

Cost effectiveness of cervical cancer screening in Serbia. A comparison of screening policies

Jovan Mihajlović, Petros Pechlivanoglou, Maarten J. Postma

^aDepartment of PharmacoEpidemiology and PharmacoEconomics (PE2), University of Groningen, Groningen, The Netherlands

Correspondence to: J. Mihajlović, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands, j.mihajlovic@rug.nl, Phone: +31503638204, Fax: +31503632772

Background

Cervical cancer incidence in Serbia has been identified as one of the highest in Europe (incidence of 24.9 per 100.000), showing slow but steady increase during the last decade [1,2]. Despite the National Programme for Prevention of Cervical Cancer (NPPCC) that has recently been established, an organised pap screening is far from full implementation. Expert estimates of the proportion of screening coverage lie around 20% of the female population.

Objectives

This study aims to assess the effectiveness and cost effectiveness of absolute adherence to the proposed policy compared to the current practice.

Methods

A Markov model simulating the natural history of cervical cancer was developed (see figure 1). This model was subsequently used to assess the costs and health benefits of different screening scenarios. The model was calibrated using country specific data, sourcing incidence and mortality from Serbian cancer registries. Accordingly, the screening algorithm incorporated in the model was based on the local guidelines. We followed a hypothetical cohort of 100,000 15-year old girls until the end of their lifetime.

Subsequently, the actual cytological screening practice covering only 20% of the targeted population was compared to a scenario of absolute adherence to the national screening programme. A discount rate of 1.5% for health and 4% for cost outcomes was applied. As a measure of effectiveness, we utilized life years gained (LYG), due to reduction in cervical cancer mortality. Costs and health effects were discounted at 4.0%; a Serbian healthcare perspective was used.

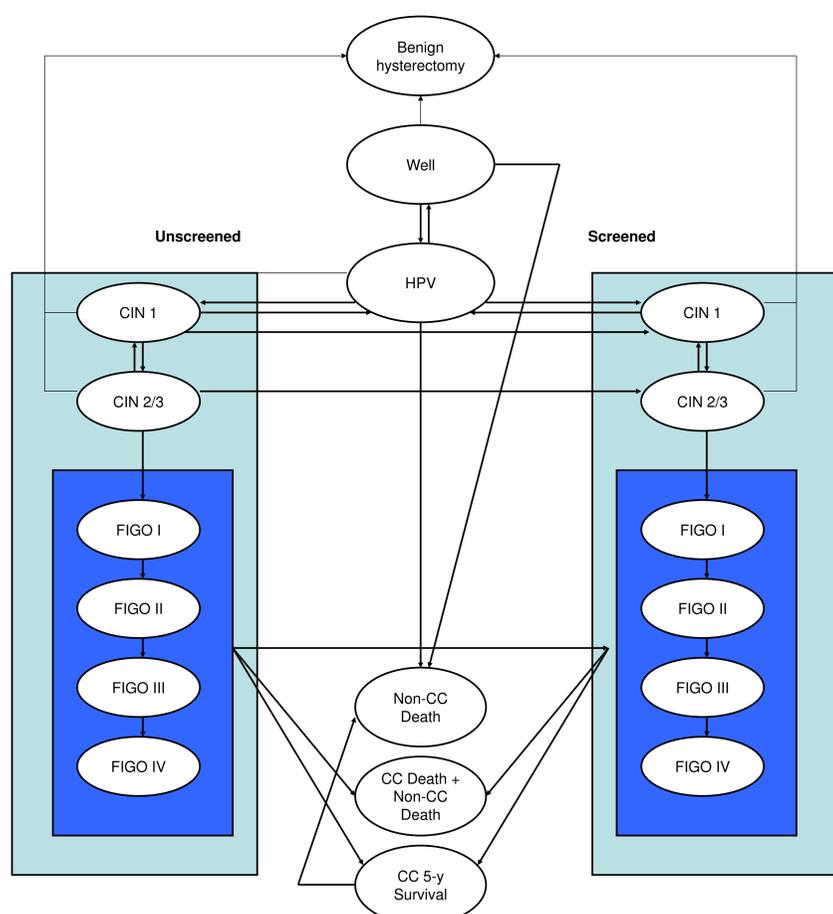


Figure 1: Markov model on the natural history of cervical cancer.

Results

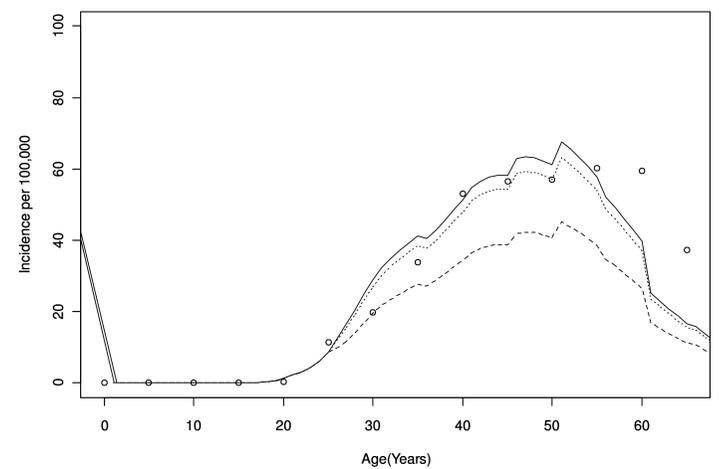


Figure 2 : Observed (dots), predicted (dotted line), no screening (solid line) and full adherence to the guidelines (dashed line) cervical cancer incidence rate scenarios for the Serbian population.

Assuming a screening coverage of 20% for a cohort of 100,000 15-year old girls screened from the age of 25 to 69 our model predicted a lifetime risk of cervical cancer of 3.4% and a mortality risk due to cervical cancer of 1.3%. Perfect adherence to the NPPCC guidelines could result in an additional 0.025 LYG per patient with an added burden of 70.32 EUR per patient. The incremental cost effectiveness of such an investment is estimated to be 2,831 EUR per LYG.

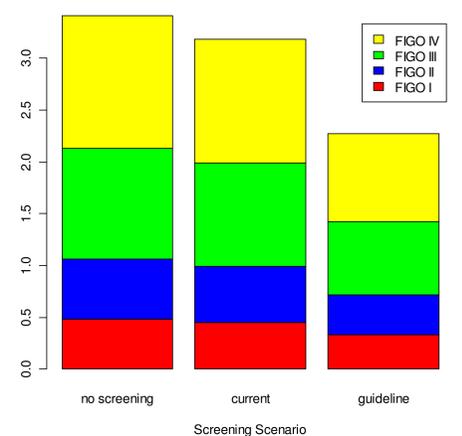


Figure 3 : Probability of cervical cancer by FIGO(I-IV) stage and screening scenario

1: no screening,
2: current screening methods,
3: screening per NPPCC guideline

Conclusion

This research identified that full adherence to the NPPCC screening policy is very likely to be cost effective. In general, the low screening coverage that has been observed appeared as the most serious obstacle to the prevention of cervical cancer. The new methods in cervical cancer prevention, however, such as HPV vaccination and HPV testing, require further pharmaco-economic assessment.

References

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