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# **Musculoskeletal Injuries in Australia: Current Challenges and Opportunities**



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# About this report

*Musculoskeletal Injuries in Australia: Current Challenges and Opportunities* is an Economist Impact report, sponsored by Smith+Nephew. The report examines the different care pathways that exist for patients with musculoskeletal injuries, particularly meniscal and rotator cuff injuries, in Australia. We explore the opportunities, barriers and challenges that exist in diagnostic modalities, referral mechanisms, cost, reimbursement and/or compensation schemes, and provide pertinent policy considerations to minimise morbidities caused by untreated meniscal and rotator cuff injuries.

By raising awareness about the existing opportunities and challenges in addressing musculoskeletal injuries in Australia, this report hopes to prompt meaningful dialogue among health and public sector stakeholders and spark new ways of thinking about mechanisms that enable improved patient care pathways. Ultimately, the goal is to achieve better patient access to effective management of acute soft tissue injuries in the region. This requires stakeholders across primary and tertiary settings working together to collectively address risks and gaps in current practices, while optimising health services approaches and needs and, thereby ensuring high-value care, favourable outcomes, and the long-term well-being of patients.

This research combined an evidence review, an expert panel meeting, and several in-depth interviews. We would like to thank the following individuals (listed alphabetically) who have generously contributed their views, insights and time for this report:

- **Alison Thorpe**, Director, Perth Shoulder Rehabilitation; Researching Clinician, Curtin University
- **Hugh Seward**, Sports Physician, WorkSafe Victoria
- **Kieran Fallon**, Professor, Musculoskeletal, Sport and Exercise Medicine, Australia National University Medical School
- **Mark Jacobs**, Injury Management Consultant, Brisbane
- **Mark Phillips**, Manager, Clinical Services Team, Recovery, Planning & Performance Division, WorkSafe Victoria
- **Paul Dale**, Director, Policy, Medical Technology Association of Australia
- **Peter Choong**, Sir Hugh Devine Professor of Surgery, University of Melbourne
- **Sarah Griffin**, Director, MedTechnique Consulting
- **Scott Willis**, National President, Australian Physiotherapy Association
- **Tamika Heiden**, Principal & Founder, Research Impact Academy
- **Tania Pizzari**, Associate Professor, Physiotherapy, La Trobe University

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# Executive summary

An estimated 1.71bn people suffer from musculoskeletal disorders (MSDs) globally.<sup>1</sup> These conditions are also the biggest contributor to years lived with disability worldwide (approximately 17%).<sup>1</sup>

In Australia, MSDs account for 12.6% of the total disease burden, and are the second leading contributor to the total disease burden after cancer.<sup>2</sup> The effects of some chronic MSDs are well recognised. For example, significant efforts have been made for lower back pain both in terms of practice guidelines for healthcare professionals and workplace advice for employers.<sup>3</sup> Meniscal injuries (MI) and rotator cuff (RC) injuries have received relatively less attention but have become a major public health challenge in Australia in the last two decades, with an increasing annual incidence that is estimated to grow further. Over the last 20 years, the prevalence of shoulder pain in the general population aged <70 years grew from 7% to 27%, while the lifetime prevalence of shoulder pain has increased to 67%.<sup>4</sup> Over a similar 20-year period, knee injuries have significantly increased for both men and women, with annual incidence rates reaching 83.9 and 60.1 per 100,000 population for males and females, respectively.<sup>5</sup> If left unresolved, these injuries

can lead to severe difficulties in managing daily activities and work-related tasks, and may even cause social withdrawal and emotional distress. This report aims to examine the issues associated with existing treatment pathways of meniscus and shoulder injuries in Australia with a focus on how these can be improved.

