

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

# 3D Printed Prosthetic Socket Liners for Patients Requiring a Limb Prosthetic Device: Clinical Effectiveness and Safety

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## Research Questions

1. What is the comparative clinical effectiveness of 3D printed prosthetic socket liners versus traditional prosthetic socket liners for patients requiring a limb prosthetic device?
2. What is the comparative clinical effectiveness of 3D printed prosthetic socket liners versus another type of 3D printed prosthetic socket liner for patients requiring a limb prosthetic device?

## Key Findings

No relevant literature was identified regarding the comparative clinical effectiveness or safety of 3D printed prosthetic compared with traditional prosthetic socket liners or another type of 3D printed prosthetic liner for patients requiring a limb prosthetic device.

## Methods

A limited literature search was conducted by an information specialist on key resources including Ovid Medline and Embase, the Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were 3D printing and socket liners. No filters were applied to limit the retrieval by study type. The search was limited to English language documents published between January 1, 2014 and May 6, 2019. Internet links were provided, where available.

## Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

**Table 1: Selection Criteria**

<b>Population</b>	Patients requiring a limb prosthetic device
<b>Intervention</b>	3D printed socket liners made from a thermoplastic elastomer (TPE)
<b>Comparator</b>	Q1: Traditional prosthetic socket liners manufactured from other materials (e.g., Polyethylene elastomer, ethylene-vinyl acetate (EVA)) Q2: 3D printed socket liners made from another material (e.g., Thermoplastic polyurethane , thermoplastic alloy)
<b>Outcomes</b>	Effectiveness, Safety (adverse events; e.g., skin integrity, skin wounds, bacterial growth, swelling, sweat)
<b>Study Designs</b>	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials and non-randomized studies

## Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first followed by randomized controlled trials and non-randomized studies.

No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials and non-randomized studies were identified regarding the safety of comparative effectiveness of 3D printed prosthetic socket liners versus traditional prosthetic socket liners or other 3D printed socket liners.

References of potential interest are provided in the appendix.

### Health Technology Assessments

No literature identified.

### Systematic Reviews and Meta-analyses

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Non-Randomized Studies

No literature identified.

## Appendix — Further Information

### Additional References

1. Hurley G, Burnard G. Material analysis of prosthetic sockets and comparison to clinical outcomes. *PM and R*. 2017;9 (9 Supplement 1):S182.
2. Poziembo B. 3D printing: Engineering socket friction to improve socket fit. *Prosthet Orthot Int*. 2015;1):312.