Study suggests the majority of tourniquets used in medical procedures are contaminated

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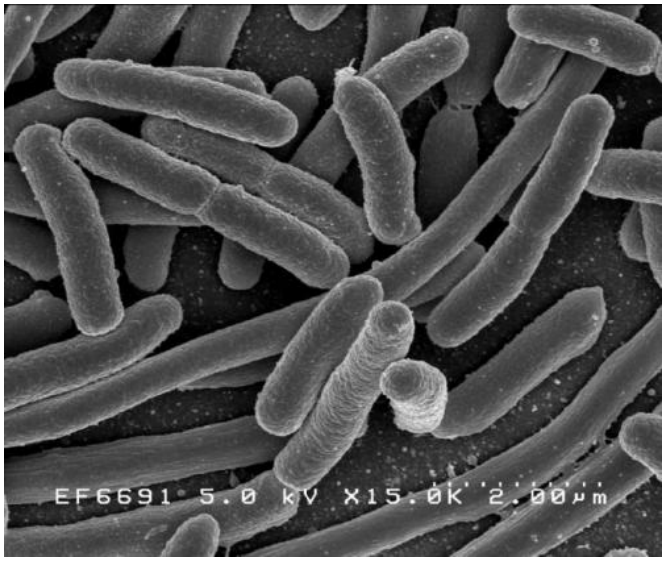

Escherichia coli. Credit: Rocky Mountain Laboratories, NIAID, NIH

New research presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Amsterdam, Netherlands (13-16 April) shows that a majority of tourniquets inspected contained microbes which could put patient safety and care quality at risk.

Tourniquets are one of the most widely used and reused items in healthcare. They are typically used during peripheral venipuncture (the most frequently performed invasive procedure in healthcare settings), often being tightened around the upper arm to make it easier to administer intravenous injections, collect blood samples, or perform other procedures.

The review study by Dr. Nádia Osório and colleagues at the Polytechnic Institute of Coimbra, Coimbra, Portugal, looked at bacterial contamination rates found in reusable tourniquets across a range of clinical studies, as well as identifying the most prevalent contaminant microorganisms.

Traditionally these items are reused between patients, which could pose a risk of cross-contamination. The authors note that: "Medical devices frequently reused between procedures in different patients are associated with high contamination rates and multiresistant microorganisms". Despite this, there are no studies which summarise all the available research into tourniquet contamination, and in particular, the types of microorganisms responsible.

The team considered potentially relevant studies, both published and unpublished, written in English, French, Spanish and Portuguese up to December 2017 for inclusion in their review. After a detailed analysis, they were left with 20 clinical studies with a combined total sample size of 1,479 tourniquets. Contamination rates varied from 10% to 100%, with coagulase-negative staphylococci being the most commonly found microorganism, being present on 441 of the tourniquets analysed. Coagulase-negative staphylococci can cause a range of infections, including skin and soft tissue infections.

The reviewed studies also found contamination by other species of bacteria including *Escherichia coli*, *Klebsiella* spp., *Pseudomonas* spp., *Acinetobacter baumannii*, and *Stenotrophomonas maltophilia*. with individual contamination rates of up to 10% for each species. These are known to cause a range of potentially very serious illnesses such as pneumonia, and represent a particular risk to individuals with compromised immune systems and those with long-term health conditions such as cystic fibrosis.

The authors found that 15 of the studies showed rates of contamination that exceeded 70% of the sampled tourniquets. They conclude that: "These data reiterate the inherent risks that reusable tourniquets can pose to patient safety and care quality, related to the potential dissemination of microorganisms between patients through this medical device."

They add: "More studies should be developed focused on the impact of the introduction of tourniquet decontamination guidelines/programs in clinical settings and professional training. Furthermore, the mandatory introduction of single-use disposable tourniquets in clinical settings should be considered as a potential resolution to our findings."

Provided by European Society of Clinical Microbiology and Infectious Diseases

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