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The Prospective Outcomes of Injury Study: Overview

11 September 2013

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HRC-funded Team (2007-2013); & ACC co-funding (2007-2010)

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Associate investigators: Sue Wilson, Ari Samaranayaka et al

What was known?

- Previous studies examining predictors of poor outcomes have focused on:
 - Mainly hospitalised injury
 - Limited range of risk factors
- New Zealand's unique context: Accident Compensation Corporation (ACC)
 - all injuries & causes; work & outside work; fault & no-fault
 - funded by a variety of levies

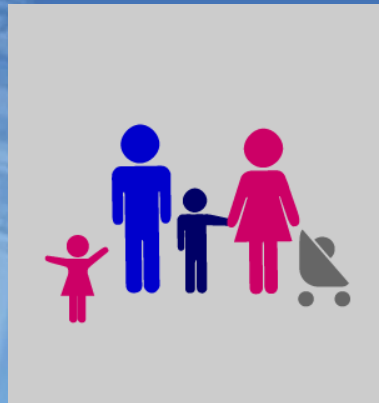


In New Zealand?

- Costly
- Little known about outcomes as experienced by injured people



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POIS Aims

- 1) Determine injury, rehab, personal, social and economic factors leading to disability outcomes following injury in New Zealand
- 2) Qualitatively explore with sub-groups, including Māori, their lived experiences and perceptions of injury and outcomes

Derrett S, Langley J, Hokowhitu B, Ameratunga S, Hansen P, Davie G, Wyeth E, Lilley R (2009) Prospective Outcomes of Injury Study. *Injury Prevention*;15 (e3)

Methods

- ACC entitlement claims register
- 5 regions
- 18-64 years (inclusive)
- New Zealand resident
- 4 interviews

