

# Treatment of prosthetic joint infection: DAIR with short duration of rifampicin

## Introduction

Evidence for prolonged rifampicin therapy for prosthetic joint infections (PJI) is limited and treatment limiting adverse events are significant. We hypothesized that the role of rifampicin is most relevant in the early phase of treatment, immediately after surgical debridement. The outcome of PJI treated with Debridement, Antibiotics and Implant Retention including short duration of rifampicin (5 days) was evaluated.

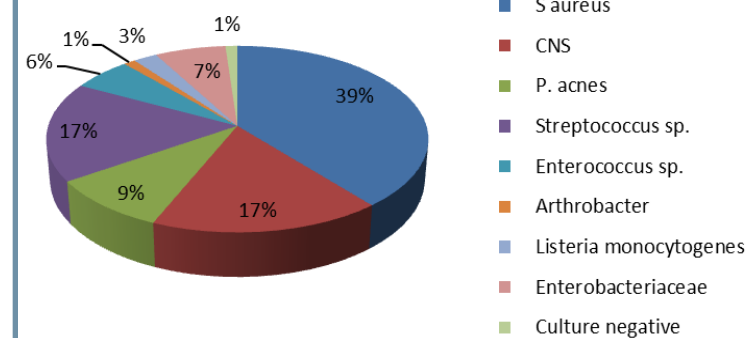
## Baseline characteristics of 67 patients with PJI

Demographics	All (n=67)
Age at diagnosis (mean, range)	58 (15-92)
Sex (male, %)	36 (54%)
Implant site (n, %)	
Hip	33 (49%)
Knee	25 (37%)
Shoulder, elbow, ankle	1,6, 2 (14%)
Revision# (n, %)	25 (37%)
Comorbidities (n, %)	
Diabetes mellitus	7 (10%)
Rheumatoid arthritis	16 (24%)
Orthopaedic oncology <sup>§</sup>	17 (25%)
Use of immunosuppressant's <sup>^</sup>	18 (27%)

## Clinical characteristics

Duration of symptoms	
<8 days	46 (69%)
8-20 days	11 (16%)
21-27 days	2 (3%)
>27 days	8 (12%)
Fever	30 (45%)
Fistula	6 (9%)
ESR (mean, range)	75 (13-140)
Number cultures taken (mean)	4.8 (1-10)
Number of positive cultures per patient (mean, range)	3.6 (0-10)
Polymicrobial infection	16 (24%)

## Microbiology outcome of all cultures



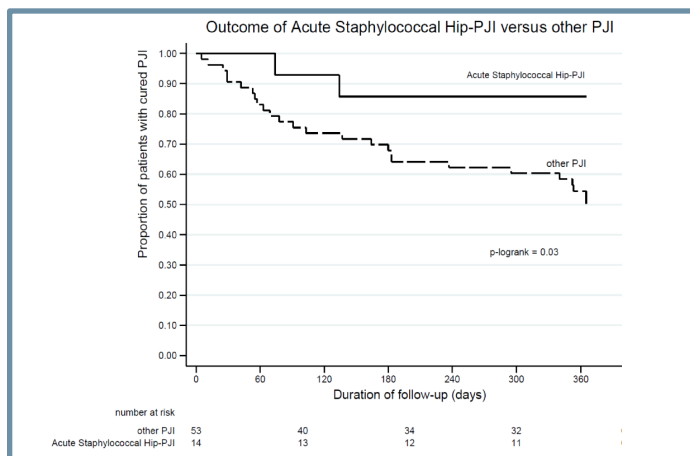
## Subgroup outcomes of PJI: DAIR with antibiotics including only 5 days rifampicin

	n	Cure
All patients	67	58%
Duration of symptoms		
Acute (< 21 days)	57	63%
Chronic (≥ 21 days)	10	30%
Patients with steroids/anti-TNF/MTX	18	39%
Patients with tumour prosthesis	17	47%
Acute* staphylococcal hip or knee PJI	26	69%
Acute* staphylococcal hip PJI	14	86%
Monomicrobial staphylococcal hip PJI	15	87%

\*Acute = symptoms or last operation < 3 weeks

## Conclusions

- In a selected patient population, the outcome of acute PJI treated with DAIR including only 5 days of rifampicin was 87% (comparable to published cohort studies and a randomized trial using at least 3 months of rifampicin combination therapy).
- No selection of rifampicin-resistant staphylococci was found in relapses
- The overall cure rate reflects our frail patient population.
- To the best of our knowledge, no studies have been published in which a shorter treatment duration with rifampicin was investigated
- A RCT comparing long term rifampicin with short term rifampicin therapy is needed.



## Methods and treatment protocol

All patients with PJI who were treated with surgical debridement and antimicrobial combination therapy including rifampicin - which in our center included only 5 days of rifampicin - followed by monotherapy based on culture and antibiotic susceptibility (e.g. flucloxacillin for *S aureus*) were enrolled in a cohort study (2003-2014). Treatment consisted of prompt, extensive surgical debridement, rinsing with povidone iodine and pulsed lavage. Rifampicin was started immediately after debridement. Outcomes and risk factors for treatment failure were assessed.

## Definition of cure and failure:

**Cure:** absence of infection and a stable implant for at least six months after stopping antibiotic therapy.

**Failure:** either chronic suppressive antibiotic therapy with retention of the prosthesis or progression or relapse of infection leading to removal of the prosthesis

## Risk factors for failure

During 2003-2012 liners were generally not exchanged.

Chronic PJI (RR 1.90, 95%CI 1.12-3.23) and immunosuppressive therapy (RR 1.76, 95%CI 1.03-3.00) were associated with increased risk for failure.

