

# Diagnosis and management of periprosthetic joint infections

Akademisk avhandling

Som för avläggande av medicine doktorexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i R-aulan, R-huset Mölndals sjukhus, Göteborgsvägen 31, Mölndal, den 9e oktober, klockan 9.00

av Karin Svensson

Fakultetsopponent:  
Professor Ian Stockley  
Sheffield Teaching Hospitals, Sheffield, Storbritannien

## Avhandlingen baseras på följande delarbeten

- I. Svensson, K, Tillander, J, Zaborowska, M, Hoffman, M, Lasa, I, Thomsen, P, Malchau, H, Rolfson, O, Trobos, M. Biofilm properties in relation to treatment outcome in patients with first-time periprosthetic hip or knee joint infection.  
*In manuscript.*
- II. Svensson, K, Rolfson, O, Nauclér, E, Lazarinis, S, Sköldenberg, O, Schilcher, J, Johansson, P.E., Mohaddes, M, Kärrholm, J. Improved success after exchange of modular components in Debridement, Antibiotics and Implant Retention: an observational study on 575 patients with infected primary total hip arthroplasty.  
*In manuscript.*
- III. Svensson, K, Rolfson, O, Kärrholm, J, Mohaddes, M. Similar risk of re-revision in patients after one- or two-stage surgical revision of infected total hip arthroplasty: an analysis of revisions in the Swedish Hip Arthroplasty Register 1979-2015.  
*Journal of Clinical Medicine, 2019;8(4):485.*
- IV. Svensson, K, Rolfson, O, Mohaddes, M, Malchau, H, Erichsen Andersson, A. Reflecting on and managing the emotional impact of prosthetic joint infections on orthopaedic surgeons – a qualitative study.  
*The Bone and Joint Journal, 2020;102-B(6):736-743.*

**SAHLGRENKA AKADEMIN**  
**INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



# Diagnosis and management of periprosthetic joint infections

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## Abstract

Periprosthetic joint infection (PJI) is a severe complication to hip and knee arthroplasty surgery. In the light of its devastating implications for the affected patient, its great economic impact on the health care system and the increasing antimicrobial resistance, it is important to develop efficient diagnostic methods, identify optimal treatment pathways and improve the care for patients.

Using a microbiological approach, Paper I aimed to identify the impact of biofilm production and susceptibility on clinical outcome. The result showed a greater risk of persisting PJI in patients infected by strong biofilm producing staphylococci compared to non- or weak biofilm producers, suggesting the implementation of biofilm diagnostics in clinical routine. Paper II aimed to compare two surgical techniques of DAIR (debridement, antibiotics and implant retention) treatment using a register-based approach. The superiority of modular component exchange compared to non-exchange was established and the exchange of modular components should be employed in cases where DAIR is a viable option. In terms of implant extracting treatment, Paper III aimed to identify re-revision rates after one- and two stage revision procedures using a national register. No difference in re-revision rates were observed, supporting the use of the one-stage procedure which is a more economic choice and more lenient alternative for patients. Paper IV aimed to investigate the experiences and emotional impact of PJI on surgeons using qualitative analysis. The results confirm a negative emotional impact in surgeons and highlight the importance of multidisciplinary work and inter-collegial support for optimal PJI management and for the wellbeing of surgeons.

**Keywords:** arthroplasty surgery, periprosthetic joint infection, biofilm