Auckland City

Manukau City



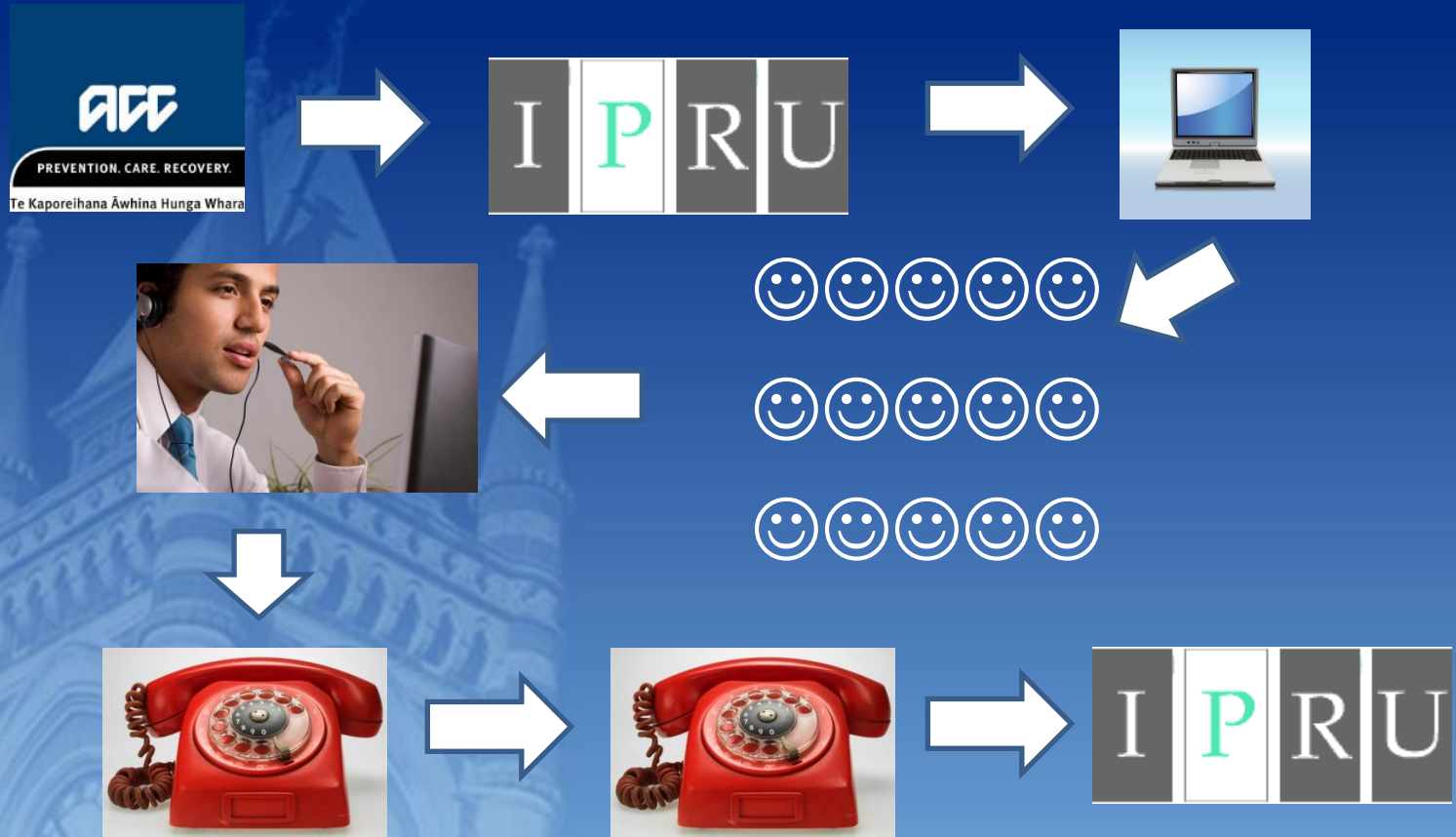
Gisborne

Otago

Southland

Wyeth E, Derrett S, Hokowhitu B, Hall C, Langley J. (2010) Rangatiratanga and Ōritetanga: Responses to the Treaty of Waitangi in a New Zealand Study. *Ethnicity & Health*;15(3):303-316.

Recruitment Process



Derrett S, Colhoun S. (2011) Being a quantitative interviewer: Qualitatively exploring interviewers' experiences in a longitudinal cohort study. *BMC Medical Research Methodology*; 11:165.

Data

Injury event

ACC data

NMDS data

Interview 3 months

Demographic
& psychosocial
factors

Interview 12 months

Injury-related
factors

Interview 24 months

Outcomes:
3, 12 & 24
months



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Participation

- 3-months (pre-injury & injury-related predictors & sub-acute outcomes)
 - 2856
- 12-months (outcomes)
 - 2282 (80%)
- 24-months (outcomes)
 - 2256 (79%)

Langley J, Lilley R, Wilson S, Derrett S, Samaranyaka A, Davie G, Ameratunga S, Wyeth E, Hansen P, Hokowhitu B. (2013) Factors associated with participants missing phases in a cohort study of injured adults. *Injury Prevention*. Published Online First:[16 Mar 2013] doi:10.1136/injuryprev-2012-040685

Cohort

- 2856 people
- Mean age 41.4 years (SD=13.0)
- 23% born outside New Zealand
- 20% Māori (n=566)
- 8% Pacific ethnicities (n=239)
- 92% in paid employment pre-injury
- 46% reported a pre-injury chronic condition

Derrett S, Davie G, Ameratunga S, Wyeth E, Colhoun S, Wilson S, Samaranayaka A, Lilley R, Hokowhitu B, Hansen P, Langley J. (2011) Prospective Outcomes of Injury Study: Recruitment, and participant characteristics, health and disability status. *Injury Prevention*; 17:6 415-418.

OVERVIEW OF OUTCOMES IN POIS



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Functional status (EQ-5D)

- 3 months (female, chronic conditions, hospitalised, trouble accessing health services)

