

Supplemental Digital Content

The diagnostic yield of routine admission blood cultures in critically ill patients

Diana M. Verboom, Kirsten van de Groep, C.H. Edwin Boel, Pieter Jan A. Haas, Lennie P.G. Derde, Olaf L. Cremer, Marc J.M. Bonten

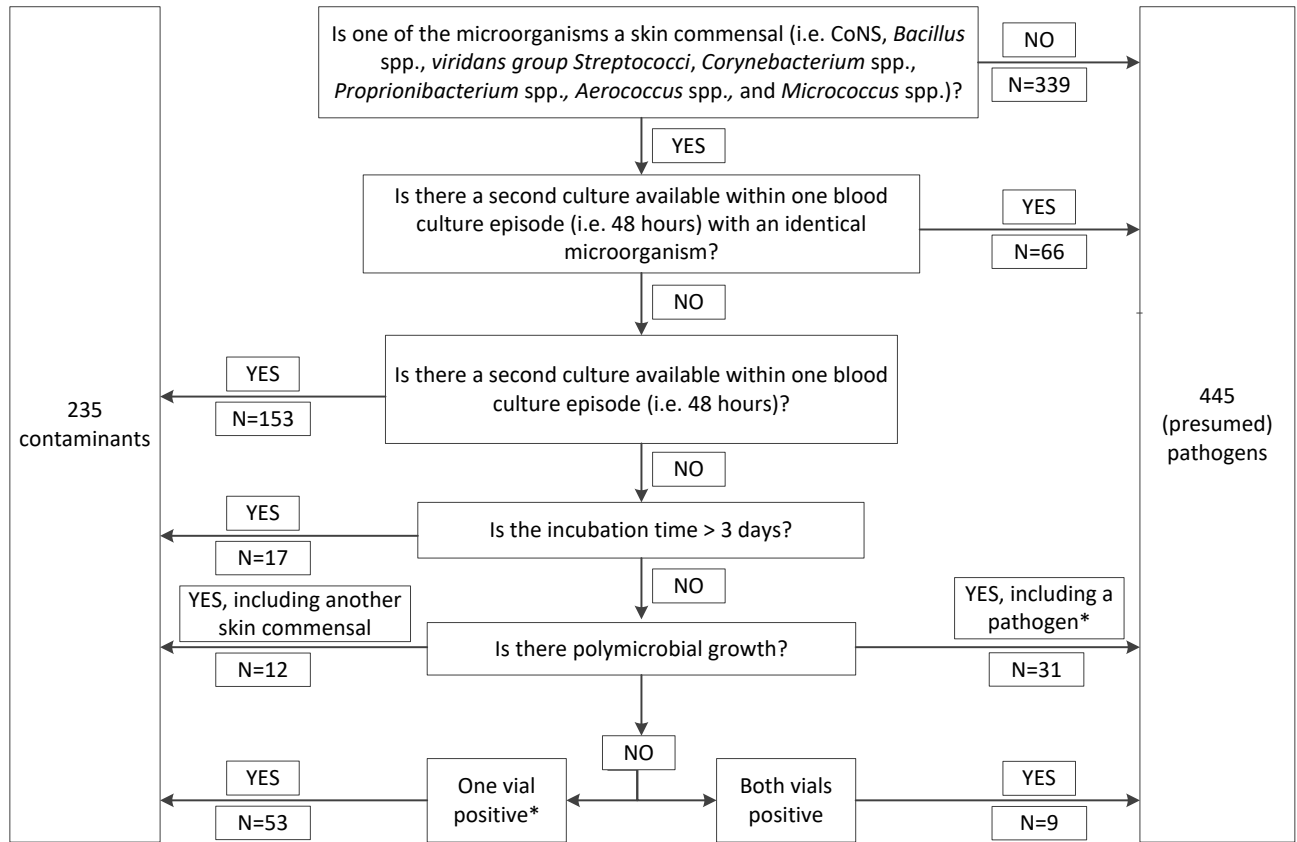
Table S1. Classification of pathogenic micro-organisms after adjudication				
	Control period		Intervention period	
	N cultures	N patients	N cultures	N patients
Enterobacteriales	33	27	70	49
• <i>Escherichia coli</i>	26	21	35	25
• <i>Klebsiella oxytoca</i>	-	-	7	4
• <i>Klebsiella pneumoniae</i>	1	1	5	4
• <i>Proteus mirabilis</i>	2	2	8	5
• <i>Raoultella species</i>	2	1	-	-
• <i>Salmonella enterica</i>	-	-	2	2
- Amp C producing				
• <i>Citrobacter freundii</i>	1	1	4	1
• <i>Enterobacter cloacae complex</i>	1	1	3	3
• <i>Morganella morganii</i>	-	-	1	1
• <i>Pantoea agglomerans</i>	-	-	1	1
• <i>Serratia marcescens</i>	1	1	4	3
	N cultures	N patients	N cultures	N patients
Other Gram-negatives	17	15	40	24
- Gram-negative anaerobes				
• <i>Bacteroides spp.</i>	3	3	4	3
• <i>Fusobacterium necrophorum</i>	-	-	1	1
• <i>Prevotella nigrescens</i>	-	-	1	1
• <i>Gram negative anaerobe (not further specified)</i>	-	-	1	1
- Other				
• <i>Aeromonas veronii</i>	-	-	2	1
• <i>Capnocytophaga species</i>	-	-	1	1
• <i>Haemophilus influenzae</i>	1	1	-	-
• <i>Moraxella catarrhalis</i>	-	-	2	1
• <i>Neisseria meningitidis</i>	1	1	2	1
• <i>Oligella urethralis</i>	-	-	1	1
• <i>Pseudomonas aeruginosa</i>	9	8	24	12
• <i>Pseudomonas putida</i>	-	-	1	1
• <i>Sphingomonas species</i>	2	1	-	-
• <i>Vibrio parahaemolyticus</i>	1	1	-	-
	N cultures	N patients	N cultures	N patients
Staphylococci	42	19	85	34
• <i>Coagulase negative staphylococci</i>	27	11	41	17

