Pitfalls of disproportionality analysis

PROTECT Symposium tutorial

Niklas Norén, PhD
Uppsala Monitoring Centre
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All models are wrong – but some are useful
- G. E. P. Box
How useful is this?
Growth retarded with poliovirus vaccine
Growth retarded with poliovirus vaccine

<table>
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<th>Age</th>
<th>14</th>
<th>23</th>
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<td>&lt;1 year</td>
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<td>1-5 years</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>0.2</td>
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<tr>
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‘De-confounded’ pattern
Alopecia with fluoxetine
Alopecia with fluoxetine

United Kingdom: 113
Canada: 22
Australia: 14

65
3.9
7.9
Alopecia with fluoxetine

United States

65

251
‘But one’ pattern
Rhabdomyolysis with venlafaxine

48 vs 58
Rhabdomyolysis with venlafaxine vs statins

45 vs 15
Masking

Rhabdomyolysis

Expected
Masking
Statins and rhabdomyolysis

25 drugs most influential on 'rhabdomyolysis'

Relative reduction in P(ADR)
Statins and rhabdomyolysis

Caster et al. 2009.

- 25 drugs most influential on 'impotence'
- 25 drugs most influential on 'rhabdomyolysis'
- 25 drugs most influential on 'diarrhoea'

Graphs showing relative reduction in P(ADR) for different conditions.
Acute renal failure with Hydrochlorothiazide/Telmisartan

- Highlighted by the first PT in 2\textsuperscript{nd} quarter 2008
Acute renal failure with Hydrochlorothiazide/Telmisartan

- Highlighted by the HLT in 2nd quarter 2006
Peripheral neuropathy with efalizumab

- Highlighted by two PTs in 4th quarter 2008
Peripheral neuropathy with efalizumab

- Not highlighted by the HLT at all
Peripheral neuropathy with efalizumab

- High expected count for HLT due to another PT
Face pain with epinephrine

4 vs 0.3
Face pain with epinephrine

4 vs 0.3
“For the year 2005, there were 66 cases in total reporting aortic dissection, of which 20 were reported with the drug of interest.”

“The cases were all duplicates.”
Drug interactions

1 + 1 = 3?
Interaction compared to what?

No drug  Drug A  Drug B  A and B additive  A and B mult.

x2  +1 x3  +2 +1  x2x3
Disproportionality analysis is a good servant but a terrible master!

Watch your step!
References