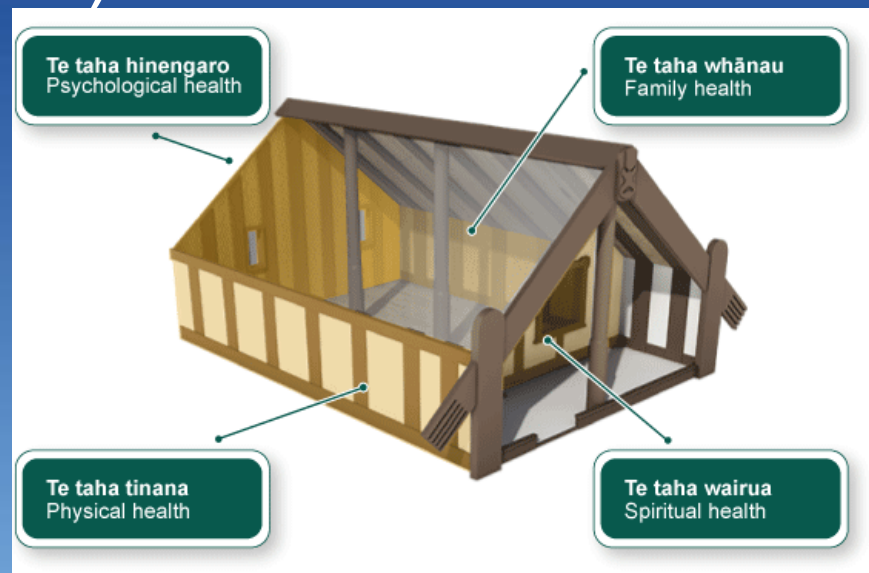
Langley J, Derrett S, Davie G, Ameratunga S, Wyeth E. (2011) A cohort study of short-term functional outcomes following injury: the role of pre-injury socio-demographic and health characteristics, injury and injury-related healthcare. *Health and Quality of Life Outcomes*; 9:68

- 12 months (pre-injury functioning, female, age, SES, chronic conditions, higher NISS)

Langley J, Davie G, Wilson S, Lilley R, Ameratunga S, Wyeth E, Derrett S. (In Press) Difficulties in functioning one year after injury: the role of pre-injury socio-demographic and health characteristics, healthcare and injury-related factors. *Archives of Physical Medicine and Rehabilitation*; 94:1277-1286

Life satisfaction for injured Māori

- Those not satisfied with social relationships
- Poor self-efficacy
- High injury severity (NISS)



Wyeth E, Derrett S, Hokowhitu B, Samaranayaka A, Langley J. (2013) Outcomes following injury among indigenous people: Life satisfaction among Māori in New Zealand three months after injury. *Health and Quality of Life Outcomes*; 11:120. doi: 10.1186/10.1186/1477-7525-11-120

3-month outcomes & NISS

- We should not focus on those with 'high' NISS injury severity alone
 - >40% with 'mild' injuries reported moderate to extreme pain, psychological distress, less participation and 2/3 reported non-recovery

Wilson S, Derrett S, Cameron I, Samaranayaka A, Davie G, Langley J. (2013) Prevalence of poor outcomes soon after injury and their association with the severity of injury. *Injury Prev.* Published Online First: [6 Apr 2013r] doi:10.1136/injuryprev-2012-040690

Maclennan B, Wyeth E, Hokowhitu B, Wilson S, Derrett S. (2013) Injury severity and three-month outcomes among New Zealand Māori: Results from a prospective cohort study. *NZMJ*;126 (1379):1-11. <http://journal.nzma.org.nz/journal/126-1379/5760/>

ACC and costs to 12 months post-injury

- ACC performing well; 5-10% costs out of pkt
- HRQoL (QALY) burdens are high

Wilson R, Derrett S, Hansen P, Langley J. (2013) Costs of injury in New Zealand: Accident Compensation Corporation spending, personal spending and quality-adjusted life years lost. *Injury Prev*; 19(2): 124-129. doi:10.1136/injuryprev-2011-040252

Table 3 Accident Compensation Corporation (ACC) and personal spending and quality-adjusted life years (QALYs) lost in the first year after injury by New Injury Severity Score (NISS)-rated injury severity (mean costs reported; median costs in parentheses; costs in New Zealand dollars)

	Financial costs					QALYs lost
	ACC spending					
	Earnings-related compensation	Other ACC support	Personal spending	Total reported spending		
NISS 1–3 (n=867)	\$3555 (\$1097)	\$2207 (\$825)	\$704 (\$88)	\$6466 (\$2661)	0.19 (0.18)	
NISS 4–6 (n=968)	\$4822 (\$2162)	\$3370 (\$1942)	\$519 (\$98)	\$8711 (\$4900)	0.23 (0.24)	
NISS >6 (n=311)	\$10 375 (\$6223)	\$8134 (\$4398)	\$1691 (\$140)	\$20201 (\$12 209)	0.29 (0.31)	

