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Assessing Appropriateness of Antimicrobial Treatment in Hospitalized Adult Patients, A Point Prevalence Study

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Background

About 20-50% of antimicrobial therapy in hospitalized patients is considered inappropriate, which is associated with increased morbidity and mortality.

The aim of our study was to evaluate the rate of appropriate antimicrobial therapy, to define specific areas that require intervention, and to compare different methods of evaluation.

Methods

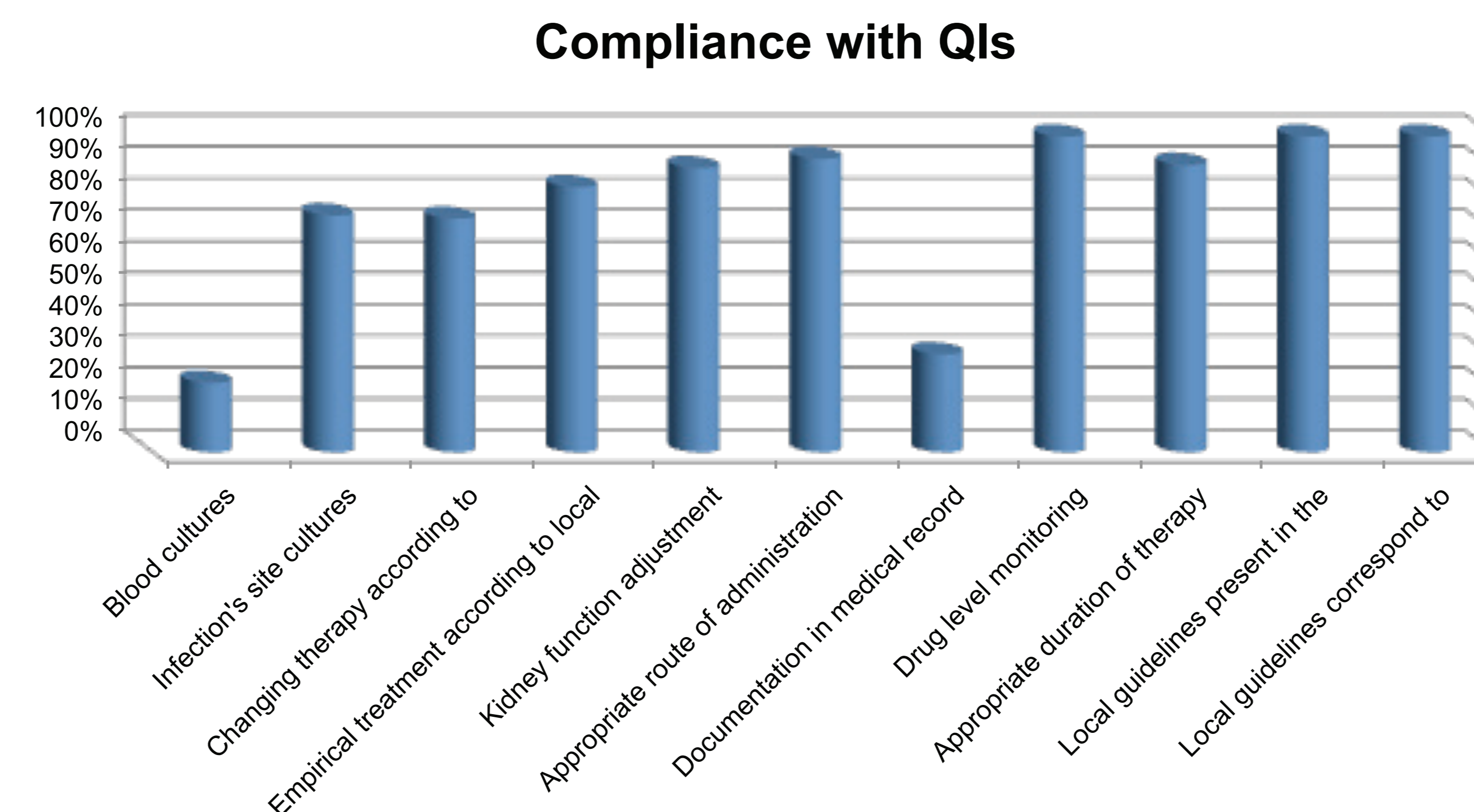
A point-prevalence study, in a secondary hospital of 495 beds. Demographic, clinical, laboratory and therapeutic data of all adult patients that were hospitalized and treated with a systemic antimicrobial during the study period were collected.

Appropriateness was evaluated both by experts, and by ranking 11 quality indicators (QIs) based on literature recommendations. Six of these 11 QIs were considered essential, thus we defined a strict definition of appropriateness if all 6 QIs were met, and a lenient definition if at least 5 QIs were met. Inter-rater agreement between all methods was analyzed, using Kappa statistic.

