Cancer Control - the role of Surveillance

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Overview of presentation

- Define Cancer Control
- Discuss what we need for surveillance
- Present examples
  - Lung
  - Breast
  - Cervix
  - Colorectum
  - Prostate
- Conclude on what we need

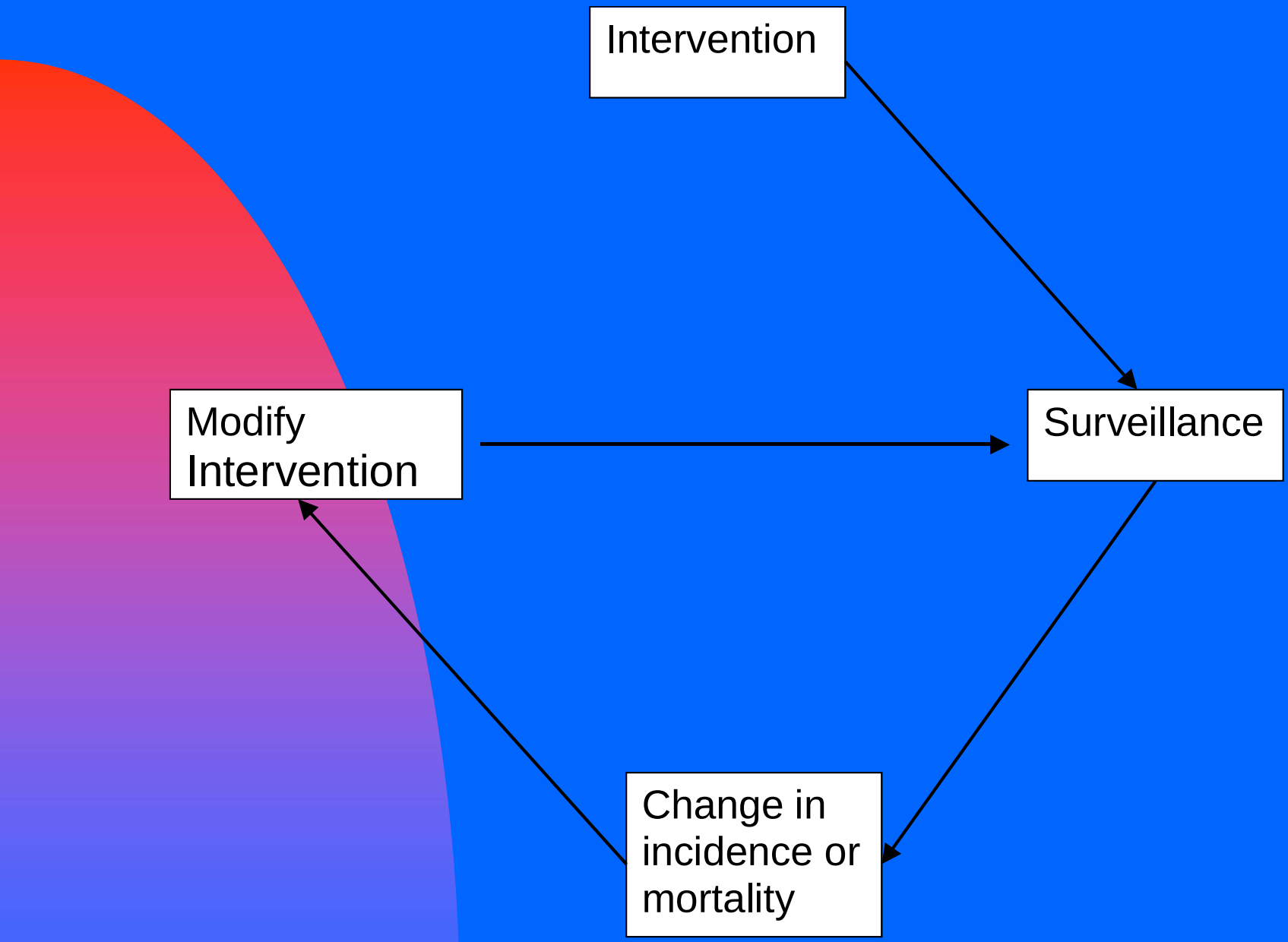
Cancer Control

Defined by WHO as an integrated approach to:

- Prevention
- Early diagnosis and screening
- Treatment
- Rehabilitation
- Palliative care

Surveillance in Cancer Control

- Impact of prevention interventions
- Effectiveness of screening
- Application of evidence-based therapy
- Effectiveness of new therapy
- Utilization of supportive and palliative care


