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Médecine et maladies infectieuses
Médecine et maladies infectieuses 44 (2014) 308–314

Original article

Comparison of hospital databases on antibiotic consumption in France, for a single management tool☆

Comparaison des bases de données hospitalières de consommation d'antibiotiques en France, pour un outil de pilotage unique

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Received 2 April 2014; received in revised form 9 May 2014; accepted 2 June 2014
Available online 9 July 2014

Abstract

Context. – The surveillance of antibiotic use in hospitals and of data on resistance is an essential measure for antibiotic stewardship. There are 3 national systems in France to collect data on antibiotic use: DREES, ICATB, and ATB RAISIN. We compared these databases and drafted recommendations for the creation of an optimized database of information on antibiotic use, available to all concerned personnel: healthcare authorities, healthcare facilities, and healthcare professionals.

Methodology. – We processed and analyzed the 3 databases (2008 data), and surveyed users.

Results. – The qualitative analysis demonstrated major discrepancies in terms of objectives, healthcare facilities, participation rate, units of consumption, conditions for collection, consolidation, and control of data, and delay before availability of results. The quantitative analysis revealed that the consumption data for a given healthcare facility differed from one database to another, challenging the reliability of data collection. We specified user expectations: to compare consumption and resistance data, to carry out benchmarking, to obtain data on the prescribing habits in healthcare units, or to help understand results.

Conclusions. – The study results demonstrated the need for a reliable, single, and automated tool to manage data on antibiotic consumption compared with resistance data on several levels (national, regional, healthcare facility, healthcare units), providing rapid local feedback and educational benchmarking.

Keywords: Benchmarking; Antimicrobial resistance; Antibiotic stewardship

Résumé

Contexte. – Surveiller la consommation hospitalière d'antibiotiques et les données de résistance est une mesure indispensable dans le cadre du bon usage des antibiotiques. En France, au niveau national, trois recueils de la consommation des antibiotiques existent : DREES, ICATB et ATB Raisin. Notre objectif était de comparer ces bases et de formuler des préconisations pour l'élaboration d'une base de recueil optimisée et unique des consommations d'antibiotiques, utilisable par toutes les personnes concernées : autorités sanitaires, établissements de santé et professionnels de santé.

Méthodologie. – Traitement et analyse des données 2008 DREES, ICATB et ATB Raisin et enquête auprès des utilisateurs.

☆ This study was presented as a poster at the RICAI in Paris, in November 2013.

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http://dx.doi.org/10.1016/j.medmal.2014.06.001
0399-077X/

Observation. – Il existe d'importantes disparités pour les objectifs, le taux de participation des établissements, les unités de consommation, les modalités de recueil, de consolidation et de contrôle des données et le délai de mise à disposition des résultats. Les données de consommation pour des mêmes établissements sont différentes d'une base à l'autre, remettant en cause la fiabilité de ces recueils. Nous avons précisé les attentes des utilisateurs : pouvoir croiser les données de consommation et de résistance, réaliser un *benchmarking*, disposer des données traduisant les habitudes de prescription au niveau des unités de soin, ou accompagner les interprétations des résultats.

Préconisations. – Il est nécessaire de pouvoir disposer d'un outil fiable, unique et automatisé de pilotage des données de consommation d'antibiotiques, croisées avec les données de résistances, à plusieurs niveaux (national, régional, établissement, services de soins) et pouvant permettre une rétro-information locale rapide et un *benchmarking* pédagogique.

Mots clés : Benchmarking ; Bon usage des antibiotiques ; Résistance aux antibiotiques

1. Introduction

The misuse of antibiotics is responsible for a particularly alarming increase in the emergence of multi-resistant bacteria, on an individual and collective scale. The available therapeutic solutions are very limited, exposing patients to a therapeutic dead-end, particularly since the number of new agents in development is very low [1].

Several "antibiotic plans" have been implemented in France since 2001 to promote the rational use of antibiotics. These include recommendations for intensified surveillance of the use of and resistance to antibiotics [2–4]. There are several "national" databases on antibiotic use in hospitals in France : collection of data on medicinal products by the Division of Research, Studies, Evaluation, and Statistics (French acronym DREES), use listed as part of the standard report on action taken to prevent nosocomial infections (French acronym ICATB), and surveillance of the Alert, Investigation, and Surveillance Network for Nosocomial Infections (French acronym ATB RAISIN).

In 2009, confronted with multiple data collection and entry methods imposed on healthcare facilities (HCF), and with the political desire to implement a new single system for collecting and calculating data on antibiotic use, the Lorraine region antibiotics network "Antibiolor" conducted a comparative study of these databases, after a call for tenders by the French Ministry of Health (French acronym DGS). The objective of this study was to compare these databases and to draft recommendations for an optimized, single database to collect information on antibiotic use, usable by all persons concerned: healthcare authorities, HCF, and healthcare professionals (prescribing physicians, pharmacists, microbiologists).

2. Method

The study was conducted between May 2010 and April 2011, and in two stages.

The first stage was dedicated to analyzing and comparing the existing databases, from a qualitative and quantitative perspective. This took place from July 2010 to February 2011. The analyses were conducted on 2008 data for which data collection had been finalized and consolidated for the 3 databases. Source data was provided by the 3 institutions running the databases (DREES, DGS, and RAISIN). The quantitative comparison of the 3 databases first required extensive data processing, to harmonize the collection unit in defined daily doses per 1000 patient-days (DDD/1000 PD) and the level of antibiotic use (Anatomical Therapeutic Chemical classification level 3: ATC 3). The analyses made it possible to compare shared use data for HCF, in the databases, in pairs, by linear regression. Access and Excel (Microsoft®) softwares were used.

During the second stage, semi-structured interviews were conducted with the various contributors involved in the production, management, and/or analysis of these databases, to identify the reasons for participating in these various collection systems, the workload required, any checks and corrections performed, processing occurring at various levels (national, regional, local), and the expectations and lines of development at these various levels. These interviews were conducted by members of the Antibiolor team in charge of the study (a 2-person team with a consultant–infectious diseases specialist, or pharmacist, or microbiologist), with the 3 national institutions running the databases, 4 observatories of medicinal products, medical devices, and therapeutic innovations (OMEDIT) at a regional level, and 11 HCF representative in terms of geographical location, size, and HCF category. In these HCF, various participants (pharmacist, chairman of the Committee for the Prevention of Nosocomial Infections (CLIN), microbiologist, infectious disease specialist) were met either individually or in groups.

The data analysis, provided by the different surveys, made it possible to draw conclusions and to issue recommendations for the optimized collection and processing of data on antibiotic use in hospitals in France, both at a national and local level. The results were presented in a detailed report, and briefing with the French Ministry of Health experts in April 2011, Group IV of the National Surveillance Committee for plan aiming to preserve the effectiveness of antibiotics, in charge of surveillance and monitoring of prescriptions.

3. Results

3.1. Qualitative analysis of the various databases

There were major discrepancies in the 3 databases concerning the objectives, HCF participation rate, level and units of consumption, conditions for collection, control, and validation of data, and the delay before the results become available. These are summarized in Table 1: