

Cost Effectiveness of Vaccination and the Value of Prevention

Akademisk avhandling

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Avhandlingen baseras på följande delarbeten

- I. Wolff E, Elfström KM, Haugen Cange H, Larsson S, Englund H, Sparén P, Roth A. 2018. Cost-effectiveness of sex-neutral HPV-vaccination in Sweden, accounting for herd-immunity and sexual behaviour. *Vaccine* 2018;36;s5160-5165
- II. Wolff E, Aronsson B, Hultstrand M, Brouwers L. 2019. Cost-Effectiveness Analyses of Different Vaccination Strategies to Reduce Pertussis among Infants in Sweden. *Journal of Infectious Diseases and Epidemiology* 2019;5;065
- III. Wolff E, Storsaeter J, Örtqvist Å, Naucler P, Larsson S, Lepp T, Roth A. 2020. Cost-effectiveness of pneumococcal vaccination for elderly in Sweden. *Vaccine* 2020;38:4988-95
- IV. Wolff E, Widgren K, Scalia Tomba G, Lepp T, Andersson S, Roth A. Cost-effectiveness of varicella and herpes zoster vaccination in Sweden, using a dynamic model. Submitted manuscript
- V. Wolff E, Larsson S, Svensson M. 2020. Willingness to pay for health improvements using stated preferences: prevention vs treatment. *Value in Health* 2020;23;1384-1390

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Abstract

The overall aim of this thesis was to analyse the cost-effectiveness of vaccination of infectious diseases and to investigate the value of prevention, in a Swedish setting.

This thesis consists of five studies. In Study I through IV, decision analytical modelling was applied to economic evaluations of the cost-effectiveness of vaccination or vaccination strategies against infectious diseases. Study I investigated the cost-effectiveness of sex-neutral HPV vaccination compared to girls-only vaccination, and Study II examined the cost-effectiveness of different vaccination strategies for pertussis. Study III investigated the cost-effectiveness of pneumococcal vaccination of the elderly, and Study IV the cost-effectiveness of varicella and/or herpes zoster vaccination among children and the elderly. There are no official cost-effectiveness thresholds in Sweden or guidelines on the relative cost-effectiveness of prevention in relation to treatment. Study V used contingent valuation and a two-part model to investigate whether, and how, the willingness to pay for prevention differed from the willingness to pay for treatment.

Overall, the results from the four economic evaluations suggest that vaccinations lead to a reduced burden of disease and that the cost-effectiveness often was heavily influenced by the values of the included parameters, as the price of the vaccine, the applied time horizon, and model choice. Finally, the results from Study V suggest that prevention was, on an average, valued higher than treatment.

Keywords: health economics, economic evaluation, cost-effectiveness, vaccination, prevention, contingent valuation