



ORIGINAL ARTICLE

Evaluation of national health-care related infection criteria for epidemiological surveillance in neonatology[☆]



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KEYWORDS

Epidemiological surveillance;
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Abstract

Objective: to assess the use of the Brazilian criteria for reporting of hospital-acquired infections (HAIs) in the neonatal unit and compare them with the criteria proposed by the National Healthcare Safety Network (NHSN).

Methods: this was a cross-sectional study conducted from 2009 to 2011. It included neonates with HAI reporting by at least one of the criteria. Statistical analysis included calculation of incidence density of HAIs, distribution by weight, and by reporting criterion. Analysis of sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) for the national criteria was performed considering the NHSN as the gold standard, with agreement assessed by kappa.

Results: a total of 882 newborns were followed, and 330 had at least one infection notified by at least one of the criteria. A total of 522 HAIs were reported, regardless of the criteria. An incidence density of 27.28 infections per 1,000 patient-days was observed, and the main topographies were sepsis (58.3%), candidiasis (15.1%), and conjunctivitis (6.5%). A total of 489 (93.7%) were notified by both criteria, eight infections were notified only by the national criteria (six cases of necrotizing enterocolitis and two cases of conjunctivitis), and 25 cases of clinical sepsis were reported by NHSN criteria only. The sensitivity, specificity, PPV, and NPV were 95.1%, 98.6%, 98.4%, and 95.7%, respectively, for all topographies, and were 91.8%, 100%, 100%, and 96.3% for the analysis of sepsis. Kappa analysis showed an agreement of 96.9%.

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PALAVRAS-CHAVE

Vigilância epidemiológica;
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Conclusion: there was a high rate of agreement between the criteria. The use of the national criteria facilitates the reporting of sepsis in newborns, and can help to improve the specificity and PPV.

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Avaliação dos critérios nacionais de infecção relacionada à assistência à saúde para a vigilância epidemiológica em neonatologia

Resumo

Objetivo: avaliar a aplicação dos critérios nacionais para notificação de infecções relacionadas à assistência à saúde (IRAS) em Unidade Neonatal e comparar com os critérios propostos pelo *National Healthcare Safety Network* (NHSN).

Métodos: estudo transversal realizado de 2009 a 2011. Foram incluídos os neonatos que apresentaram notificação de IRAS por pelo menos um dos critérios. Análise estatística incluiu cálculo de densidade de incidência de IRAS e distribuição por peso e por critério de notificação. Foi realizada análise da sensibilidade, especificidade, valor preditivo positivo (VPP) e valor preditivo negativo (VPN) para os critérios nacionais, considerando o NHSN como padrão-ouro e a concordância avaliada pelo Kappa.

Resultados: foram acompanhados 882 neonatos, e 330 apresentaram pelo menos uma infecção notificada por, no mínimo, um dos critérios. Foram notificadas 522 IRAS, independentemente do critério. Observou-se densidade de incidência de 27,28 infecções por 1.000 pacientes-dia, e as principais topografias foram sepse (58,3%), monilíase (15,1%) e conjuntivite (6,5%). Um total de 489 (93,7%) notificações foram por ambos os critérios; oito infecções foram notificadas apenas pelo critério nacional (duas conjuntivites e seis enterocolites necrosantes); e 25 casos de sepse clínica foram notificadas apenas pelo NHSN. A sensibilidade, especificidade, VPP e VPN foram de 95,1%, 98,6%, 98,4%, 95,7%, respectivamente, para todas as topografias, e para análise de sepse foram 91,8%, 100%, 100% e 96,3%. O Kappa revelou concordância de 96,9%.

Conclusão: verificou-se uma elevada concordância entre os critérios. A utilização dos critérios nacionais facilita a notificação da sepse em neonatologia e podem contribuir para melhorar a especificidade e VPP.

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Introduction

Control of hospital-acquired infections (HAIs) represents a challenge for health care workers and hospital administrators, as HAIs are severe infectious events, responsible for increased morbidity and mortality, costs, and social impact.^{1,2}

For the effective control of these diseases, the Hospital Infection Control Commissions (HICCs) must structure and maintain a system of epidemiological surveillance of HAIs, especially in critical sectors such as adult, pediatric, and neonatal intensive care units.³⁻⁵

The organization of epidemiological surveillance of HAIs was started in the United States in 1986, when the National Nosocomial Infections Surveillance (NNIS), the surveillance system of the Centers for Disease Control (CDC), was organized and subdivided into components that include global monitoring, intensive care units (ICUs), a surgical component, and neonatal units.⁶

The method proposed by the NNIS was expanded and revised in 2005, and received the designation of the National Healthcare Safety Network (NHSN),⁷ with the establishment of criteria for infection associated with invasive devices (mechanical ventilation, central venous catheter, and urinary catheter), a surgical surveillance

component, the introduction of a surveillance component in dialysis, and the use of the safety component protocol for the health care professional. The criteria are revised and new versions of NHSN are published periodically.⁷

In Brazil, the control of HAIs was regulated in 1983 by Decree 196/1983, revoked by Decrees 930/92 and 2616/1998.⁵ Since 1994, the Brazilian Ministry of Health has adopted the use of the method proposed by NNIS as a recommendation for epidemiological surveillance of HAIs in Brazilian hospitals, with the publication of the manual's translation. Thus, the NHSN protocols constitute the reference guide for epidemiological surveillance and reporting of HAIs in Brazilian hospitals.⁶ The NNIS method was officially adopted by the HICC of the Hospital das Clínicas da Universidade Federal de Minas Gerais (HC/UFGM), Belo Horizonte, Brazil, in 1994, controlling data collection, diagnosis, and reporting of HAIs.

Since 2008, the Brazilian National Health Surveillance Agency (Agência Nacional de Vigilância Sanitária - ANVISA) has published manuals that address definitions, indicators, and strategies related to the prevention of major HAIs. The national criteria for surveillance of HAIs in neonatology were published in 2008 and updated in 2010, with the goal of standardizing epidemiological surveillance, targeting

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