

Multidisciplinary concertation in decision making for complex bone and joint infections

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Introduction

- Bone and joint infections (BJI) are a significant cause of morbidity, especially with the increasing ageing population.
- The most severe BJI cases represent a key issue for orthopaedists and physicians specialised in infectious diseases due to complex management and outcome → **Complex BJI (CBJI)**.
- To enhance CBJI knowledge and management, CBJI reference centres (RC) have been implemented in France. Each potential CBJI must be assessed in a multidisciplinary concertation in one RC in order to provide recommendations +/- management guidelines.
- However, CBJI definition has been designed by Health Ministry without concordance validation.

Objective: to assess the agreement in CBJI diagnosis, between experts of one RC and between RC

Methods

Selection of **20 BJI cases** in the Hospital Discharge Database (HDD) of a RC, using a validated algorithm.
Four orthopaedic non-BJI stays were added in order to also check non cases.

Grammatico-Guillon L. et al. Bone and joint infections in hospitalized patients in France, 2008: clinical and economic outcomes. *J. Hosp. Infect.* 82, 40–48 (2012)

Step 1: inter- and intra-rater agreement in a RC

- Exploratory validation
- Five raters of the same RC:
 - 3 orthopaedists - 2 infectiologists
 - 2 professors - 2 seniors - 1 fellow
- Individual rating** using electronic patient record
- Second rating** with at least a one-month delay
- Analyses of agreement:
 - Inter-rater: Fleiss' kappa coefficient for multiple raters
 - Intra-rater: Cohen's simple kappa coefficient

Quality of agreement



Step 2: inter-RC agreement

- Standardised information and reporting form for the same 20 BJI cases
- Submitted to **six RC**
- RC were asked to rate cases in a **multidisciplinary concertation**, gathering at least: infectious diseases specialist, orthopaedic surgeon, microbiologist ± medical officer of health (legal quorum)
- Additional data collected:
 - number, age, status and medical specialty of concertation members
 - time per case
- Analysis of agreement: Fleiss' kappa coefficient

Results

Step 1

All physician raters agreed on the 4 non-cases. These cases were therefore excluded from the analyses.

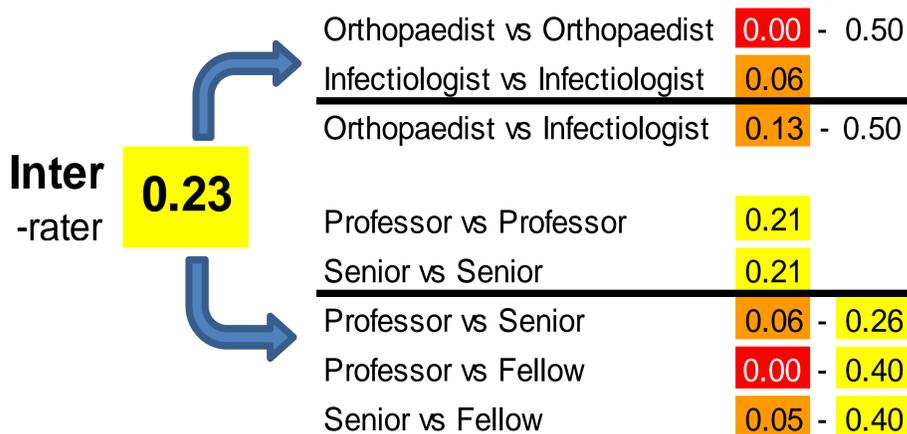


Figure 1 Inter-rater agreement (minimum and maximum κ coefficients)

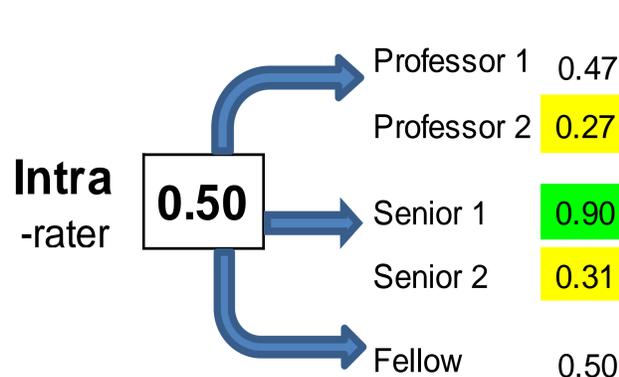


Figure 2 Intra-rater agreement (κ coefficient)

Step 1 results

Inter-rater agreement:

Fair

not better within specialty or status

Intra-rater agreement:

Moderate

not better with experience

Step 2: in progress

Discussion

• First step: heterogeneity of CBJI classification

- between raters: infectiologists and orthopaedists have probably a different interpretation of the official definition.
- for one rater: no trend for intra-rater agreement increasing with experience.

→ Multidisciplinary consultation must be performed to avoid heterogeneous CBJI classification. Hence, a recent French study showed that management of BJI was significantly improved after implementing a multidisciplinary concertation in orthopaedic surgery unit.

Bauer et al. Impact of a Multidisciplinary Staff Meeting on Antibiotic Treatment Quality For Osteoarticular Infections in an Orthopaedic Surgery Care Unit *Médecine et maladies infectieuses* 42 (12) 603-7 (2012).

• **Second step:** good inter-RC agreement is expected due to high skill of expertise → could enhance the place of the RC for the CBJI.