



University
of Basel

Department of
Biomedical Engineering



Seminar Series:

Latest Breakthroughs in Biomedical Engineering Research

Location: DBE Science Lounge, Hegenheimermattweg 167C, 4123 Allschwil

Date & Time: Thursday 24.04.2025 | 16:30 – 17:30

Host: Prof. Florian Thieringer

Adoption and implementation of 3D printing in healthcare: research insights and practical implications

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Abstract

This presentation provides an overview of the adoption and implementation of 3D printing solutions in healthcare. It begins by defining three key concepts: 3D printing, adoption, and implementation. Next, it presents a concise review of existing systematic reviews on 3D printing in healthcare published between 2022 and 2025, summarizing the latest knowledge in the field.

The focus then narrows to the most prevalent application of 3D printing: oral and maxillofacial surgery, including dental surgery. Findings from systematic reviews in this area indicate that much of the research is technically oriented, emphasizing materials, anatomic models, and implants. However, there is a notable lack of clinical trials and no studies on the actual adoption or implementation of 3D-printed solutions in healthcare.

To address this gap, our research group, based at the Additive Manufacturing for the Life Sciences Competence Centre (AM4Life), has been studying the adoption of 3D printing in healthcare since 2021. This presentation outlines our findings from 2021 to 2025 and explores their implications for decision-making in 3D printing adoption. Finally, key areas for future research are identified.

Biosketch

Anders Brantnell is a Docent and Assistant Professor in Industrial Engineering and Management at Uppsala University, specializing in Medical Technology Innovation and Implementation. He is also affiliated with the Department of Women's and Children's Health.

Brantnell's research focuses on the development and implementation of new healthcare solutions across various clinical fields, including oral and maxillofacial surgery, cardiology, orthopedics, and mental health. His work spans multiple technologies such as 3D printing, the Internet of Things, digital health, artificial intelligence, and blockchain. Brantnell publishes his research in peer-reviewed clinical, public health and management-oriented journals.

At the Additive Manufacturing for the Life Sciences Competence Centre (AM4Life), Brantnell leads a work package on exploitation and dissemination, covering regulatory aspects and implementation strategies. He also has extensive experience teaching courses on product development, healthcare innovation, implementation, and research methods.