From a health systems perspective, recognition of the importance and burden of MI and RC injuries is severely lacking. Due to covid-19, waitlists and waiting times for elective surgeries for MI and RC injuries have increased, especially in the public hospital system. The Government of Australia has attempted to address musculoskeletal conditions with a range of programmes such as the National Strategic Action Plan for Arthritis, the National Strategic Action Plan for Osteoporosis and the Musculoskeletal Health Network.<sup>6,7,8</sup> Despite these efforts, the clinical guidelines, treatment options and surgical interventions still have some gaps. There is a need to pay attention to helping patients navigate optimal soft tissue injury care pathways and efficient reimbursement mechanisms.

As gatekeepers of the care pathway, general practitioners (GPs) play a critical role in

diagnosis, care and outcomes for patients with these injuries. The patient pathway for these injuries can vary significantly depending on GPs' referral decisions, and on whether allied health professionals such as physiotherapists are involved as a first touchpoint of care. Better clinical definitions and enhanced clarity on the current care options, along with more administrative support for GPs, is needed to effectively streamline the patient journey between primary or allied and tertiary care settings. These systemic issues warrant urgent intervention in order to significantly improve the mental and physical health and well-being of the Australian population. Furthermore, improving health literacy and providing patient education is a shared responsibility of the wider healthcare sector and promotes self-determination for recovery.

With growing focus on research and health technologies, newer surgical approaches and devices are continually being introduced for the clinical management of these injuries. In order to keep pace with these developments and ensure the best clinical care and outcomes for patients, it is imperative to critically review emerging evidence on both current and new interventions on a regular basis. Additionally, to enhance clinical standards, foster innovation in health technologies and surgical approaches, and improve access to care and patient outcomes, Australia also

needs to review the existing treatment and reimbursement policies (both public and private) around the patient pathway for MI and RC injuries.

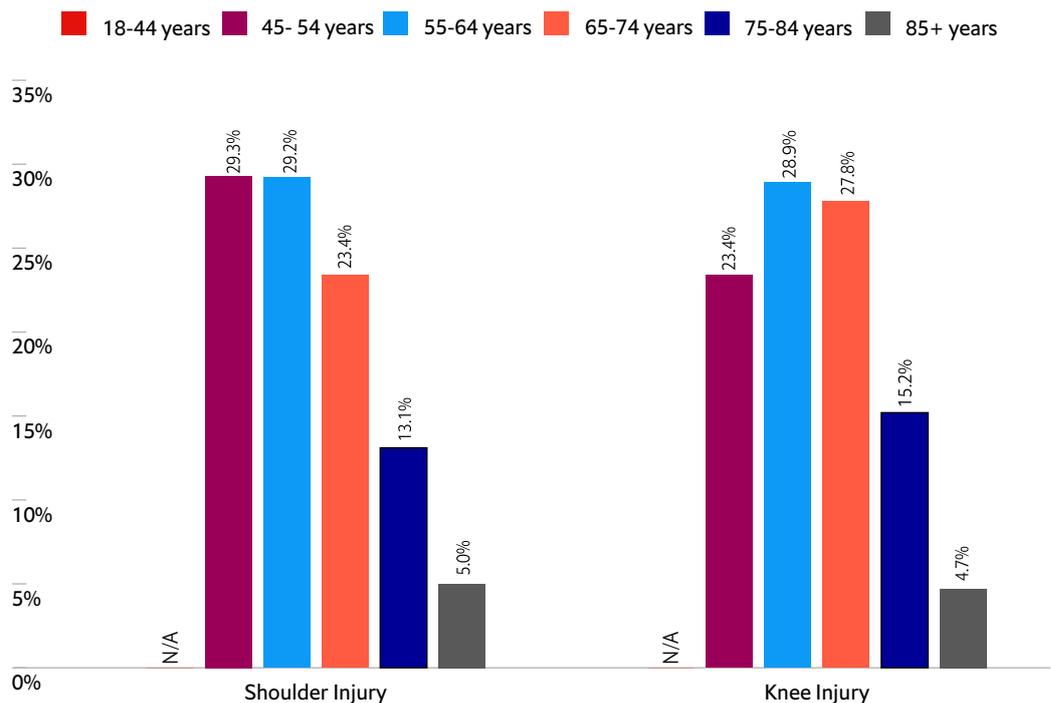
Greater recognition of the health and economic burden of MSDs, especially MI and RC injuries, is needed at the patient, health systems (public and private), and government level. For patient-centred, value-based care to be effectively established in Australia, better information-sharing between different providers along the entire spectrum of care, as well as closer collaboration between providers and payers, is needed. This includes improving funding mechanisms in order to encourage patient accountability and follow-up consultations so that the care pathway is clearly defined and effectively implemented. Better data collection and cooperation between insurers, employers and the health system will also be vital to improving pathways by reducing complications, low-value care, preventable hospitalisations, time, resources and costs for both patients and providers. Finally, timely reviews of existing compensation and reimbursement schemes for MSDs could provide much needed evidence and insights to enable more cost-effective care.

