WHAT’S NEW IN INTENSIVE CARE

ECDC definitions and methods for the surveillance of healthcare-associated infections in intensive care units

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On 5 May 2017, the European Centre for Disease Prevention and Control (ECDC) published its updated protocol for surveillance of healthcare-associated infections (HAIs) and prevention indicators in European intensive care units (ICUs) [1]. The ECDC’s Healthcare-Associated Infections surveillance Network (HAI-Net) has been coordinating European surveillance of HAIs in ICUs since 2008 with participation of 15 countries and 1365 ICUs in 2015 [2]. The methodology was originally developed by the Hospitals in Europe Link for Infection Control through Surveillance (HELICS) project in 2000–2002 [3] and adopted by ECDC in 2010. A revision of the first protocol was agreed at consensus expert meetings in 2013–2015.

The objective of the ECDC surveillance protocol is the standardisation of case definitions, data collection and reporting procedures for hospitals participating in national or regional surveillance of HAIs in ICUs across Europe in order to facilitate the collection of comparable epidemiological data as a basis for interventions and the communication and exchange of experience of national surveillance systems. The case definitions of HAIs aim to accommodate differences, across Europe, in diagnostic practices such as taking microbiological samples for the diagnosis of HAIs. The minimal requirement for participation in surveillance of HAIs in ICUs is surveillance of bloodstream infections (BSIs) and pneumonia (PN). Reporting of urinary tract infections (UTIs) and catheter-related infections (CRIs) is optional. The data are collected by the national surveillance systems and submitted annually to ECDC. The results are published on the ECDC website [2]. A software application, HelicsWin. Net, is available free-of-charge for entry of HAI surveillance data (https://ecdc.europa.eu/en/publications-data/helicswinnet-hwn).

The latest update of the ECDC protocol was triggered by the unexplained, large variation in the prevalence of HAIs among European countries reported by the ECDC point prevalence survey of HAIs and antimicrobial use in European acute care hospitals 2011–2012. Structure and process indicators for infection prevention and control and antimicrobial stewardship (Table 1), as well as a new variable on the outcome of the HAI were included in the latest version of the surveillance protocol. These modifications were developed by ECDC and HAI-Net ICU experts and agreed during an HAI-Net ICU meeting in February 2015.

The ECDC case definitions applied for surveillance of HAIs in European ICUs are presented in Table 1a in the supplementary material.

The case definition for BSI addresses both primary and secondary BSIs. A definition for CRI establishes the microbiological criteria for assignment of the catheter as the origin of the BSI. When CRIs are not specifically reported, BSIs for which the same microorganism was cultured from the catheter or when symptoms improved within 48 h after removal of the catheter are reported as BSIs with origin central venous catheter (CVC). In this way, it is possible to assess the burden of BSIs linked to catheters in ICUs with different local practices for microbiological confirmation through culture of the catheter.
Table 1 Structure and process indicators for infection prevention control and antimicrobial stewardship in intensive care units (ICUs)

| Area                        | Indicator                                                                 | Metric                              |
|-----------------------------|---------------------------------------------------------------------------|-------------------------------------|
| Hand hygiene                | Alcohol hand rub consumption in ICU during the previous year              | Litres per 1000 patient-days        |
| Staffing                    | Registered nurse hours in ICU                                             | Hours per 1000 patient-days         |
| Antimicrobial stewardship   | Nursing assistant hours in ICU                                            | Hours per 1000 patient-days         |
| Intubation                  | Endotracheal pressure controlled and/or corrected at least twice a day     | Proportion (%) compliant observations|
| Oral decontamination        | Oral decontamination using oral antiseptics at least twice a day           | Proportion (%) compliant observations|
| Position of the patient     | Position of the patient not supine                                       | Proportion (%) compliant observations|
| Central venous catheter     | Catheter site dressing is not damp, loose or visibly soiled               | Proportion (%) compliant observations|

The definition is in line with the one used in prevention studies and diagnostic and treatment guidelines and has been used in studies that demonstrate the effect of preventive interventions [7]. Furthermore, a recent meta-analysis indicated that VAE surveillance does not detect cases of VAP accurately [8]. A comparison with the current CDC/NHSN definition of VAE and probable VAP [4] showed discordance for VAP, with agreement in only four of 61 cases identified as VAP by either one or the other definition [9]. In contrast, a study comparing the ECDC definition with the previous US definition for VAP had demonstrated very high concordance when applying both definitions in the same group of patients [10].

The updated ECDC protocol for surveillance of HAIs in European ICUs combines outcome indicators (incidence of HAIs, microbiology and outcome) with structure and process indicators for infection prevention and control and antimicrobial stewardship. It aims to provide information that is useful and actionable at hospital, regional and national level both for prevention of HAIs and policymaking. EU/EEA countries are invited to apply the protocol in national surveillance systems and participate in European surveillance fostering an EU-wide collaboration to support the prevention of HAIs.

Electronic supplementary material
The online version of this article (https://doi.org/10.1007/s00134-018-5113-0) contains supplementary material, which is available to authorized users.

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Compliance with ethical standards

Conflicts of interest

The authors declare that they have no conflict of interest.

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