Results

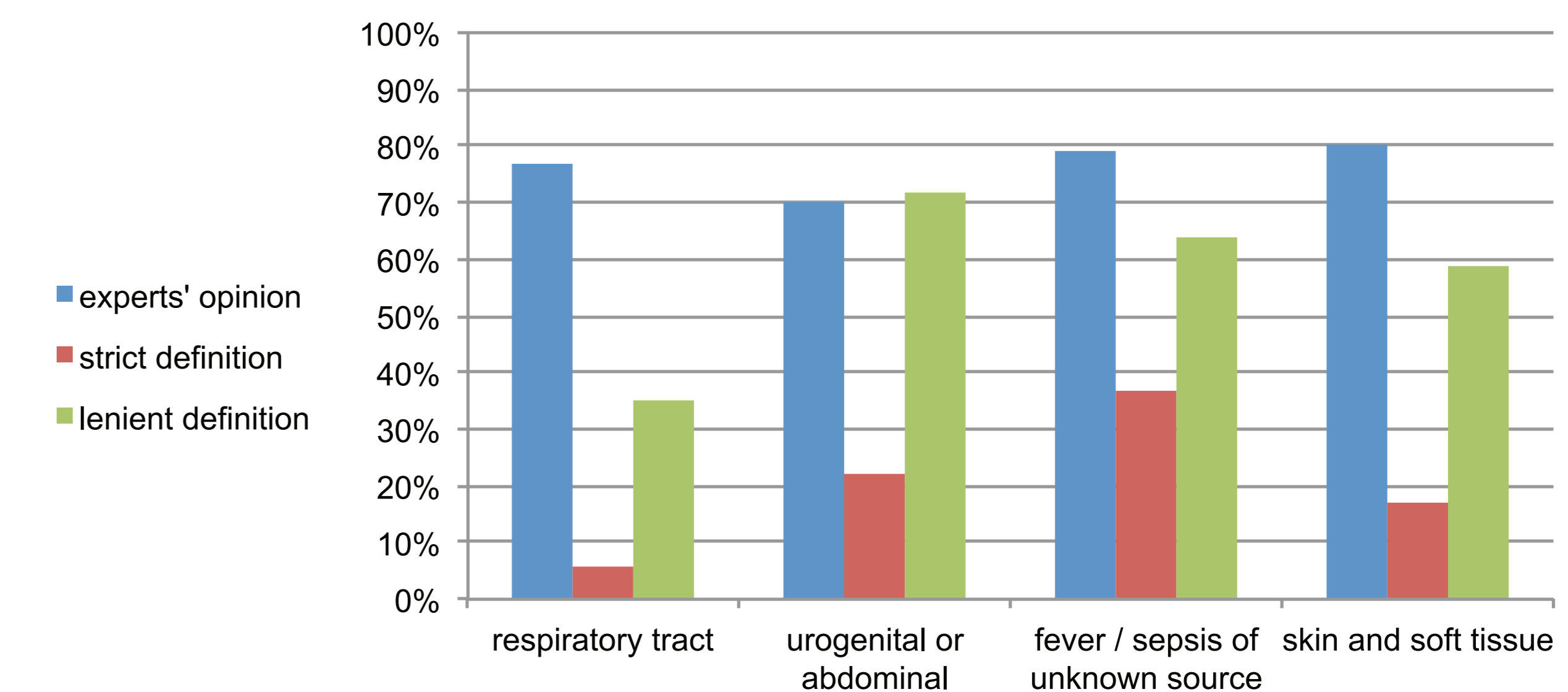
106 patients were included in the study. 79 patients (75%) were treated appropriately according to experts' opinion, 61% according to the lenient definition, and only 20% according to the strict definition. A very low agreement rate was found between the strict definition and experts' opinion ($\kappa=0.068$), and a moderate agreement was found between the lenient definition and experts' opinion ($\kappa=0.45$). Rates of compliance to each of the QIs are shown in figure 1.

Figure 1:
Rates of compliance with each of the QIs



No correlation was found between demographic or clinical variables and rates of appropriateness. Appropriate treatment tended to variations according to indications for therapy, as shown in figure 2, and it was significantly less common for respiratory infections than for urogenital or abdominal infections ($p=0.017$), using the lenient definition.

Figure 2:
correlation between appropriateness and indications for treatment



Conclusions

We found a high rate of inappropriate antimicrobial therapy in different indications for therapy, both by objective definitions, and by experts' opinions (although to a lesser amount in the latter).

Agreement between 3 methods of evaluation was found to be poor in our study.

We need to use strict and uniform parameters in order to optimize antimicrobial therapy in the hospital, and to monitor them regularly.