

University of Groningen

Performing timely blood cultures for infectious patients is associated with shorter duration of therapy and reduced length of stay

Luz, Christian F.; Dik, Jan-Willem; Friedrich, Alexander; van der Palen, Job; van Assen, Sander; Nannan Panday, Prashant; Sinha, Bhanu

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Final author's version (accepted by publisher, after peer review)

Publication date:
2017

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Luz, C. F., Dik, J-W., Friedrich, A., van der Palen, J., van Assen, S., Nannan Panday, P., & Sinha, B. (2017). *Performing timely blood cultures for infectious patients is associated with shorter duration of therapy and reduced length of stay*. 1. Poster session presented at Joint Annual Meeting of the German Society of Infectious Diseases (DGI) and the German Center for Infection Research (DZIF) 2017, Hamburg, Germany.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

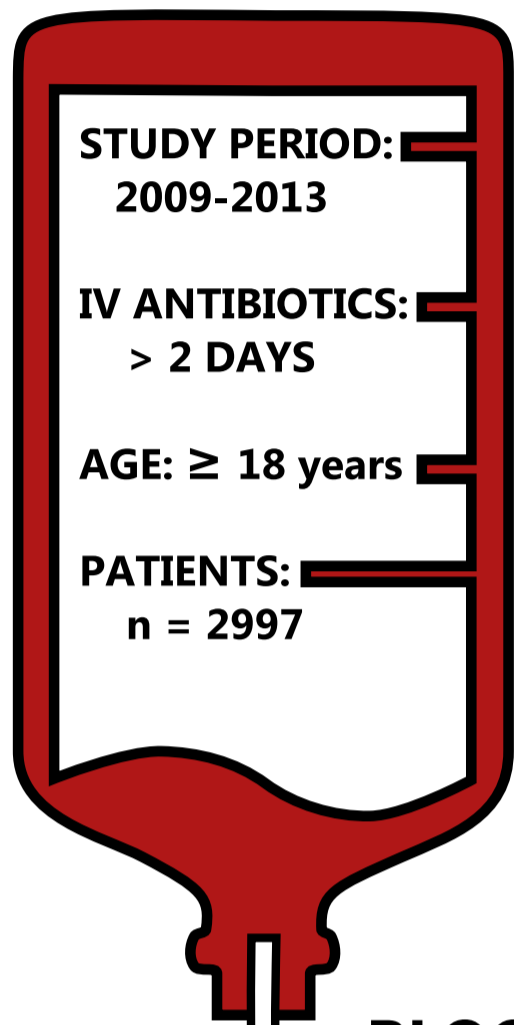
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

BLOOD CULTURES' EFFECT ON LENGTH OF STAY

Christian F. Luz¹, Jan-Willem H. Dik¹, Alex W. Friedrich¹, Job van der Palen², Sander van Assen³, Prashant Nannan Panday¹, Bhanu Sinha¹

¹University Medical Center Groningen, Groningen, NL ²University of Twente, Enschede, NL ³Treant Zorggroep, Emmen, NL



INTRODUCTION

Performing blood cultures is essential for appropriate antimicrobial therapy and mentioned in most guidelines on severe infections, but several studies show that guideline adherence is rather poor¹⁻⁴. This jeopardizes quality of care and increases the risk for resistance development. However, the impact of blood cultures has not been evaluated so far. We therefore analyze the effect of blood cultures on length of stay (LOS) and duration of therapy in patients receiving intravenous (IV) antibiotics on admission.

MATERIAL & METHODS

Setting: University Medical Center Groningen, 1339-bed academic tertiary referral hospital

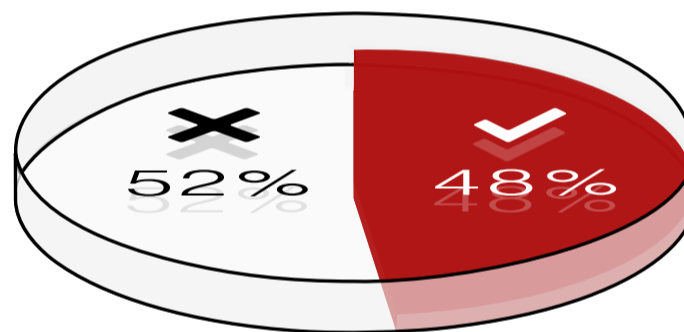
Antibiotics use: top ten prescribed non-prophylactic antibiotics in 2009-2013 (soon extended to 2016)

Antibiotic start: on admission (±1 day)

Exclusion: patients under 18 years, hematology and oto-rhino-laryngology wards

Statistics: Log-rank test, multiple logistic regression and Cox regression analysis

BLOOD CULTURE PERFORMED ?