• <i>Staphylococcus aureus</i>	15	8	45	18
	N cultures	N patients	N cultures	N patients
Streptococci	22	19	35	24
- Pyogenic streptococci				
• <i>Streptococcus agalactiae</i>	2	2	-	-
• <i>Streptococcus dysgalactiae</i>	3	2	6	4
• <i>Streptococcus pyogenes</i>	3	3	2	2
- Non-pyogenic streptococci				
• <i>Streptococcus gallolyticus</i>	-	-	2	1
• <i>Streptococcus pneumoniae</i>	9	9	14	9
• <i>Viridans streptococci</i>	4	2	3	2
- Other streptococci				
• <i>Aerococcus species</i>	-	-	3	1
• <i>Gemella morbillorum</i>	-	-	1	1
• <i>Granulicatella adiacens</i>	-	-	2	2
	N cultures	N patients	N cultures	N patients
Enterococci	20	13	46	25
• <i>Enterococcus faecalis</i>	5	4	13	8
• <i>Enterococcus faecium</i>	16	10	33	17
Other Gram-positives	9	5	17	13
- Gram-positive anaerobes				
• <i>Actinomyces odontolyticus</i>			3	3
• <i>Clostridium innocuum</i>			1	1
• <i>Clostridium perfringens</i>			3	2
• <i>Clostridium symbiosum</i>	1	1		
• <i>Lactobacillus sakei</i>			1	1
• <i>Lactococcus lactis</i>	1	1		
• <i>Parvimonas micra</i>			1	1
• <i>Peptostreptococcus species</i>			1	1
- Other				
• <i>Bacillus species</i>	-	-	1	1
• <i>Kocuria species</i>	1	1	1	1
• <i>Listeria monocytogenes</i>	-	-	4	1
• <i>Pseudoclavibacter species</i>	2	1		
• <i>Rothia mucilaginosa</i>	4	1	1	1
	N cultures	N patients	N cultures	N patients
Yeast	9	6	16	6
• <i>Candida albicans</i>	2	2	6	3

• <i>Candida glabrata</i>	7	4	2	2
• <i>Candida krusei</i>	-	-	8	1
Total	145	95	282	154

This table reports the number of unique cultures and unique patients with a positive result, therefore numbers of cultures and patients do not necessarily add up per type of micro-organism.

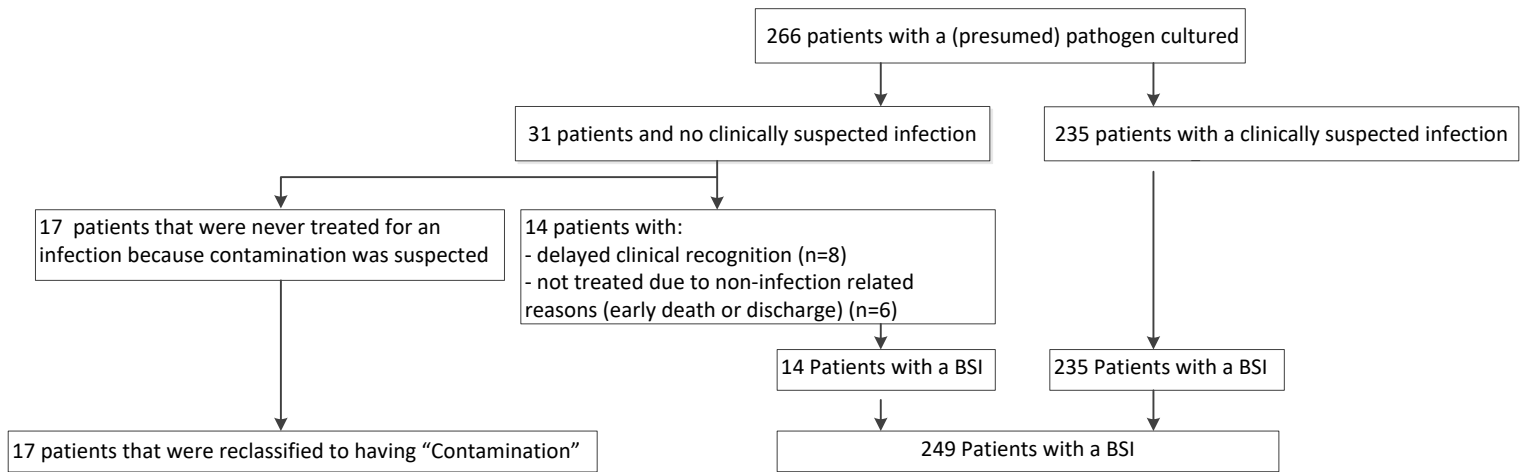
Figure S1. Classification of blood culture results



