Using surveillance data to estimate national trends in Work-Related Disease & to evaluate interventions

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Epidemiologists & prevention services want to know:

• Is the **true incidence** of a given WRD (work-related disease) increasing over time, decreasing, staying the same?

• Have **interventions** (eg to limit exposure) had any **impact** on true incidence?

These questions are relevant at a **national level** and also at a **European (EU) level**

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Example: UK surveillance by Occupational physicians (THOR OPRA scheme)

Estimated % change in UK incidence in WR anxiety & depression: each year is compared to 1999

But might this picture be false – eg due to a bias in data system?

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Aims of COST-MODERNEET Working Group 2

• To describe best practice for estimating **true change in incidence** over time in WRD from surveillance scheme data

• Show how the **impact of an intervention** to prevent a WRD might be assessed using surveillance data

• Encourage collaborations between COST MODERNEET member countries in trends and intervention analysis

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Outline of remainder of talk

1. (Briefly) discuss whether possible to estimate **true change in incidence over time** in WRD from surveillance data.

2. An example of trends analysis: contact dermatitis in UK

3. Discuss examples where surveillance data has been used to address effects of national/EU interventions

4. Potential for international collaborations.

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1. Is it possible to estimate reliably (ie, without bias) national **time trends** in TRUE incidence of WRD using surveillance data?

For reliable estimation, we want **temporal consistency** in

- Diagnostic criteria
- The data collection system (see next slide)
- External forces (eg compensation system, cultural factors patient awareness)
  (eg changes in compensation rules may lead to increase in reported cases, even if true incidence has not changed).

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Temporal **inconsistency** in a data collection system:

CHANGES OVER TIME in

- **size of working population** covered by scheme
- number of physician **reporters**
- Reporting **behaviour**, eg voluntary reporters may get tired as time progresses!

We can make allowances for some of these factors by correct statistical analysis – provided we can measure the factors
Completeness of ascertainment: does it matter?

Figure: True incidence rate & estimated incidence (from a hypothetical surveillance system):

There is substantial under-ascertainment, but.....
estimated rate of change (ie time trend) = true rate of change

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So maybe we can estimate **change** in incidence reliably even when under-ascertainment?
Estimated UK time trends (1996-2008) in contact dermatitis (% change in incidence compared to 1999)

Two different surveillance schemes: EPIDERM & OPRA

**EPIDERM, all reporters**

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<th>Year</th>
<th>% increase in reported cases</th>
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**OPRA, all reporters**

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Estimated annual change (1996-2008):
-3.5% (95% CI: -4.2, -2.7)

Estimated annual change (1996-2008):
-7.9% (95% CI: -10.1, -5.7)

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More details of ‘trends’ methods:

McNamee et al, OEM 2008 (& MODERNET poster)

&

Paris et al, OEM 2012

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3. Evaluation of national/European level interventions to reduce WRD

Some questions about interventions

1. Has UK MDA safety notice re latex gloves in UK reduced the incidence of dermatoses attributed to latex?

2. Has European Union legislation to reduce exposure to chromate in cement reduced the incidence of allergic contact dermatitis attributed to chromate?

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3. Evaluation of national/European level interventions to reduce WRD

How can we evaluate these types of interventions?

• We cannot carry out Randomised Trials (RCTs)

• Alternative: a controlled ‘Before and After’ study* using surveillance data on WRD

Important to
(i) define time periods ‘blind’ to outcomes

(ii) take account of other, possibly artifactual, reasons why reported cases might decline

(iii) Learn from good RCT design

* Cochrane criteria for classification of OH intervention studies define a control group in a different way from here

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3. Evaluation of national level interventions to reduce occupational dermatoses: latex gloves advice

Turner, McNamee, Agius, Wilkinson, Carder, Stocks (OEM Oct 2012) used data from THOR EPIDERM surveillance scheme to address this question.

Key dates:

08/2008: UK MDA Safety Notice
11/2002: Legal decision in favour of claimant

These dates used to define 3 time periods:

Before intervention
Transition period
After intervention

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3. Evaluation of national level interventions to reduce occupational dermatoses: latex gloves advice

• Main comparison: change in incidence (After vs Before) of cases of allergic CD attributed to latex vs cases of allergic CD not attributed to latex.

NB: Non-latex cases act as a ‘control’

• Focus on health care workers: comparative good OH cover, intervention advice likely to be implemented

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Evaluation of national/European level interventions to reduce allergic contact dermatitis: chromate in cement

Has European Union legislation to reduce exposure to chromate in cement been effective in reducing the incidence of allergic contact dermatitis attributed to chromate in the UK?

Stocks et al* used data from UK THOR EPIDERMD surveillance scheme to address this question in the UK

More details:

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4. Encourage collaborations between COST MODERNET member countries in trends and intervention analysis

At present only a few countries involved in these activities........

We would like to encourage MALPROF (& other COST MODERNET countries) to collaborate with us in joint studies

We want to learn about inter-country differences in surveillance systems.

In surveillance systems with a high degree of temporal consistency, analysis of data can take simple form.

THANKYOU FOR YOUR ATTENTION

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