# Introduction

MSDs are problems with bones, muscles, and joints. The 2019 Global Burden of Disease (GBD) Study found that MSDs were the highest contributors to the need for rehabilitation, with the corresponding years lived with disability equal to 149m years.<sup>1</sup> The situation in Australia is no different, where

around one in three people have some form of musculoskeletal condition.<sup>9</sup> There is a strong focus on improving some chronic MSDs such as arthritis, osteoporosis and back pain in the country.<sup>9</sup> For lower back pain, for example, there exists considerable information such as practice guidelines and workplace advice

**Figure 1: Musculoskeletal complaints in Victoria, Australia, from the Population Level and Analysis Reporting (POLAR) database, 2014-2018.<sup>10</sup>**



for both health practitioners and employers alike.<sup>3</sup> However, common soft tissue injuries such as MI and RC injuries may not receive as much attention even though they also pose a substantial burden on patients and the healthcare system.

Figure 1 illustrates the prevalence of musculoskeletal complaints, across different age groups, presented to GPs in Victoria over a period of five years, between 2014 and 2018.<sup>10</sup> The prevalence of these injuries among youth is primarily due to higher levels of activity, and in ageing populations due to degenerative diseases. Additionally, in the hospital setting, diseases of the musculoskeletal system and connective tissue were the cause of some of the highest numbers of in-patient admissions (745,050 patients) across both public and private hospitals in the country, in 2021-2022.<sup>11</sup> During the same period, the emergency admissions involving surgery were highest for procedures on musculoskeletal system with 87% admissions in public hospitals.<sup>12</sup> For elective admissions, other knee and shoulder interventions were among the top 20 procedures with 84% and 87% respectively in private hospitals.<sup>12</sup>

If left unresolved, MI and RC injuries can lead to severe difficulties in managing daily activities and work-related tasks, and may even cause social withdrawal and emotional distress, all of which contribute to the heightened risk of individuals developing further complications and comorbidities.

### Meniscal injuries

The knee joint comprises two menisci — the medial (inner) and the lateral (outer) — which are integral to the joint's structure.<sup>13</sup> They play essential anatomical, biomechanical and functional roles, some of which include load

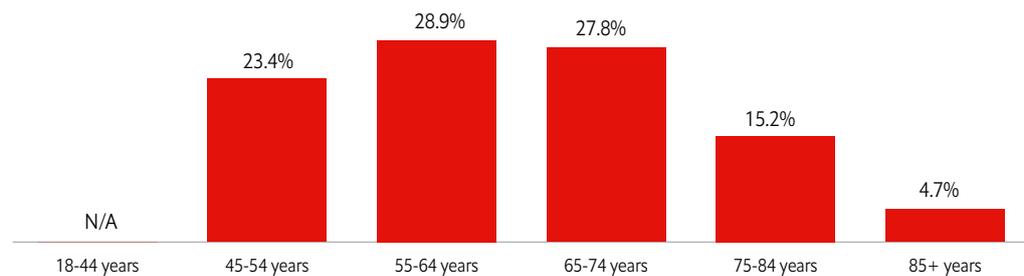
transfer, shock absorption, lubrication, and mechanical stability of the knee.<sup>13,14</sup> These are also the most frequently injured structures in the knee joint, with the medial meniscus being more prone to tears due to its shape and attachments.<sup>13</sup>

