Abstract

Objectives

This paper presents a simulation model for evaluating the possible effects of a screening and vaccination campaign against Human Papillomavirus [HPV] in Kenya.

Method

A System Dynamics model was developed using the iThink™ computer simulation package. The model was based on data extracted from epidemiological, demographic and published research and where data was not available, expert opinion was sought. The deterministic model stratified the population by vaccination status, screening status and HPV infection status. The model was simulated to estimate outputs for the next 50 years from 2011. Cost Utility indicators of Disability Adjusted Life Years (DALYs) and cost per averted DALY were used for economic evaluation.

Results

The model predicted that catch up vaccination had the greatest impact in reducing the prevalence of cervical cancer. This was followed by Primary vaccination, with early detection through Screening having the lowest impact of the three choices of interventions in respect of averted cases of cervical cancer and DALY estimates.

Conclusion

Kenya as a country should consider adoption of secondary /catch up vaccination as an immediate measure to curb cervical cancer followed by primary vaccination of pre-adolescent girls. Screening should be a complementary measure(s). This model provides a policy decision support vehicle that can allow for choice between different interventions based on their expected outcomes. It also allows modification to accommodate new research results and information to assess the clinical impact of different policies and interventions in cervical cancer management in Kenya.