

Letter to the Editor

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Non-residents presenting with splenic injuries to Christchurch Public Hospital as a result of motor vehicle crashes: 2005-2014

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Dear Editor,

Background

Despite the encouraging decline in motor vehicle crashes (MVCs) in New Zealand (NZ), the rate of associated comorbidities and death remains one of the highest for a developed country; 5.7 deaths per 100,000 population in 2013.¹ Factors associated with a higher burden of MVCs include the increased demand on transport, growing population, alcohol and drug use and higher number of non-resident workforce and tourists.¹ This latter group has controversially gained recent media attention due to an apparent increase in the number of reported MVCs involving non-residents.²

Several explanations may account for a disproportionately higher rate of MVCs by non-residents, if one truly exists. New Zealand employs a left-hand traffic, a system followed only by a few countries (i.e., approximately 35 percent of the world's population).³ Moreover, differences in road signs, language barriers and behavioural biases (e.g., types of transport used) may be additional contributing factors. Between 2010 and 2014, NZ received a mean 2.6 million visitors annually.⁴ A study by Gwynne-Jones showed that MVCs were the second most common cause of orthopaedic admissions of non-resident patients to Dunedin Hospital.⁵ However, the majority of the sampled patients were from countries that also employ the left-hand traffic—Australia, Europe and UK.⁵

Christchurch is the largest city in NZ's South Island, and is visited by over 440,000 visitors annually.⁴ At the time of the 2013 census, the population in Christchurch was just over 430,000, of whom 21.1 per cent were born overseas (i.e.,

visitors and temporary residents).⁶ Christchurch Public Hospital is a large tertiary hospital and serves a population of close to 540,000 with a capacity of 600–650 beds.

We recently reviewed patients with splenic injuries who presented to Christchurch Public Hospital between 2005 and 2014 (n=239) (Alamri et al., unpublished). The spleen is the most commonly injured organ in blunt abdominal trauma.⁷ Mortality from splenic injuries ranges from 6–22 per cent depending on severity grade.⁷ For patients who survive, compromised splenic function may have subsequent long-term effects including immune dysfunction.⁷ We utilised these data, as well as information obtained from the NZ census to examine the extent of involvement of non-residents in MVCs resulting in splenic injuries. Mean differences were analysed using independent-samples Student t-test; correlations were examined utilising regression analysis.

Findings

We found the most common mechanism of splenic injury to be MVCs. Whilst the total number of MVCs resulting in splenic injuries showed a clear increasing trend, the proportion of MVCs causing high-grade splenic injuries remained relatively stable (around 40%; Figure 1). The number of annual MVCs causing splenic injuries (median 11, range 5–21) was not found to be related to the mean number of international visitors to Christchurch (741,035±116,477) per year¹, $r=0.15$, $p=0.67$.

Of the patients whose ethnicity was known, 4.5 per cent were non-residents. For the available data, there was no difference in the splenic injury severity grade between residents and non-residents ($t_{176}=0.48$, $p=0.63$). Non-residents, however, had a significantly longer hospital stay (mean 20.4 days±10.8), compared with residents (mean 10.4 days ± 14.1), $t_{167}=1.99$, $p=0.03$.

Conclusions

Our findings provide no evidence that non-residents are more likely to be involved in MVCs. Non-residents who were involved in MVCs sustained splenic injuries of similar severity to NZ residents. They, however, stayed significantly longer as inpatients compared with NZ residents, perhaps due to difficult disposition logistics (e.g., lack of family/relative support). This latter finding is in keeping with

the NZ literature.⁵

This study utilises splenic injuries as a proxy for significant MVC-associated morbidity in patients presenting to Christchurch Public Hospital. Splenic injuries have not been validated as an appropriate surrogate for the overall number of MVCs. Likewise, we used limited data originating from a single city, which may not be representative of MVCs elsewhere in NZ, despite the lack of evidence to suggest otherwise.¹ Exact information on numbers of residents vs. non-residents being involved in MVCs remains lacking. Hence, the use of whichever available surrogates appears justified until such time that definitive data are available. Acknowledging the limitations of our study, we conclude that MVC-associated morbidity and costs remain public health challenges that we ought to address. However, the claim that non-residents are involved in more MVCs than NZ residents appears unsubstantiated.

Sincerely,

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Figure 1: Trends of MVCs as a cause of splenic injuries presenting to Christchurch Public Hospital between 2005 and 2014. □ Number of all MVCs causing splenic injuries; ♦ MVCs causing high-grade splenic injuries; MVC = motor vehicle crash