Table 4 Accident Compensation Corporation (ACC) and personal spending and quality-adjusted life years (QALYs) lost in the first year after injury by hospitalisation status (mean costs reported; median costs in parentheses; costs in New Zealand dollars)

Hospitalisation status	Financial costs					QALYs lost
	ACC spending					
	Earnings-related compensation	Other ACC support	Personal spending	Total reported spending		
Not admitted (n=1667)	\$4294 (\$1296)	\$2975 (\$1218)	\$717 (\$93)	\$7987 (\$3328)	0.21 (0.21)	
Admitted (n=548)	\$7731 (\$3962)	\$5611 (\$3103)	\$876 (\$114)	\$14 218 (\$8359)	0.25 (0.28)	

Outcomes for Pacific Peoples

Mauiliu M, Derrett S, Samaranayaka A, Sopoaga F, Kokaua J, Davie G. (In Press) Characteristics of Pacific peoples in an injury study and key sub-acute outcomes: a comparison between Pacific and non-Pacific participants in a longitudinal New Zealand study.

Delaibatiki-Cammock R, Derrett S, Davie G, Sopoaga F, Langley J. (2012) Injury among Pacific Peoples in New Zealand: Descriptive results from a cohort study. *Australasian Epidemiologist*; 19(2):15-21.

Delaibatiki R, Derrett S, Sopoaga F. (*Under review*) A cohort study of injured New Zealanders and a Pacific model of health.



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Pacific peoples' outcomes at 3-months

- No evidence to suggest Pacific peoples' likelihood of paid employment differs from non-Pacific people at 3-months
- However, Pacific peoples have increased likelihood of problems with:
 - disability
 - self-care
 - anxiety/depression
 - social relationships



Vocational outcomes

- POIS worker cohort 2626 participants
- 36% of whom have a work-related injury
- Majority (73%) are working at 3 months
- Of those still absent from work – the majority (71%) anticipate recovery to usual work
- However, 720 (27%) absent from work at 3 months; 18% absent at 24 months

Work-related outcomes

Work status 3 months after injury

- Single item asked at 3 month interview
“Are you back at work?” Yes/No
- Outcome of interest: “Not working”

Lilley R, Davie G, Ameratunga S, Derrett S. Factors predicting work status 3 months after injury: results from the Prospective Outcome of Injury Study, *BMJ Open*, 2012; 2:e000400.

Pre-injury characteristics



Summary of 3-month results



Other work analyses

- Work-related & non-work-related injuries
 - By 12 months workers with work-related injury have poorer recovery from injury compared to workers with non-work injury
- Work organisational factors
 - Workers from small sized organisation had increased odds of post-injury work absence
- Predictors of work status longer-term
- Work and disability trajectories over 12 months following injury



Socioeconomic outcomes

- Injury:illness comparison
- 60% decline in income 12 months after stroke
- 13% after injury
- 79% of injured back at work
- 49% of stroke group

McAllister S, Derrett S, Audas R, Herbison P, Paul C. (2013) Do different types of financial support after illness or injury affect socio-economic outcomes? A natural experiment in New Zealand. *Social Science & Medicine*.

Disability Outcomes

WHODAS II – 12-item

- Standing
- Household
- Learning new task
- Joining in community activities
- Emotionally affected
- Concentrating
- Walking
- Washing body
- Getting dressed
- Dealing with people
- Friendships
- Day to day work

WHODAS score ≥ 10



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Disability outcomes

- Disability pre-injury: 5% overall
- Disability 3 months after injury:
 - 54% of hospitalised & 39% of non-hospitalised

Derrett S, Samaranayaka A, Wilson S, Langley J, Ameratunga S, Cameron ID, Lilley R, Wyeth E, Davie G. (2012) Prevalence and predictors of sub-acute phase disability after injury among hospitalised and non-hospitalised groups: a longitudinal study. *PLoS One*; 7(9): e44909.

