

Surveillance of BSI and pneumonia in neutropenic patients: Results of case study-based training sessions

D. Luft^{1,2*}, R. Babikir^{1,2}, H. Bertz³, W.V. Kern⁴, A.F. Widmer⁵, M. Dettenkofer^{1,2} and the ONKO-KISS study group

¹Department of Environmental Health Sciences, University Medical Center Freiburg, Germany, ²German National Reference Centre for Surveillance of Nosocomial Infections, ³Department of Medicine I, Hematology and Oncology, University Medical Center Freiburg, Germany, ⁴Department of Medicine and Center for Infectious Diseases & Travel Medicine, University Medical Center Freiburg, Germany, ⁵Division of Infectious Diseases and Hospital Epidemiology, University Hospital Basel, Switzerland

Introduction and Purpose

Surveillance of nosocomial infections is one key element of infection control. Data feedback to healthcare providers and comparison of infection rates between different units or hospitals are main objectives of surveillance systems. However, comparison of data is only feasible if standardised case definitions are used by trained investigators. One option for training and validation of investigators is the use of case studies.

We report the results of case studies used for training purposes and answered by investigators participating in ONKO-KISS.

ONKO-KISS is part of the German national nosocomial infection surveillance system focusing on bloodstream infections (BSIs) and pneumonia during neutropenia in adult patients undergoing haematopoietic cell transplantation (HCT) or chemotherapy for acute leukaemia. By January 2012 35 units in 22 hospitals participated in ONKO-KISS.

Methods

Cases of BSI are determined using Centers for Disease Control and Prevention (CDC) definitions for laboratory confirmed BSI. Cases of pneumonia are determined using modified CDC criteria adapted for neutropenic patients (Surveillance protocol available in German and English language at www.nrz-hygiene.de/surveillance/kiss/onko-kiss).

Investigators received initial training on the application of surveillance definitions and continuous support thereafter.

For training and validation of investigators, case studies for individual evaluation were annually provided. Case studies were based on real cases and comprised both cases of daily practice and complex cases (previously requiring advice from the reference centre). Results were compared with the agreed assessment of the reference centre team serving as the gold-standard and discussed with participants. Starting 2011, case study results were analysed with regard to diagnostic accuracy.

In addition to the data presented in the abstract the results of the case studies completed in 2013 are included here.

Results

1. Numbers of case studies, participating investigators and included infections per year

	2011	2012	2013	total
case studies	13	16	10	39
cases of pneumonia included	8	7	4	19
cases of BSI included	1	10	5	16
participating investigators	21	17	22	60

2. Overall sensitivity of investigators for detection of both types of infection

		2011	2012	2013	total
sensitivity %	total	73	89	87	84
	BSI	62	90	92	89
	pneumonia	74	87	81	80
specificity %	total	86	93	85	88
	BSI	88	89	80	86
	pneumonia	83	96	89	90

Overall sensitivity and specificity increased between 2011 and 2012. In 2013 sensitivity remained stable, specificity was comparable to the results of 2011.

3. Distribution of sensitivity and specificity among participating investigators (2011 not available)

	2012		2013	
	sensitivity	specificity	sensitivity	specificity
	%	%	%	%
minimum	65	82	56	75
25th percentile	82	88	81	77
median	88	94	89	83
75th percentile	100	100	100	92
maximum	100	100	100	100

Conclusions

Case studies are a practical and efficient instrument to educate investigators and to assess diagnostic accuracy in surveillance systems.

Variations in results were observed over time and between investigators. These observations might be explained to some extent by turnover among investigators and participating centres.

Our data further emphasise the need for continuous quality assessment and education of investigators in surveillance systems.