Interaction between Legal Systems

Room for Reflection

21 – 23 January 2015

Causality in Epidemiology and Private Law

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21 January 2015
The occasion

- Writing about causality, ‘proportional liability’ in private law
- Most classic, doctrinal legal research about a new case decided by the Dutch Supreme Court
- In Dutch and no inter-disciplinarity/collaboration there

Proportional liability in Nefalit

- Nefalit liable for damages Karamus?
- Lung cancer Karamus caused by
  - asbestos exposure during work for employer Nefalit;
  - Karamus’ smoking habit;
  - or other factors?
- Asbestos exposure as condicio-sine-qua-non not sufficiently plausible
- No claim?

What would epidemiologists think?

Nefalit partially liable on the basis of a reasoned estimate that the lung cancer was caused by asbestos exposure (55%)
Concept of the counterfactual

Several (necessary) component causes make up a sufficient cause

One causal mechanism

The last component cause to complete sufficient cause is often seen as the cause, but is in fact equally important as other component causes.
Proportional liability in Nefalit

Supreme court ruling: is responsible for the part they played in the causal mechanism

- So what is this proportion?
- Epidemiology can calculate this in populations, based on the relative risk associated with asbestos i.e. Population Attributable Fraction
  
  \[ RR \ 2.25 = PAF \ 55\% \]

interpretation:

probability of asbestos as the cause of the disease


Discover the world at Leiden University
All possible sufficient causes
Suppose there are only 10 ways to develop lung cancer
Population attributable fraction
What fraction of cases are attributable to asbestos exposure?
Population attributable fraction
What fraction of cases are attributable to asbestos exposure?
Population attributable fraction
What fraction of cases are attributable to asbestos exposure?

- 30%
- 50%
- 44%
- 22%
- 100%
- + > 100%

Proportional liability in Nefalit

Supreme court ruling:
Smoking, genetic predisposition, age and other causes could have partially contributed to the damage

Is it fair to use the PAF?

<table>
<thead>
<tr>
<th>Cause</th>
<th>RR</th>
<th>PAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>asbestos</td>
<td>2.25</td>
<td>55%</td>
</tr>
<tr>
<td>age</td>
<td>2.78</td>
<td>64%</td>
</tr>
<tr>
<td>smoking</td>
<td>2.00</td>
<td>50%</td>
</tr>
<tr>
<td>Total claim</td>
<td></td>
<td>169%</td>
</tr>
</tbody>
</table>

HR 31-03-2006 * Nefalit/Karamus
Proportional liability in Nefalit

Supreme court ruling:
Smoking, genetic predisposition, age and other causes could have partially contributed to the damage

Is it fair to use the PAF?

- asbestos, employer 1: RR 2.25 = PAF 55%
- age: RR 2.78 = PAF 64%
- chemical X, employer 2: RR 2.00 = PAF 50%

Total claim: 169%

Results? Law

- proportional liability doesn’t make sense from epidemiological perspective
- can’t translate population measures in individual causal inference just like that
- warrants (even more) restraint in assuming proportional liability
- develop an alternative in article submitted to *European Journal of Risk Regulation*, with two other authors
Results? Epidemiology

- Epidemiology is not the only one who suffers from the impossibility to observe the counterfactual
- Population measures should not only be calculated, also explained -> Horizon 2020?
- Do we need to update the component cause theory to describe ‘relevance’ of a single component cause?

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