Title,

HRA IN ANAL HPV-RELATED CHANGES: OPTIMIZING TRAINING AND CARE

Category,

Background,

HRA allows for increased earlier detection of HSIL in at-risk populations. The b**enefits** of this are a *decreased disease burden (fewer patients progress to carcinoma prior to detection) and* an earlier start to treatment. The combined effect of these are better patient outcomes, reduced mortality, and less aggressive interventions with an improved quality of life and reduced long-term healthcare costs associated with advanced disease management.

However, enhanced screening can lead to an *increased healthcare burden* due to a larger number of patients with -known- disease and higher short-term costs. Additionally, it can strain healthcare resources and personnel, particularly if the screening leads to false positives or identifies indolent tumors that may never have caused harm.

Balancing early detection with resource management remains a key challenge. An estimate of the effects of proposed guideline changes can be a valuable tool in choosing an appropriate approach as well as in seeking optimal modifications for specific populations and healthcare settings.

Monte Carlo simulations allow for an estimate of future numbers of patients requiring care, thereby allowing an estimate of required personnel and materiel. The flexibility of such simulations in changing the underlying parameters make them a suitable tool for evaluating the effects of any proposed changes to guidelines.

Methods

We simulated a population under a set of assumptions about the natural disease progression of anal carcinoma. We added assumptions about the effects of a chosen screening and treatment strategy, and then changed the screening strategy to one with increased sensitivity in detecting LSIL and HSIL lesions. The simulation was repeated 20 times, with 50 cycles of disease progression and detection at each level of screening/treatment.

Results

We have shown that the introduction of a more sensitive screening method leads to a decreased incidence of active disease in the population (reduced incidence of carcinoma and partially HSIL due to detection before progression, as well as decreased incidence of LSIL and HSIL due to timely curative treatment). At the same time, we showed that a more sensitive screening strategy leads to a larger number of people with known disease and therefore a larger number of required patient encounter.

Conclusion

These results were expected and in line with previous experience with screening for other types of cancer. We have shown that Monte Carlo simulations with appropriate input parameters can be used to estimate the required capacity after planned changes to screening strategy and/or changes to underlying risk factors within the population. Given the simple incorporation of varying underlying parameters, they can also be used to assess effects of various policies within specific populations and settings, allowing for more precisely tailored screening strategies at the regional and national levels.