

## Appendix: Supplementary Material

## Appropriateness definitions

		If endorsed guidelines are <u>present</u>	If endorsed guidelines are <u>absent</u>
Appropriate	1 <b>Optimal</b> <sup>1</sup>	Antimicrobial prescription follows either the Therapeutic Guidelines <sup>2</sup> or endorsed local guidelines <i>optimally</i> , including antimicrobial choice, dosage, route and duration <sup>3</sup>	The antimicrobial prescription has been reviewed and endorsed by an infectious diseases clinician or a clinical microbiologist OR The prescribed antimicrobial will cover the likely causative or cultured pathogens <b>and</b> there is not a narrower spectrum or more appropriate antimicrobial choice, dosage, route or duration <sup>3</sup> available
	2 <b>Adequate</b>	Antimicrobial prescription does not optimally follow the Therapeutic Guidelines <sup>2</sup> or endorsed local guidelines, including antimicrobial choice, dosage, route or duration <sup>3</sup> , however, is a <b>reasonable</b> alternative choice for the likely causative or cultured pathogens OR For surgical prophylaxis, as above <b>and</b> duration <sup>3</sup> is less than 24 hours	Antimicrobial prescription including antimicrobial choice, dosage, route and duration <sup>3</sup> is not the most optimal, however, is a <b>reasonable</b> alternative choice for the likely causative or cultured pathogens OR For surgical prophylaxis, as above <b>and</b> duration <sup>3</sup> is less than 24 hours
Inappropriate	3 <b>Suboptimal</b>	There may be a mild or non-life-threatening allergy mismatch OR Antimicrobial prescription including antimicrobial choice, dosage, route and duration <sup>3</sup> , is an <b>unreasonable</b> choice for the likely causative or cultured pathogens, including: <ul style="list-style-type: none"> <li>spectrum excessively broad, unnecessary overlap in spectrum of activity, dosage excessively high or duration excessively long</li> <li>failure to appropriately de-escalate with microbiological results</li> </ul>	
	4 <b>Inadequate</b>	Antimicrobial prescription including antimicrobial choice, dosage, route or duration <sup>3</sup> is <b>unlikely</b> to treat the likely causative or cultured pathogens OR The documented or presumed indication does not require <b>any</b> antimicrobial treatment OR There may be a severe or possibly life-threatening allergy mismatch, or the potential risk of toxicity due to drug interaction OR For surgical prophylaxis, the duration <sup>3</sup> is greater than 24 hours (except where local guidelines endorse this)	
	5 <b>Not assessable</b>	The indication is not documented and unable to be determined from the notes OR The notes are not comprehensive enough to assess appropriateness OR The patient is too complex, due to multiple co-morbidities, allergies or microbiology results, etc.	

<sup>1</sup> Taking into account acceptable changes due to the patient's weight or renal function, if this information is available

<sup>2</sup> Antibiotic Expert Group. Therapeutic Guidelines: Antibiotic. Version 15 (2014), or online version

<sup>3</sup> Duration should only be assessed if the guidelines state a recommended duration and the antimicrobial has already been dispensed for longer than this, or if there is a clear planned 'end date' documented

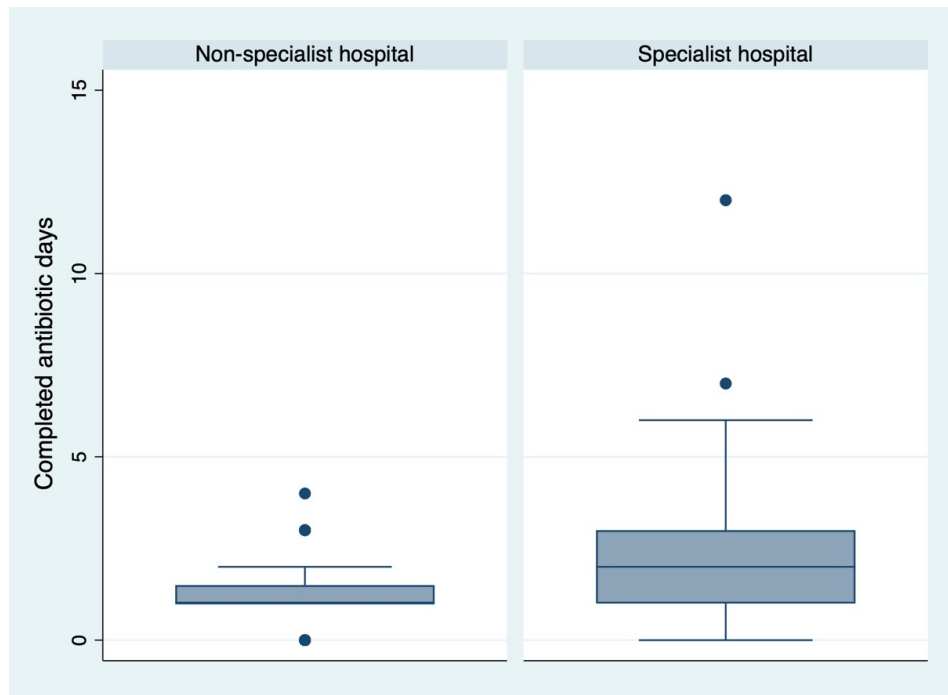
Supplementary Figure 1: Definitions of appropriate prescribing

Supplementary Table 1: Antibiotic Appropriateness and Compliance with Guidelines

<b>Appropriateness*</b>	<b>Frequency**</b>	<b>Percentage</b>
1-Optimal	373	89.9
2-Adequate	27	6.5
3-Suboptimal	11	2.7
4-Inadequate	2	0.5
5-Not Assessable	2	0.5
<b>Compliance with Guidelines*</b>	<b>Frequency**</b>	<b>Percentage</b>
Compliant with locally endorsed guidelines	330	79.5
Compliant with <i>Therapeutic Guidelines</i>	53	12.8
Non-compliant with guidelines	19	4.6
Directed therapy	7	1.7
No guidelines available	4	1
Not assessable	2	0.5

\*These are as assessed by trained local auditors and categories are mutually exclusive

\*\*N=415 prescriptions



Supplementary Figure 2: Antibiotic duration by specialist and non-specialist hospital

Antibiotic duration in specialist hospitals: median 2 days (IQR 1-3 days), in non-specialist hospitals median 1 day (IQR 1-1.5 days),  $P < 0.0001$ . Dots represent outliers.

Supplementary Table 2: Dosing Frequency for Gentamicin and Benzylpenicillin

Gentamicin	Frequency	Percentage
24-hourly	100	55.9
36-hourly	43	24
48-hourly	26	14.5
Single dose	10	5.6
Total	179	100
Benzylpenicillin	Frequency	Percentage
12-hourly	141	97.9
8-hourly	3	2.1
Total	144	100