

Report on Bachelor Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	Martina Lušková
Advisor:	Mgr. Lenka Šlegerová
Title of the thesis:	Is women's vaccination against HPV in the Czech Republic cost-effective?

OVERALL ASSESSMENT:

Short summary

The thesis deals with women's vaccination against human papillomavirus (HPV) in the Czech Republic. The author performs a cost-effectiveness analysis of the current state of the non-obligatory vaccination covered from the statutory health insurance vis-à-vis two alternative scenarios, proposed by the author, extending the age range of girls for whom the vaccination is fully covered.

The author applies a standard approach used in health economics to solve such problem questions, calculating the incremental cost-effectiveness ratio while using the Markov model to estimate the difference in health status of the strategies in question.

The author demonstrates good orientation in a comprehensive medical issue as the thesis analysis requires knowledge of the cervical cancer diagnosis and its pre-stages.

As the main limitation of the analysis, the author states the fact that data are calculated from the administrative data of the health insurance funds (i.e. administrative data collected from providers of care for the purposes of health care reimbursement), whereas it would be more appropriate to use data from oncological registry.

In my opinion, the administrative data may be sometime more accurate than the national registry data. I see a more significant issue in the way the average numbers, obtained from the UZIS, were used in the Markov model. From the data request, specified in the appendix, it seems the author did not work with demographics and simply used the average cervical cancer mortality of 2018/2019 in every Markov cycle. However, the author herself states, that "*... the average age, as well as median age, at which cervical cancer is diagnosed is fifty-five years. The twenty-fifth and seventy-fifth quantile interval represents age ranging from forty-one to sixty-seven years at which cervical carcinoma is diagnosed*". To calculate the ICER properly, the average mortality should not be applied from the first Markov cycle (i.e. at the age of 14 of the age cohort in question), but mortality would have to be age-adjusted for each cycle of the Markov model in line with the gradual aging of the monitored women population. As a consequence of applying the average mortality, I believe the benefits of alternative strategy, measured in QALY, are significantly over-estimated. If so, it has some consequences for the interpretation of the analysis results; from this perspective, the value added of the thesis is somehow limited.

However, because the thesis does not sufficiently describe what demographic data enter the Markov model, my concern may as well be only a result of misunderstanding; it could be that demographic issue is properly solved, but the author forgets to describe it.

Contribution

The author presents original ideas on the HPV vaccination strategies in the Czech Republic. The essay has some potential to feed the debate on vaccination strategy changes. Its contribution is, however, limited to the extent it works with limited data, the biggest limitation being the ignorance of age-specific cervical cancer mortality, which, most probably, has not been provided to the author. Incorporating it would require including mortality charts within the Markov model when gradual ageing of one particular age cohort is followed.

Still, the author demonstrates the ability to draw conclusion based on the knowledge of relevant literature and the outcomes of her analysis.

Methods

The tools are relevant to the research question being investigated and adequate to the author's level of study. The author aims to calculate the incremental cost-effectiveness ratio to assess current HPV vaccination strategy in Czechia compared to two proposed strategies. Homogenous multistate Markov model is used to model transitions among different health states, estimating progression of the cervical cancer.

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Besides using data obtained from the UZIS, the author also employs data that she researched from the health insurance companies, and brings the medical (health) perspective in line with the economic one.

Though I think omitting the age-specific mortality while calculating the alternative strategy's benefits overestimates the results, the analytical exercise in running the Markov model seems correct - incorporating age-specific mortality would result in a more comprehensive analysis of the issue.

In the thesis, I miss a comprehensive text on thesis limitations. Some limitations are named in different parts of the text and in only one paragraph in conclusion; a designated subchapter within Results chapter would do better.

Literature

The thesis demonstrates author's understanding of the topic, both the medical-related and the economic-related part of the issue, and good command of recent literature. The author quotes relevant literature in a proper way. The only thing I was missing was specification of what kind of data the other studies on the same topic from abroad used and how does it align with data and its processing applied by the author.

Manuscript form

The thesis is well structured, easy to read. It is well written, using good English and academic style of writing. The text effectively refers to graphs and tables and disposes with a complete bibliography.

Overall evaluation and suggested questions for the discussion during the defense

The results of the Urkund analysis do not indicate significant text similarity with other available sources. In my view, the thesis fulfils the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, **I recommend it for the defense and suggest a grade B.**

- In chapter 2.3, the author describes current HPV vaccination strategies in Austria, German, and Latvia. Why did the author choose particularly these countries? Do they differ from other countries, or because they differ from the CZ situation? Is the CZ case similar to any other European country, i.e. does Czechia apply an EU-common approach to HPV vaccination?
- In chapter 3 the author summarizes few cost-effectiveness studies on the same topic as her thesis. Please discuss what kind of data and approach do these studies use and whether it is in line or not with data and approach used in your thesis?
- Please comment on the demographic concern described above - have you dealt with demographic issues, age-specific mortality rates, and if not, do you think that incorporating these into your analysis would change your results, and how?

SUMMARY OF POINTS AWARDED:

CATEGORY	POINTS
<i>Contribution (max. 30 points)</i>	20
<i>Methods (max. 30 points)</i>	25
<i>Literature (max. 20 points)</i>	18
<i>Manuscript Form (max. 20 points)</i>	20

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TOTAL POINTS (max. 100 points)	83
GRADE (A – B – C – D – E – F)	B

NAME OF THE REFEREE: *PhDr. Lucie Bryndová*

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*Digitálně podepsáno (29.8.2021):
Lucie Bryndová*

Referee Signature

