


The time is right to do more to reduce ACL injuries

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The number of anterior cruciate ligament (ACL) injuries is increasing; during 1998–2018, their incidence increased in male Australians by 5.2% per year, and by 6.2% per year in female Australians.¹ While there are many reasons for the rise, increased participation in sport at all levels is postulated to be a significant contributor.¹ ACL injuries increase short and long term morbidity and have significant economic costs,^{2–4} leading to the question: is prevention better, or at least more cost-effective, than cure?

In this issue of the *MJA*, Ross and colleagues⁵ argue for a national ACL injury prevention program on the basis of their modelling of its health and economic benefits. Economic models are useful for generalisation, extrapolation, and prediction. They allow decision makers and researchers to test the broader, long term implications of a proposed intervention beyond what is feasible in a randomised or non-randomised trial. It is encouraging to see these types of modelling exercises published in the *MJA* to help inform critical decision making about improving health outcomes cost-effectively.

Ross and colleagues adopted a broad, societal perspective for their analysis, including logistic costs for implementing the program, societal costs for ACL reconstructions, the direct and indirect costs associated with knee osteoarthritis, and costs of primary and revision total knee replacement. Over 35 years, a national ACL injury prevention program was modelled to save more than \$50 million, to improve quality of life by more than 400 quality-adjusted life years, and to avert more than 4000 ACL injuries; for every dollar invested in the program, \$3.51 in costs would be saved. This finding is consistent with other national public health interventions, providing a similar return on investment to a needle exchange program in Australia.⁶

Given the strong economic argument for the program, perhaps we should be championing at the bit to advocate its national implementation? However, models are only as good as their assumptions and data sources. The costs for implementing the program were derived from those for a similar ACL injury prevention program in New Zealand; the key assumptions regarding reach, adoption, and implementation were based on Swedish data. Consequently, questions remain about the generalisability of the model to Australia. Given earlier reports on the uptake of injury prevention advice,⁷ encouraging amateur sports participants to adopt and adhere to an injury prevention program may also be difficult. The assumptions for program costs and rates of program implementation, adoption, and reach were critical for the analysis by Ross and colleagues. Reassuringly, they found that the model yielded similar results when more conservative assumptions for all four sensitivity parameters were applied.⁵

So should we proceed with a national rollout? Ross and his colleagues highlight the need for a public health approach

to help prevent ACL injuries in amateur soccer players. Their model is highly valuable for quantifying the broad costs and effects of rolling out such a program across Australia. However, its true impact remains to be determined, as are the costs of implementing it. We suggest that a pilot or initially staggered rollout of an ACL injury prevention program would be prudent, allowing all those involved to evaluate program delivery, uptake, and performance in order to determine whether the program was delivering on its potential.

Measuring the success of a primary prevention strategy is also contingent on capturing adequate data; a study is only as good as the data on which it is based. Given the health and economic burden of ACL injuries, the case for a national ACL registry is strong. It could be used to systematically monitor progress in reducing the burden of ACL injuries, and to support evaluations of ACL injury prevention programs. Evaluations nested within the data collection processes of national registries have significant economic and pragmatic advantages;⁸ for example, several large studies have already taken advantage of the Australian Orthopaedic Association National Joint Replacement Registry.^{9,10} Implementing a large scale ACL injury prevention program without processes for measuring outcomes would seem to waste its potential. The phased introduction of an ACL injury prevention program, supported by a national ACL registry for comprehensive evaluation, would facilitate best practice grounded in evidence.

Competing interests: No relevant disclosures.

Provenance: Commissioned; not externally peer reviewed. ■

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