Intervention
Surveillance
Change in incidence or mortality
Modify Intervention

Indicators of success

Outcome:

- Incidence
- Mortality

Process:

- Indicators that the intervention has resulted in a relevant change at the population level

Data required for Surveillance in Cancer Control

For Prevention:

- Risk factors
- Incidence
- Mortality

Data required for Surveillance in Cancer Control

For Screening:

- Details on target group
- Compliance of target group
- Quality of screening tests
- Staging
- Incidence
- Mortality

Data required for Surveillance in Cancer Control

For Therapy:

- Staging
- Treatment

  Role of electronic health record ?
- Disease free survival
- Relative survival
- Mortality

Data required for Surveillance in Cancer Control

For Supportive and Palliative Care:

- Number of programmes
- Coverage of population
- % Patients Cancer pain free

Breast Cancer

- Level 1 evidence for mammography screening in woman age 50-69
- Level 1 evidence for efficacy of adjuvant chemotherapy and tamoxifen

IARC Working Group, 2002

Women aged 50–69:

- Mammography alone 0.75 (0.67, 0.85)

Women aged 40–49:

- Mammography alone 0.81 (0.65, 1.01)
- All valid trials 0.88 (0.74, 1.04)

Time before screening effect seen

- In randomized trials: 5-7 years
- In the population: at least 10 years

Because:

- Most deaths after screening starts due to pre-existing cancers
- Compliance with screening increases slower than in trials

