



Major article

Evaluating the quality of outbreak reports on health care-associated infections in São Paulo, Brazil, during 2000–2010 using the ORION statement findings and recommendations

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Background: The standard of outbreak reports must be improved to a level where they are robust enough to properly influence preventive strategies. We aimed to verify compliance with mandatory outbreak notification, describing epidemiologic characteristics and management, and evaluating the quality of outbreak reports on health care-associated infections in São Paulo State, Brazil.

Methods: A systematic search was carried out on PubMed, the Latin American and Caribbean Health Sciences Literature database, Embase, Outbreak Database, the Annals of Brazilian Conferences on Healthcare-Associated Infection Prevention and Infectious Diseases, and reports from the São Paulo State Hospital Infection Division. The quality of reports was evaluated according to the Outbreak Reports and Intervention studies of Nosocomial Infection (ORION) statement guidelines.

Results: A total of 87 outbreak reports were identified; however, only 15 outbreaks (17.2%) were reported to the São Paulo State Hospital Infection Division. Bloodstream infection and neonatal intensive care units were mostly implicated (23% and 19.5%, respectively). Quality, evaluated according to ORION statement recommendations, was generally poor. The ORION categories of Background, Objectives, Participants, Setting, Infection-Related Outcomes, and Generality were properly described in 32.2%, 74.7%, 2.3%, 46%, 2.3%, and 12.6% of reports, respectively. Interventions and Culture-Typing were described with details in 51.9% and 55.2% of outbreak reports, respectively.

Conclusions: Our findings pointed out the need for strategies to improve competence in outbreak reports, and the ORION statement guidelines may help in this matter. Efforts to promote confidence and consequent compliance with mandatory notification of outbreak reports are essential.

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Health care-associated infections (HAIs) are usually endemic, but it is estimated that 2%–5% of these infections are due to nosocomial outbreaks.^{1,2} Despite low frequency, outbreaks can cause concern, increasing morbidity and mortality, and require extensive personnel and financial resources in addition to being very time consuming.^{3,4}

Outbreak investigations can provide insight into the field of health care epidemiology and infection control by describing

cause and evaluating the most appropriate interventions for prevention.^{5–7}

Since 1998, reporting outbreak investigation to health agencies is mandatory in Brazil.⁸ Vonberg and Gastmeier⁹ estimated that about 75% of all nosocomial outbreaks published in the medical literature support new ideas for the prevention of nosocomial infections. In agreement with this, the quality of outbreak reports and interventions in infection control must be improved to a level where they are robust enough to influence policy as well as governmental guidelines and practice in health care.^{9–12}

During the 1990s, when evidence-based medicine gathered momentum, the quality of research reporting was required even more. In that decade, to improve transparency and consistency of research reports, efforts were initiated by researchers, editors, and

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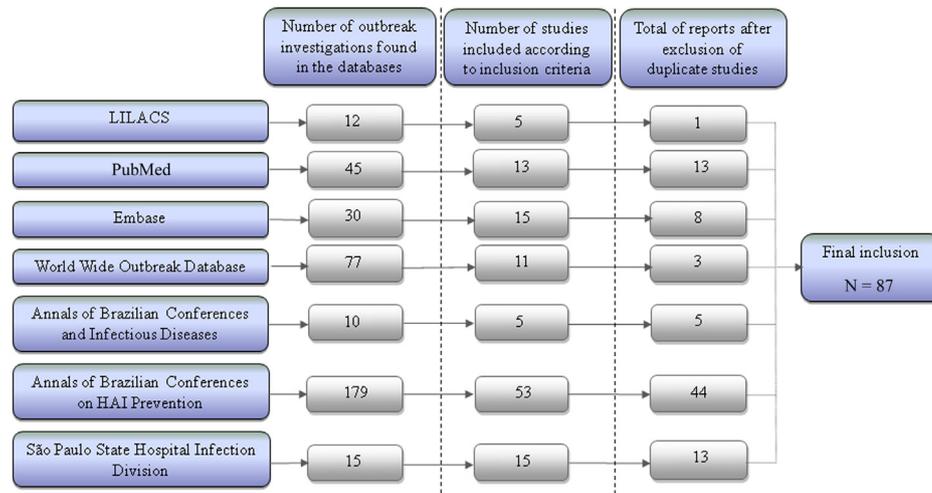