PRELIMINARY FINDINGS

| Factor | Cox regression on length of stay | HR | p-value |
|------------------------------|----------------------------------|---------------|---------|
| Age | | 0.99 | <0.001 |
| Sex | | 0.86 | <0.001 |
| Blood cultures | | 1.11 | 0.011 |
| Leucocytes | | 0.86 | 0.006 |
| Weekend admission | | 1.20 | <0.001 |
| Admission to the hospital | | | <0.001 |
| via ER | | 1 (reference) | |
| via GP | | 0.99 | 0.824 |
| via out-patient clinic | | 0.84 | 0.031 |
| via unknown route | | 0.87 | 0.285 |
| via transfer | | 0.57 | <0.001 |
| Type of antibiotic | | | 0.011 |
| Co-amoxiclav | | 1 (reference) | |
| Cefuroxime | | 0.97 | 0.626 |
| Ceftriaxon | | 0.90 | 0.130 |
| Piperacillin/Tazobactam | | 0.85 | 0.005 |
| Ciprofloxacin | | 0.77 | 0.007 |
| Clindamycin | | 0.79 | 0.016 |
| Amoxicillin | | 0.83 | 0.328 |
| Meropenem | | 0.90 | 0.043 |
| Co-amoxiclav + Ciprofloxacin | | 0.83 | 0.128 |
| Medical specialty | | | <0.001 |
| Surgery | | 1 (reference) | |
| Internal medicine | | 0.80 | <0.001 |
| Other | | 0.83 | 0.003 |

← longer LOS shorter LOS →

- Association with likelihood for taking blood cultures in odds ratios (OR): Measuring CRP: OR = 8.13 (p<0.001) & measuring leucocytes: OR = 0.52 (p=0.064): adjustment see above
- Total duration of antibiotic therapy: 9.8 vs. 11.0 days (p=0.030)
- Total consumption in DDDs: 18.01 vs. 20.46 (p=0.915)

PRELIMINARY CONCLUSION

Patients with (timely) blood cultures performed had a significantly shorter duration of therapy and LOS. Increasing the compliance with existing guidelines for drawing blood cultures prior to starting antibiotic therapy

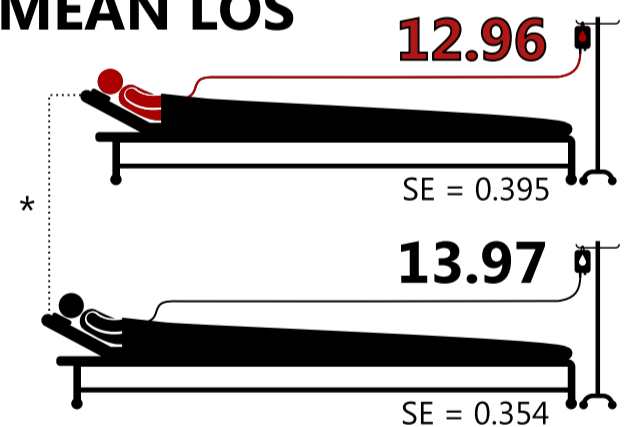
is most likely a useful intervention to improve quality of patient care and patient safety. These data underline the importance of an integrated, multidisciplinary approach in antimicrobial, infection prevention and diagnostic stewardship (AID)⁵.

REFERENCES

- 1) Rhodes A. et al. Intensive Care Med 2017, 43:304-377.
- 2) Abu Omar Y. et al. Eur J Cardiothorac Surg 2017, 51:10-29.
- 3) Reissig A. et al. Lung 2013, 191:239-246.
- 4) Chia D. et al. Am J Med Qual 2014, 30:539-542.
- 5) Dik J.-W. et al. Future Microbiol 2015, 11:93-102.

CONTACT: c.f.luz@umcg.nl

MEAN LOS



* log rank test: p < 0.017