

Assessing excess health service utilisation and direct medical costs following an index injury using linked, anonymised, datasets

Steven Macey, Research Analyst, Swansea University

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Aim of study

To estimate the extent of excess HSU and excess direct medical costs following the occurrence of an index injury, by utilising large scale anonymised datasets, linked via unique patient level identifiers



Materials & methods

Design – Longitudinal; Retrospective; Quantitative

Setting – Swansea (population = 196,113 individuals)

Sample size – 30,387 injured individuals

Data sources – Administrative register

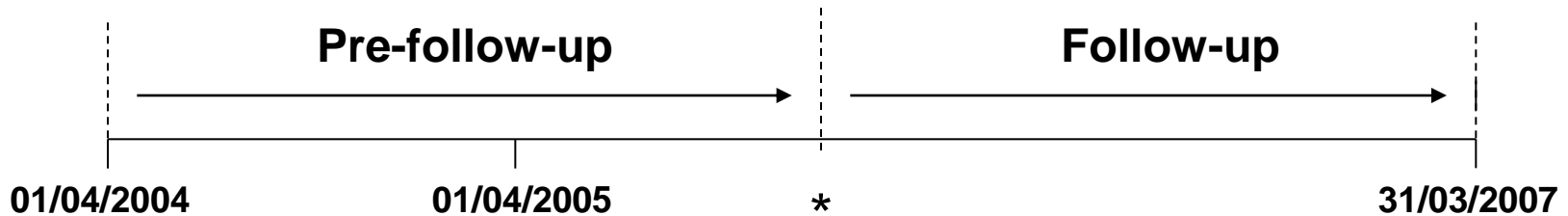
– ED, Inpatient, Outpatient records

– Trust Financial Returns

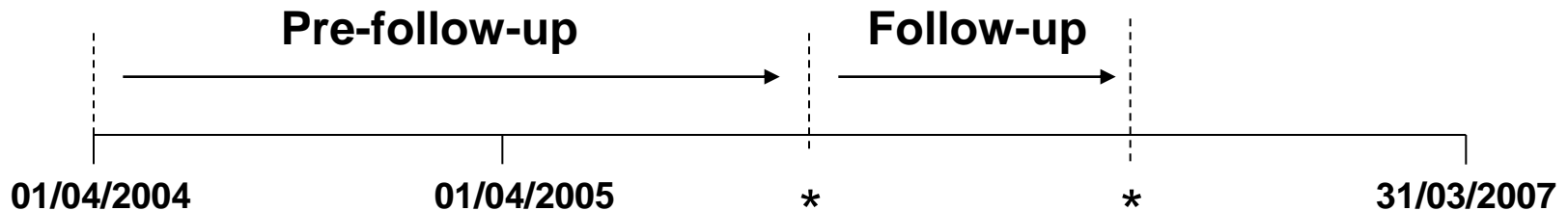
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Timelines

Scenario 1: follow-up continues until end of investigative period



Scenario 2: follow-up ends due to death or new injury



‘Same injury’ or ‘New injury’?

- Individuals with multiple injury related healthcare events identified
- 1st and 2nd occurring events assigned to injury grouping
- No. of individuals with 2nd healthcare event starting within 1 day of 1st event counted
- % of above individuals with 1st and 2nd events part of same injury grouping calculated
- Process repeated incrementing interval between 1st and 2nd healthcare event 1 day at a time
- New injury defined when % < 50

'Same injury' or 'New injury'?



Assume index injury is skull-brain injury and that after 100 days subsequent injury event more often than not isn't skull-brain injury

- Same injury – If subsequent injury event occurs at point Y AND subsequent injury event is skull-brain injury
- Different injury – If subsequent injury event occurs at point Y AND subsequent injury event isn't skull brain injury
 - If subsequent injury event occurs at point Z

Outcome measures

Excess HSU

Excess Direct Medical Costs

Excess = Observed - Expected

Observed = Number, length & medical costs of healthcare events during follow-up period (exc. Index injury event)

Expected = Number, length & medical costs of healthcare events during pre-follow-up period (exc. Index injury event)

X

Length of follow-up relative to length of pre-follow-up

X

Age & Dataset multipliers

Wakey Wakey!!!!!!!!!!!!!!!!!!!!



Results - HSU

On average per index injury:

- Excess ED count = 0.12 (0.11, 0.13)
- Excess Inpatient admission count = 0.07 (0.06, 0.08)
- Excess Inpatient LOS count = 1 (0.78, 1.23)
- Excess Outpatient count = 0.55 (0.52, 0.58)

Results – Direct medical costs (DMC)

On average per index injury:

- Excess ED DMC = £12 (11, 13)
- Excess Inpatient DMC = £492(416, 569)
- Excess Outpatient DMC = £73 (68, 78)
- Excess Combined DMC = £578 (500, 655)

ED summary

	HSU	Direct Medical Costs
Male	0.12	£12
Female	0.12	£12
Aged under 50	0.12	£12
Aged 50 or above	0.13	£13
Skull-brain injury	0.28	£28
Burns	0.03	£3

Inpatient summary

	HSU admissions	HSU LOS	Direct Medical Costs
Male	0.06	0.60	£263
Female	0.08	1.49	£770
Aged under 50	0.04	0.28	£113
Aged 50 or above	0.19	3.74	£1,929
Hip fracture	0.31	13.10	£10,137
Upper extremity, other	0.04	0.05	£31

Outpatient summary

	HSU	Direct Medical Costs
Male	0.54	£71
Female	0.56	£77
Aged under 50	0.45	£60
Aged 50 or above	0.92	£123
Burns	3.84	£548
Spine, vertebrae	-0.01	£-1

Overall Direct Medical Costs (DMC)

- Excluding index injury healthcare event
 - mean DMC per index injury = £578
 - overall DMC across all index injuries = £17,563,686

- Including index injury healthcare event
 - mean DMC per index injury = £948
 - overall DMC across all index injuries = £28,806,876

and the winner is



Thanks.....

.....to my supervisors

- Professor Ronan Lyons
- Professor Ceri Phillips

.....to Dr Sinead Brophy for providing statistical advice

.....to you all for listening

s.m.macey@swansea.ac.uk