Sir,

We read with interest the leading article ‘Are susceptibility tests enough, or should laboratories still seek ESBLs and carbapenemases directly?’ and would like to raise two issues.

First, we share the authors’ concerns over the ability to successfully treat organisms with β-lactams whose MICs are close to the breakpoint. They point out that routine laboratories do not have the necessary precision to stratify isolates across the now critical range of 1–4 mg/L. An additional variable to consider is altered antibiotic pharmacokinetics in some patient groups. For example, burn/truma patients can have highly altered pharmacokinetics, excreting β-lactams so rapidly that therapeutic levels are not achieved for routinely susceptible organisms. The risk of therapeutic failure will be increased when the MIC is close to the breakpoint. Thus, we believe that the extended-spectrum β-lactamase (ESBL) status is crucial in detecting organisms for which, potentially, MICs are elevated in b-lactamase (ESBL) status is crucial in detecting organisms for which, potentially, MICs are elevated. The authors also describe the need for speed with ESBL tests to increase their value in clinical management, particularly in this setting so that cephalosporins are avoided.

Secondly, the authors describe the need for speed with ESBL tests to increase their value in clinical management, particularly in severely ill patients. National data show that ~5.7% of cases of Escherichia coli bacteraemia and 13% of cases of Klebsiella pneumoniae bacteraemia are due to ESBL-producing organisms. We recently conducted a telephone survey of blood culture methodology by contacting 44 National Health Service laboratories throughout England. All but two laboratories performed direct susceptibilities on blood cultures (BSAC methodology). Of these, all tested cefpodoxime. Thus, at 24 h most laboratories would suspect an ESBL, although confirmation may take a further 24 h. In our laboratory we utilize a rapid (result within 4–6 h of bottle being subcultured), cheap and reliable test for the detection of ESBLs in blood culture.* Audit of our blood cultures from 2005 to 2011 revealed 309 cases of bacteraemia due to ESBL-producing organisms. This represents ~8% of positive blood cultures containing Gram-negative bacilli. In 207 cases (67%), the laboratory information management system contained sufficient documentation of therapy for further analysis. Sixty-eight of the 207 patients were started on correct empirical therapy (either a carbapenem or gentamicin if susceptible), usually on the basis of prior ESBL-positive cultures, leaving 139 (67%) patients on incorrect therapy. At least 32% (documentation of when therapy was changed was missing in most instances) were switched to a carbapenem up to a day earlier on the basis of the rapid test compared with conventional testing. Of note is that in several instances the clinician believed the patient to be stable on initial consultation. However, when the rapid ESBL test result became available later the same day, it became clear on further discussion that the patient was more unwell than thought initially. This may be partly due to most blood culture results being phoned in on the morning prior to the availability of other blood test results that may indicate disease progression. Additionally, the discovery of the ESBL status prompted a more thorough review of the patient. When blood cultures are positive very early in a patient’s illness it can be hard to judge a response to antibiotics within the first 24–48 h. Thus, obtaining knowledge of antibiotic resistance status quickly can provide information about likely response ahead of clinical evaluation. None of the patients had their treatment changed empirically on the basis of clinical deterioration. We conclude that rapid testing to determine the ESBL status of Gram-negative organisms in blood cultures is an important adjunct to patient management, the relevance of which is likely to increase as antibiotic resistance becomes more widespread.

Transparency declarations

None to declare.

References


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