

# ECONOMIC EVALUATION OF THE FAMILIAL CANCER GENETIC SERVICES PROGRAM IN WA GENETIC TESTING FOR FAP

## AIM

To evaluate costs and outcomes of genetic testing for Familial Adenomatous Polyposis (FAP) using a Markov model.

## METHOD

### Costs

- Costs of counselling, genetic testing, surveillance, surgery and treatment were based on patterns of care in WA
- Calculated in 2001-2002 dollars at Net Present Value and 5% discount rate applied to costs incurred in the future

### Assumptions

- Sample group represents 1st degree relatives of known FAP mutation carriers.
- Penetrance of 100% by age 40 for mutation-carriers
- Annual risk reduction of 98% due to intensive surveillance and prophylactic surgery
- Compliance of 100% with clinical recommendations for surveillance following genetic testing
- Auxiliary cancer not included

### Outcomes

- Long-term cancer incidence outcomes were derived from the published literature and modelled using Markov analysis

### MARKOV MODEL



## RESULTS

Since the proportion of the community that have not had a genetic test but elect increased surveillance based on family history alone (50% risk of FAP) is unknown we reviewed dichotomous scenarios. However, the true cost-effectiveness lies somewhere in between the two extremes.

### Scenario 1

The intervention group (of whom 50% are found to carry the mutation and therefore have increased surveillance) was compared to control 1 - individuals who do not undergo genetic testing but comply with clinical recommendations for increased surveillance and prophylactic surgery based on family history alone.

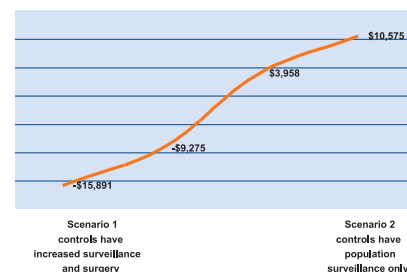
Effectiveness is the same but there are net savings of \$15,891 since increased surveillance and surgery is restricted to known mutation-carriers.

### Scenario 2

The intervention group was compared to control 2 - individuals who do not undergo genetic testing and have population surveillance only despite high-risk family history.

Effectiveness is increased by 40 years at a total per person lifetime cost of \$10,575 or \$254 per cancer-free year gained.

Net cost or saving of the intervention group compared with controls



## DISCUSSION

- Genetic screening for FAP is a cost-effective use of resources under a range of scenarios
- The genetic test identifies:
  - non-mutation-carriers so that unnecessary surveillance is reduced
  - mutation-carriers so that colorectal cancer-related morbidity and mortality are reduced if clinical recommendations for intervention are adopted
- Optimum cost-effectiveness depends on:
  - high disease penetrance
  - compliance with recommended surveillance and surgery
- The results are sensitive to changes in the discount rate however genetic screening for FAP is always cost-effective when compared to no test
- The generic decision model has application in the evaluation of other genetic tests such as BRCA and HNPCC