



**Karolinska  
Institutet**

From the Division of Global Health (IHCAR), Department of Public Health Sciences

# **Antibiotic Prescribing**

## **Focusing on the situation in Swedish nursing homes**

### **ACADEMIC DISSERTATION**

For the degree of PhD in Medical science at Karolinska Institutet  
The thesis will be defended in public in English at Farmakologi hall, Nanna Svartz väg 2, Solna Campus, Karolinska Institutet

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## ABSTRACT

**Background** The increasing rate of resistance to antibiotics has become a global concern. High consumption and irrational use of antibiotics is contributing to this development. In Sweden sales data of antibiotics was available, but there was a lack of detailed knowledge about therapeutic indications and compliance with guidelines, especially concerning elderly residents in nursing homes.

**Aim** The aim was to present the treatment of infections in outpatients and in the elderly in nursing homes, and further to develop and evaluate the effect of an educational intervention, aiming at improving treatment with antibiotics in Swedish nursing homes. The specific objectives were to: i) Present the treatment patterns regarding infectious diseases in outpatients (I) and elderly residents in nursing homes (II). ii) Through focus group discussions and collection of knowledge and attitude data, elucidate the decision making process for antibiotic prescribing in nursing homes (III), target the intervention and explore barriers and facilitators for behavioural change. iii) Evaluate the effect of the intervention on quantity and quality of prescribing in relation to available guidelines (IV)

**Methods** Paper I and II are cross-sectional studies describing the prescribing pattern in outpatients in five counties and in 58 nursing homes in Sweden, respectively. In paper III mixed methods are used – focus group discussions with ten nursing assistants, ten nurses and six general practitioners, and a knowledge- and attitude questionnaire. The study design used in paper IV is a cluster randomised controlled trial evaluating an educational intervention targeting physicians and nurses concerning antibiotic prescribing in nursing homes in Sweden.

**Results** In the outpatient setting, 59% of patients with infectious complaints were treated with antibiotics (Paper I). In nursing homes the corresponding figure was 84% (Paper II). Women with lower UTI were treated with a quinolone in 21% of the cases in the outpatient setting (Paper I) and 29% in nursing homes (Paper II). In 38% of the cases in nursing homes, an antibiotic was prescribed during an indirect contact with the physician. Half of the women with lower UTI in nursing homes, received a treatment which was not in line with the recommendations (Paper II). The focus group discussions (Paper III) have provided us with a perspective on the staffs' own experiences with regard to infections in nursing homes. The educational intervention had a modest effect on most outcome variables, including the primary outcome - proportion of quinolones for lower UTI in women - but reduced the proportion of infections treated with an antibiotic by 12% (Paper IV).

**Conclusions** In outpatients, the prescribing pattern in general seemed to be in accordance with the recommendations, although there is still some room for improvement. The educational intervention had a modest effect on most outcomes, including the primary outcome, but reduced the proportion of prescribed courses of antibiotics.

**Keywords:** antibiotic prescribing, outpatients, nursing homes, educational intervention, Sweden