Fig 1. Distribution of outbreaks reports evaluated according to the reference sources, São Paulo State, Brazil, 2000–2010. HAI, health care-associated infection; LILACS, Latin American and Caribbean Health Science Literature database.

methodologists to develop and recommend specific standards for published research. Since 1996 multiple statements and checklists have been developed for publishing a variety of study types, such as the Consolidated Standards of Reporting Trials, the Transparent Reporting of Evaluations with Nonrandomized Designs statement, and the Strengthening the Reporting of Observational Studies in Epidemiology statement.^{13–16} In the field of hospital epidemiology, the Outbreaks Report and Intervention Studies of Nosocomial Infection (ORION) statement was created; it consists of a 22-item checklist and a summary table that facilitates the synthesis of evidence and promotes transparency of reporting.^{10–12,16–18}

Our study aimed to review outbreaks reported in São Paulo State, Brazil, and verify compliance with mandatory outbreak notification, describe epidemiologic characteristics and management, and evaluate the quality of outbreak reports.

METHODS

A systematic search was performed to describe nosocomial outbreaks occurring in São Paulo State and reported during the time period 2000–2010. São Paulo State has approximately 41,262,199 inhabitants, representing 21.6% of the total population of Brazil,^{19,20} and 891 hospitals that represent 14.2% of all health institutions in the country.²¹

Data sources

The following databases were used for a systematic search of available articles describing nosocomial outbreaks: Embase, the Latin American and Caribbean Health Science Literature database, and PubMed. We adopted the controlled vocabulary used for subject indexing in Embase (*hospital infection*, *epidemics*, and *Brazil*), the descriptors in health sciences for the Latin American and Caribbean Health Science Literature database, and the Medical Subject Headings for PubMed (*cross-infection*, *disease outbreak*, and *Brazil*). The Annals of the Brazilian Conference on HAI Prevention and Hospital Epidemiology and Brazilian Conference on Infectious Disease were reviewed and abstracts describing nosocomial outbreaks were included. The freely accessible worldwide database of health care-associated outbreaks—known as Outbreak Database (www.outbreak-database.com)—was accessed and searched using

the term *Brazil*. Outbreaks reported to the Hospital Infection Division at the São Paulo State Health Department were also included.

Inclusion criteria

We included HAI outbreaks occurring in São Paulo State and reported during 2000–2010. Articles focusing exclusively on phenotyping or genotyping methodologies of the pathogens without an epidemiologic approach were excluded.

Data collection

The data extraction was done by 1 researcher (A.L.P.M.), and all the process of data extraction was supervised by a second researcher (M.C.P.). These researchers discussed all of the outbreak reports in case of uncertainty during the data extraction.

Two instruments were used to capture all the information required. The first was for epidemiologic characteristics, such as geographic location and investigation methods applied. The second instrument was the ORION Authors (or Reviewers) Checklist, which evaluates information to determine the quality of an outbreak report.¹⁰

Variables

To describe the features of the reports the following variables were selected: geographic location (ie, city, type of health care facility, and ward), descriptive characteristics (ie, infection sites, pathogens, and antimicrobial resistance), investigation methods applied (ie, genotyping methods, epidemiologic approach, and source of transmission), and control measures adopted. The ORION items and descriptors were used to evaluate the quality of the studies.

Data analysis

A descriptive analysis of the selected variables was carried out using EPI-INFO version 3.5.2 software (Centers for Disease Control and Prevention, Atlanta, GA).

RESULTS

A total of 87 outbreak investigation reports were identified. Most frequently the publications were from the Annals of Brazilian

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