*Culture results with an obligate aerobe (*Micrococcus spp.*, n=5), were all classified as contaminants.

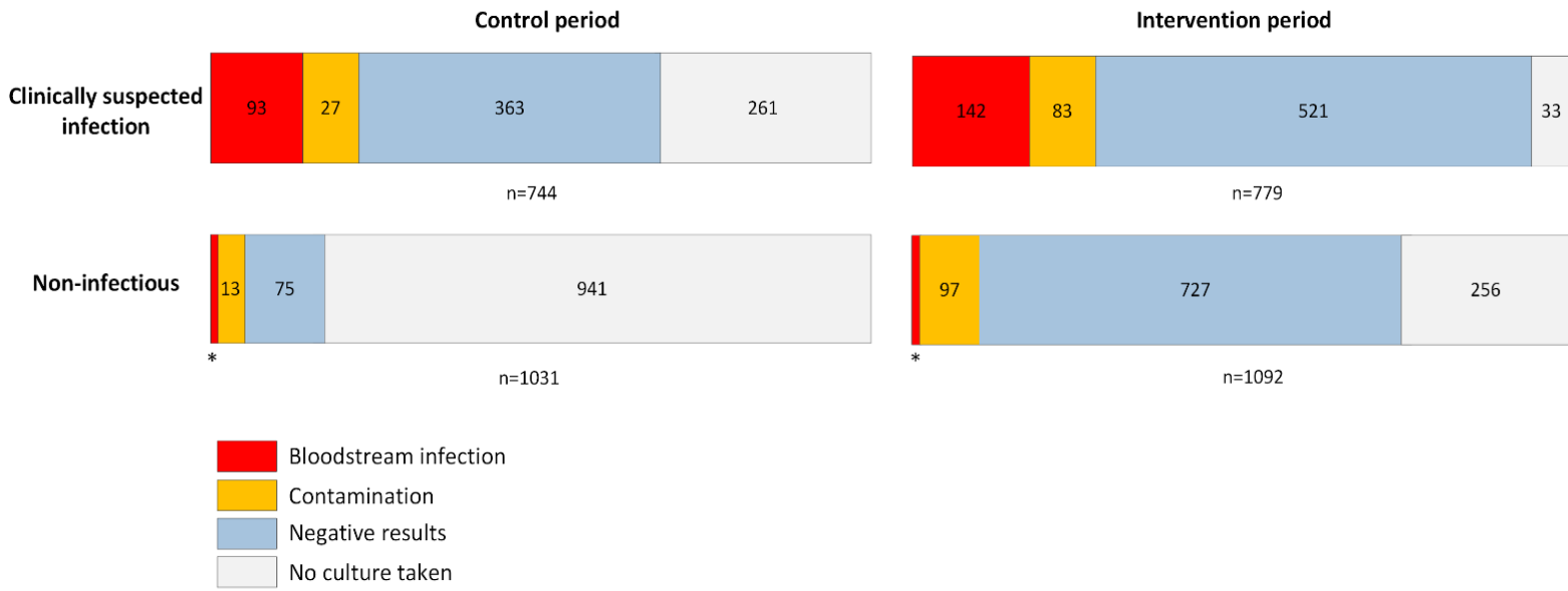
Thirty-one cultures (in 27 patients) contained both a contaminant and a (presumed) pathogen according to this algorithm, and were classified as (presumed) pathogen in this figure.

Figure S2. Adjudication of bloodstream infections and contamination in patients after aggregating blood culture results



ICU: intensive care unit. *BSI*: Bloodstream infection. Presence of a (clinically suspected) infection was based on the prospective data collection within the MARS study (1), and was based on the presence of sepsis or use of therapeutic antimicrobial therapy within the first two days of ICU admission.

Figure S3. Included patients in the before and after period by clinically suspected infection



The box size represents the relative proportion of number of subjects within the particular subgroup. Clinically suspected infections include all infections in the first two days of ICU admission. *2 patients without clinical suspicion of infection had a BSI in the before period, compared to 12 in the after period.

References

1. Klein Klouwenberg PM, Ong DS, Bos LD, et al. Interobserver agreement of Centers for Disease Control and Prevention criteria for classifying infections in critically ill patients. *Crit Care Med*. 2013; 41:2373–8.