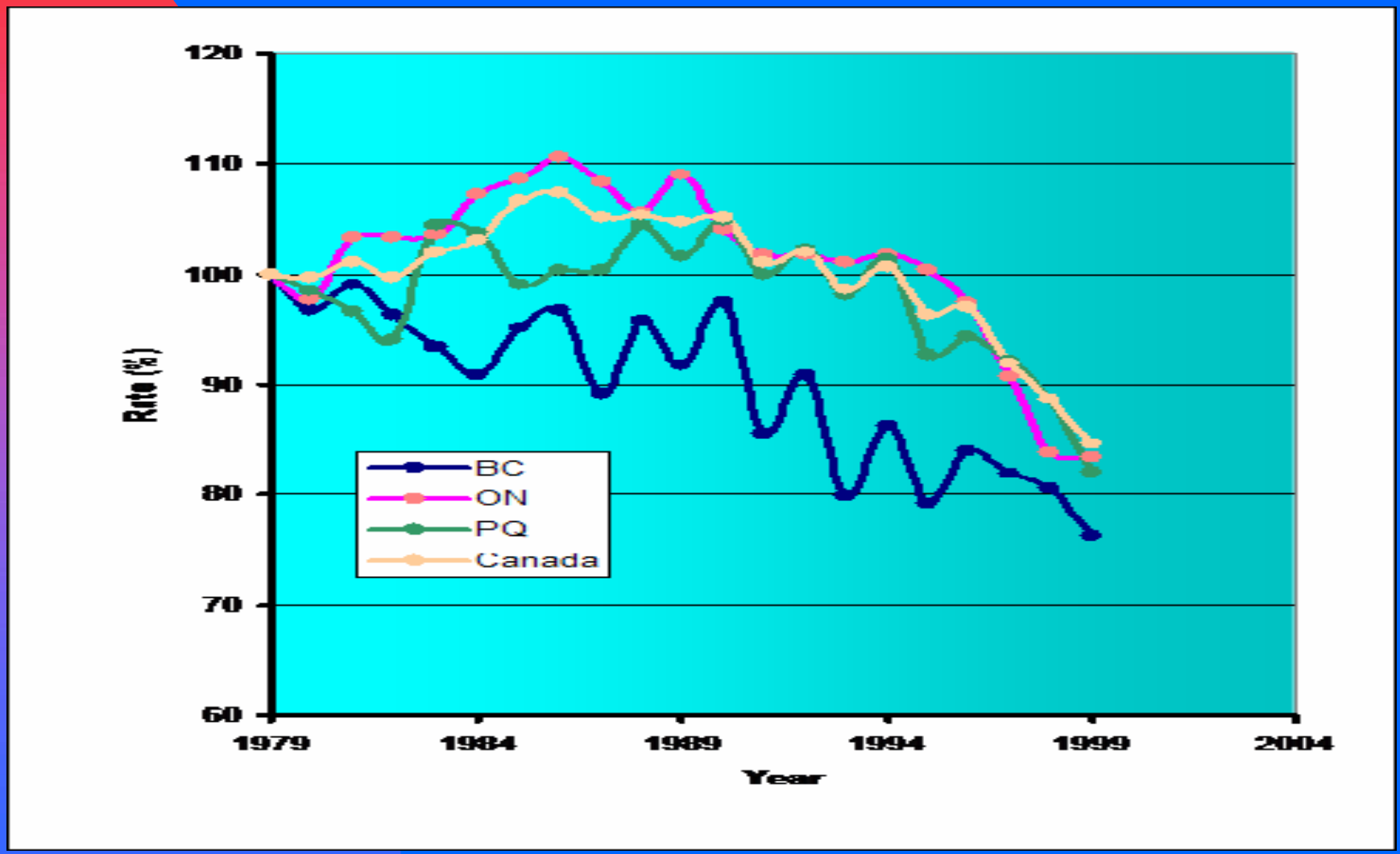
Paper in NEJM by Berry et al, 2005

- Based on assumptions of efficacy
- Assumed effect of screening and treatment largely additive
- Only able to accommodate modeled effects by assuming that, in the absence of screening and improved treatment, breast cancer mortality would have risen

Other Explanation for trends

- Timing of recent fall compatible with improvements in therapy
- Timing and lack of effect in some countries is not compatible with an effect of mammography screening
- Lack of fall prior to 1990 suggests that early detection is not effective in the absence of effective treatment

Trends in Breast Cancer mortality within Canada



Coverage achieved in Canada, 1998-99 (smear within the last 3 years)

Age	Self-reported use
20-29	80%
30-39	86%
40-49	82%
50-59	77%
60-69	60%
Total (20-69)	79%

Source: National Population Health Survey, 1998-99

Reduction in cervix cancer mortality achieved, 1950-99

Country	Recommended Age	Recommended Frequency	Mortality Reduction
Canada	20-64	1-3-yearly	78%
Finland	30-59	5-yearly	80%
U.S.A.	18-70+	1-3-yearly	78%

Vaccination against HPV

- Proportion of target group vaccinated
- HPV infection rates after 5,10, 15 years
- If infected, which HPV types?
- Rate of CIN 2+ at 25, 30, 35 years
- Rate of invasive cancer cervix at 40, 45, 50 years etc

Controls?

Prevention of Colorectal cancer

- Limited evidence for efficacy of chemoprevention with NSAIDS
- Sufficient evidence for physical activity
- Sufficient evidence for weight reduction
- Limited evidence for fruit and vegetable consumption
- Inconsistent evidence for other dietary changes
- Probable effect of HRT

Screening for Colorectal cancer

Randomized trials of FOBT have shown 20% reduction in colorectal cancer mortality

These trials achieved compliance of 70%

- General population pilot studies suggest less compliance than in trials (50%)
- There are not yet enough endoscopists for population-based programmes in Canada
- Results of flexible sigmoidoscopy trials expected soon
- It is possible that prevention would do as well

Reasons for fall in prostate cancer mortality

- Screening - unlikely
- Improved therapy

  If life is prolonged by hormone therapy, there is a greater probability that a competing cause of death (e.g. heart disease, other cancer), will cause death

The majority of men with prostate cancer die with, not from their disease

Estimated effect of available cancer control strategies

	Cases	Deaths
✓ Tobacco control	20%	30%
✓ Dietary modification	25%	20%
✓ Infection Control	15%	20%
✓ Screening	3%	4%
➢ Cervix	80%	90%
➢ Breast	0%	25%
✓ Treatment	0%	25%

Time for cancer control measures to achieve an important impact

Prevention:

- Tobacco control 30 years
- Dietary modification 10-50 years
- Infection control 40 years

Screening 10 years

Treatment 5 years

Obstacles to surveillance

- Time to outcome
- Absence of routinely collected data on process measures
- Privacy concerns
- Difficulties in obtaining informed consent

Evaluating new approaches

We plan Sentinal Surveillance Centres, where the following can be piloted:

- Collecting risk factors
- Collecting stage
- Collecting treatment data
- Improving compliance to screening

Essential features of Sentinal Centres

- Population based
- Collaboration of oncologists obtained
- All degrees of severity of disease recorded
- Linked to cancer registry
- Buy in from primary care practitioners

Conclusions

- Trends in outcome measures are difficult to interpret, and delayed
- Inferences drawn from process measures are likely to be more timely
- But data on process measures are not usually collected in sufficient detail
- We need to invest resources in piloting the collection of process measures