- Disability 24 months after injury: 13% overall
 - 19% for Māori
 - 15% for Pacific Peoples



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Pre-injury and injury-related characteristics

Pre-injury socio-demographic

Age; Sex; Ethnicity (Māori; Pacific); Education; Living arrangements; Paid employment; Household income adequacy

Pre-injury health & psychosocial

Pre-injury WHODAS disability, General health; Chronic conditions; Depressive-type episodes; Optimism; Self-efficacy; Faith or spiritual belief; Family involvement; Social relationships; Physical activity; Sleep; BMI; Smoking; Sense of community; Alcohol use; Recreational drug use

Injury-related

Assault; Threat to life; Threat of disability; Access to healthcare services; 12 injury categories (ICD-10); Anatomical injury severity (NISS)

Not retained in models

Pre-injury socio-demographic

Age; Sex; Ethnicity (Māori; Pacific); ~~Education~~; Living arrangements; ~~Paid employment~~; ~~Household income adequacy~~

Pre-injury health & psychosocial

Pre-injury WHODAS disability, ~~General health~~; Chronic conditions; Depressive-type episodes; Optimism; ~~Self-efficacy~~; ~~Faith or spiritual belief~~; ~~Family involvement~~; ~~Social relationships~~; ~~Physical activity~~; ~~Sleep~~; BMI; Smoking; Sense of community; ~~Alcohol use~~; ~~Recreational drug use~~

Injury-related

Assault; ~~Threat to life~~; Threat of disability; Access to healthcare services; 12 injury categories (ICD-10); Anatomical injury severity (NISS)

Independent predictors of disability

Pre-injury socio-demographic

Age; Sex; Ethnicity (Māori; Pacific); Living arrangements

Pre-injury health & psychosocial

Pre-injury WHODAS disability, Chronic conditions; Depressive-type episodes; Optimism; BMI; Smoking; Sense of community

Injury-related

Assault; Threat of disability; Access to healthcare services; 12 injury categories (ICD-10); Anatomical injury severity (NISS)

No (or weak) evidence

Pre-injury socio-demographic

(Age); ~~Sex~~; Ethnicity (Māori; Pacific); ~~Living arrangements~~

Pre-injury health & psychosocial

Pre-injury WHODAS disability; Chronic conditions; Depressive-type episodes; Optimism; BMI; (Smoking); ~~Sense of community~~

Injury-related

Assault; Threat of disability; Access to healthcare services; 4 of 12 injury categories (ICD-10); ~~Anatomical injury severity (NISS)~~

Provisional RRs (hosp/non-hosp)

Pre-injury socio-demographic

Māori: 1.7 / 1.0

Pre-injury health & psychosocial

Pre-injury WHODAS disability: 2.4 / 2.6

≥2 Chronic conditions: 3.0 / 1.4

Depressive-type episodes: 0.7 / 1.4

Optimism: 1.9 / 1.2

BMI≥30: 1.9 / 1.4

Injury-related

Assault: 0.9 / 2.5

Threat of disability: 2.8 / 0.9

Access to healthcare services: 1.9 / 1.7

4 of 12 injury categories: Head/neck superficial 2.3 / 0.8;

Intracranial 1.4 / 2.0; Spine sprain/strain 1.1 / 1.6; Lower extremity open wound 0.2 / 0.5

Provisional RRs (hosp/non-hosp)

Pre-injury socio-demographic

Māori: 1.7 / 1.0

Pre-injury health & psychosocial

Pre-injury WHODAS disability: 2.4 / 2.6

≥2 Chronic conditions: 3.0 / 1.4

Depressive-type episodes: 0.7 / 1.4

Optimism: 1.9 / 1.2

BMI≥30: 1.9 / 1.4

Injury-related

Assault: 0.9 / 2.5

Threat of disability: 2.8 / 0.9

Access to healthcare services: 1.9 / 1.7

4 of 12 injury categories: Head/neck superficial 2.3 / 0.8;

Intracranial 1.4 / 2.0; Spine sprain/strain 1.1 / 1.6; Lower

extremity open wound 0.2 / 0.5

Adjusted for:
age, sex, NISS &
12 injury types

- Functional outcome trajectories
- PTSD
- Comorbidities
- Carers' experiences
- Re-injury
- Experience of health services
- Longitudinal analyses

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