aureus) at site of infection or in blood culture OR
  • Suspected MRSA, in the opinion of the clinical team OR
  • Considered inappropriate for initiation or continuation of beta lactam antibiotic treatments

• Patients receiving treatment for ABSSSI in hospital

Exclusion Criteria

• Patients diagnosed with ABSSSI and managed solely in primary care

• Patient unwilling or unable to give consent to allow their records to be used for the study

• Patients referred to other hospitals for part of their treatment pathway or where treatment data is not available

Data Analysis

• ABSSSI-related length of stay was defined as the number of days from the date of ABSSI diagnosis until the patient was deemed fit for discharge from secondary care.

• Cost calculations for inpatient bed days were performed using NHS reference costs and as described previously (£26 per OPAT contact).

• Healthcare resource use cost estimates are based on bed days saved and do not include any additional fees associated with private service providers.

Results

• A total of 145 patients were enrolled in the study; demographics are described in Table 1.

• Management pathways observed for patients with ABSSSI in the study are shown in Figure 1.

• The mean (standard deviation [SD]) number of OPAT contacts per patient was 3.8 (3.0) for those treated in non-inpatient settings.

• The median (interquartile range [IQR]) ABSSSI related length of stay (LOS) under secondary care responsibility was 8 days (IQR 4-15 days).

• Twenty percent (14/71) of inpatients were deemed suitable to receive OPAT (assuming non-availability of alternative oral antibiotic), despite not receiving treatment in this setting.

• These 14 patients utilised 145 ABSSSI-related inpatient bed days costing an estimated £67,759 (£4,840 per patient at £46.73 per day)

• Treatment in the OPAT setting for these patients would have cost approximately £1,383 (based on mean of 3.8 contacts per patient), representing potential cost savings ranging from £5,159 (£368 per patient; assuming 1 inpatient day per patient replaced) to £66,375 (£4,741 per patient; assuming all inpatient bed days replaced by OPAT)

Figure 1. Management settings for patients with ABSSSI

Table 1. Patient Demographics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N=145</th>
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<tbody>
<tr>
<td>Male (n,%)</td>
<td>69 (48%)</td>
</tr>
<tr>
<td>Age (years)*</td>
<td>64 (17)</td>
</tr>
<tr>
<td>Cellulitis (n,%)</td>
<td>116 (80%)</td>
</tr>
<tr>
<td>Unsuitable for initiation of beta lactam antibiotics (n,%)</td>
<td>117 (81%)</td>
</tr>
<tr>
<td>Confirmed MRSA infection (n,%)</td>
<td>9 (6%)</td>
</tr>
<tr>
<td>Suspected MRSA infection (n,%)</td>
<td>19 (13%)</td>
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*Result shown as Mean (SD) | Reference Cost

Conclusions

This study demonstrates the healthcare resource burden associated with the management of complicated ABSSSI across 5 NHS hospitals. Although OPAT services are increasingly being developed and utilised in the NHS, there are potential opportunities for cost savings. Strategies to identify patients eligible for OPAT should be harmonised in order to minimise inappropriate resource use and the risk of preventable hospital readmissions.

References


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