Regional variation in treated mental health conditions and persistent pain after transport injury

Dr Melita Giummarra
ARC DECRA, Senior Research Fellow

Department of Epidemiology and Preventive Medicine, Monash University
Caulfield Pain Management and Research Centre, Alfred Health

melita.giummarra@monash.edu  @MelitaGiummarra
STUDY TEAM

- Richard Amoh-Gyimah  
  Institute of Transport Studies, Monash University
- Ms Jennifer Gong  
  Department of Epidemiology and Preventive Medicine, Monash University
- Dr Meead Saberi  
  Institute of Transport Studies, Monash University
- Prof Alex Collie  
  Insurance Work and Health Research Group, Monash University
- Prof Belinda Gabbe  
  Department of Epidemiology and Preventive Medicine, Monash University

DISCLOSURES

This project was funded by the Victorian Transport Accident Commission (TAC) through the Institute for Safety, Compensation & Recovery Research (ISCRR). We acknowledge the contribution of the TAC strategy team to the project.
Over the first ten years of the Victorian State Trauma System (established 2000-03) approximately 2,800-3000 major trauma admissions were registered to the Victorian State Trauma Registry each year.

- Incidence of trauma admission has gradually increased
- Transport-related deaths has decreased (AOR: 0.95)
- Cost burden of Disability Adjusted Life Years (DALYs) has decreased

The Victorian regionalised trauma system is enhancing survival … but what about the impact of injury on PAIN and MENTAL HEALTH?

- Both are leading global contributors to the global burden of disability
- Both have enormous implications for:
  - Quality of life
  - Health care utilisation
  - Social and economic participation
  - Protracted compensation claims
  - Suicide
TREATED CONDITIONS AFTER TRANSPORT INJURY

Study Aims

1. Characterise the incidence and profile of injured persons with treated persistent pain and mental health conditions within 24-months of transport injury.

2. Examine healthcare costs of those with treated conditions

3. Identify regional variations in the treated conditions

Funded by the TAC 2020 Strategy to support recovery through implementation of early interventions for pain & mental health

EXCLUDED (total n = 34,547)
- No payments (first 84 days) n = 9,250
- Fatalities n = 2,202
- Subsequent claim removed n = 1,801
- Age <18 at injury n = 8,003
- Surgery >6 weeks n = 6,917
- Reside outside Victoria n = 6329
- Local Government Area unknown n = 11
- Missing demographic data n = 34

N = 106,797

Transport Accident Commission claims (2008 – 2013)

Total included
N = 74,217

* The TAC is a “no fault” (hybrid) compensation system
TREATED CONDITION DEFINITIONS

- Client and payment data retrieved via Compensation Research Database (CRD)
- Treated conditions were identified between 3-months and 2-years post-injury

Persistent pain criteria:
- ≥ 4 physiotherapy X 28 days (by 3 consec. periods)
- ≥ 3 opioid or codeine scripts
- ≥ 3 tricyclic scripts (<100mg/day)
- ≥ 2 anti-neuropathic pain scripts
- ≥ 1 pain specialist
- ≥ 1 pain admission
- ≥ 1 network pain program

Mental Health condition criteria:
- ≥ 10 psychological services
- ≥ 2 psychiatric services
- ≥ 3 antidepressants
- ≥ 1 anti-psychotic medication
- ≥ 1 sedative

Prang (2016) BMC Research Notes, 9:456
INCIDENCE & RATES OF TREATED CONDITIONS

Treated Mental Health condition

<table>
<thead>
<tr>
<th>Year</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0.88</td>
<td>1.07</td>
<td>1.10</td>
<td>1.18</td>
<td>1.12</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Treated Persistent Pain condition

<table>
<thead>
<tr>
<th>Year</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
<th>HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0.97</td>
<td>1.04</td>
<td>1.11</td>
<td>1.23</td>
<td>1.31</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hazard ratios (HR) adjusting for age, sex, residential area, IRSAD, road user group, injury group, year of injury, length of hospital stay.

- Treated Mental Health condition: HR 0.61 (95% CI: 0.55, 0.68)
  - 39% lower rate of treated mental health

- Treated Persistent Pain condition: HR 0.48 (95% CI: 0.44, 0.52)
  - 52% lower rate of treated persistent pain

Melita Giumarra (N = 74,217)
There was an earlier rate of onset for persistent pain than mental health conditions (HR: 1.44, 95% CI: 1.36 to 1.53)
TREATED CONDITIONS: REGIONAL VARIATIONS

REGIONAL VICTORIA
N = 20,339 over 6 years

Pain (3.8%)
Mental Health (2.3%)

METRO VICTORIA
N = 53,457 over 6 years

Pain (7.3%)
Mental Health (3.7%)

Higher incidence only in regions with medium to high SES
Higher incidence only in regions with low to medium SES

* Minimum of 100 per region; analyses excluding those with catastrophic injuries; mapped probabilities adjusted for all demographic and injury characteristics
Prevalence of treated persistent pain and mental health conditions within LGAs strongly correlated

TREATED CONDITIONS: PAIN & MENTAL HEALTH

Metropolitan
\[ r = 0.76, \ p < 0.001 \]

Regional
\[ r = 0.48, \ p = 0.013 \]

* analyses excluded those with severe traumatic brain injury and spinal cord injury
Persistent pain and mental health conditions after injury are clearly tied to multiple social, health, injury and system-based factors (e.g., health/trauma system, accessibility)

The incidence of treated conditions is no doubt under-representative of the true incidence of treated conditions, and definitely underrepresents the incidence of those conditions:

- Linkage with other treatment data (e.g., PBS/MBS), or self-funded treatment was not possible
- Presence of symptoms/diagnoses was not available (e.g., pre/post-treatment, or in those not receiving treatment)
- We know that only ~20-50% of people in the community with persistent pain or symptoms of a mental health condition receive any (or adequate) treatment.
“... provide the right care at the right time by the right team”

- We need a regionalised strategy not only to enhance **survival** but to promote **recovery**
  - Establish better **PARTNERSHIPS** between provider, funder, and government to enable timely access to treatment
  - **ADDRESS BARRIERS** to improve service accessibility/flexibility (e.g., e-health), and service provider/consumer attitudes
  - **FILL KNOWLEDGE GAPS** regarding regionalised contributors to health outcomes (e.g., socioeconomic disadvantage, health literacy, attitudes towards treatment)
  - **SCREEN INJURED PEOPLE FOR RISK** of secondary conditions (w/in 3-months) and provide timely and risk-stratified treatment
  - Improve **POST-INJURY CARE COORDINATION** procedures (e.g., post-discharge, primary care) to monitor and respond to escalation in treatment needs
The TAC is now exploring collaborative partnerships with primary health networks to enable delivery of health programs and services that meet the needs of their clients.