

# SPHYGMOMANOMETER CUFFS: A POTENTIAL SOURCE OF INFECTION

Zargarán D, Hardwick S, Adel R, et al. *Angiology* 2015;66(2):118–121.

## INTRODUCTION<sup>1</sup>

- Sphygmomanometer blood pressure (BP) cuffs have been identified as potential sources of Hospital Acquired Infections (HAIs) through pathogen transmission
- Despite the potential role of BP cuffs as fomites, not all healthcare institutions have requirements to decontaminate between uses

## PURPOSE<sup>1</sup>



To assess the potential pathogenic hazard associated with BP cuffs in a UK hospital setting

## METHODS<sup>1</sup>



- BP cuffs from 14 medical wards and outpatient clinics in a London general hospital were swabbed for the presence of bacterial organisms
- Swabs were taken from the inner aspect (surface in direct contact with patient skin) of 120 cuffs
  - Standard biological techniques were used to culture swabs over 48 hours

## RESULTS<sup>1</sup>

**102 of 120 BP cuffs (85%) were positive for at least 1 bacterial organism;** the remaining 15% were sterile. 3 cuffs (2.5%) contained skin flora.

**5.8%**  
of BP cuffs were contaminated with

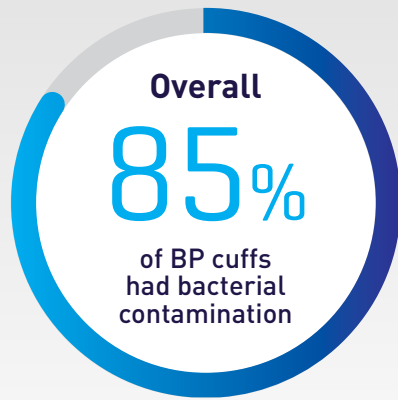
**3 bacterial species**

**35%**  
of BP cuffs were contaminated with

**2 bacterial species**

**44.2%**  
of BP cuffs were contaminated with

**1 bacterial species**



OUTPATIENT CLINICS	INPATIENT WARDS
Bacterial contamination rates:	
<div>90%</div> <ul style="list-style-type: none"><li>• Almost all blood pressure cuffs in outpatient departments were contaminated</li><li>• There was no significant difference in contamination rates between outpatient and inpatient clinics (p=0.22)</li></ul>	<div>82%</div> <ul style="list-style-type: none"><li>• In medical wards, 82% of blood pressure cuffs were contaminated</li><li>• 100% of cuffs used in the coronary care inpatient unit were contaminated</li></ul>
Predominant bacterial species:	
<div>Diphtheroids</div> <ul style="list-style-type: none"><li>• Known cause of diphtheria, diphtheric skin lesions, sepsis and infective endocarditis<sup>2</sup></li></ul>	<div>Coagulase-negative Staphylococcus</div> <ul style="list-style-type: none"><li>• Frequent cause of nosocomial meningitis<sup>3</sup></li><li>• Most common pathogen causing bacteraemia associated with indwelling devices<sup>4</sup></li></ul>

## CONCLUSIONS<sup>1</sup>

- This study reported extensive bacterial contamination of blood pressure cuffs in a UK district hospital setting
- Such levels of contamination potentially pose a serious risk to patients, given the number and pathogenic capacity of the cultured species
- The results highlight a need for hospitals to implement improved disinfection protocols to mitigate pathogenic risk when using blood pressure cuffs
- Suggestions to mitigate the risk of nosocomial infection include:
  - Novel cuff design
  - Strict cleaning protocols between patients (e.g. disinfecting detergents that do not damage the cuff)
  - Use of a disposable barrier between the cuff and skin, for each patient

## STUDY LIMITATIONS:<sup>1</sup>

- Studies in other geographical areas and healthcare settings would help establish the generalisability of these UK results
- Future studies should include other pathogens, including fungi

**REFERENCES:** 1. Zargarán D, Hardwick S, Adel R, et al. Sphygmomanometer cuffs: A potential source of infection! *Angiology*. 2015;66(2):118–121. 2. Hadfield TL, McEvoy P, Polotsky Y, et al. The pathology of diphtheria. *J Infect Dis*. 2000;181 suppl 1:S116–S120. 3. Laguna-Del Estal P, Castaneda-Pastor A, Gil-Navarro M, et al. Comparative study of meningitis due to *Staphylococcus aureus* and coagulase-negative *Staphylococci* in adults. *Rev Neurol*. 2009;48(1):2–6. 4. Huebner J, Goldmann DA. Coagulase-negative staphylococci: Role as pathogens. *Annu Rev Med*. 1999;50(1):223–236.