Meniscal tears are commonly classified based on their orientation, which could be longitudinal/vertical, horizontal, radial or complex (a combination of different tear patterns).<sup>15</sup> Meniscal tears are also identified based on the nature of displacement (i.e., how the part of the torn meniscus is displaced away from the meniscus) and specific pattern types. An example of such injuries are “bucket handle tears”, which are large vertical tears that have been displaced.<sup>15</sup> It is also possible for tears to occur in the meniscal roots, through which the menisci are anchored to the tibial plateau.<sup>16</sup> Meniscal tears can also be degenerative and atraumatic, occurring as a result of ageing.<sup>17</sup>

Meniscal tears are often “hidden” because they may not always be symptomatic. A systematic review found the overall pooled prevalence of meniscal tears in 3,761 asymptomatic uninjured knees to be 10% (95% CI: 7-13%). It was also found that meniscal tears were more prevalent in adults aged  $\geq 40$  years (19%, 95% CI: 13-26%), as compared with adults younger than 40 years of age (4%, 95% CI: 2-7%).<sup>18</sup>

Tears involving meniscal roots are known to alter the normal biomechanics of the knee, cause pain, and lead to early-stage knee osteoarthritis (OA).<sup>16</sup> In fact, experts shared that in Australia, MI are often viewed as the first step or the initial indications of mild OA and are managed accordingly because once a patient has a significant MI, the development and onset of OA is almost inevitable. As a result, there has also been a move away from managing such injuries surgically through

**Figure 2: Knee injuries stratified by age in Victoria, Australia, from the POLAR database, 2014-2018<sup>10</sup>**



meniscectomies (meniscal resection), as evidence has shown this can cause OA to develop more rapidly.<sup>19, 20</sup> Repairing and attempting to preserve the meniscus, on the other hand, is more likely to delay or prevent the onset of OA.<sup>16, 18, 19</sup> Therefore, optimal diagnosis and management are crucial to avoid long-term complications.

Diagnosis of meniscal tears should be based on a thorough clinical history and examination, supplemented by Magnetic Resonance Imaging (MRI) for suspected cases. For treatment, clinical practice guidelines recommend the prioritisation of repair and conservative management over meniscectomy (surgery) since meniscectomy increases the likelihood of OA.<sup>21, 22</sup> Meniscectomy is usually reserved for younger patients in cases where patients have actively given informed consent and repair is feasible.

### Risk factors

Sporting injuries are a common and widely acknowledged cause of acute meniscal tears. A 2013 meta-analysis identified participation in soccer, rugby and swimming as risk factors for acute meniscal tears.<sup>23</sup> Meanwhile, another study of 392 patients with MI, aged 18-60 years, found sports injuries accounted for about one-third (32.4%) of all cases (mean age

= 33 years).<sup>24</sup> However, non-sports injuries accounted for 38.8% of tears (mean age = 41 years), out of which the majority (71.9%) occurred during routine activities, with squatting or ascent from a squat as a common mechanism of injury.<sup>24</sup> The study also reported that 61% of degenerative tears were seen in non-sports injuries and were more prominent in adults above 40 years.<sup>24</sup>

Meniscal tears are also one of the most common work-related injuries, with associated risk factors such as kneeling, squatting or crouching, crawling, lifting/carrying/moving, standing up from a kneel, stair or ladder climbing, and driving.<sup>25</sup> Yoga practitioners have also been found to have an increased risk of MI (OR: 1.72, 95% CI: 1.23-2.41).<sup>26</sup> Delayed anterior cruciate ligament (ACL) surgery (> 12 months) has also been identified as a risk factor for meniscal tears linked with knee laxity.<sup>23</sup> Meniscal tears are more common in the six months following ACL rupture, with recurrent instability episodes increasing the risk of an MI.<sup>27, 28</sup>

Additionally, having a high basal metabolic rate (BMI greater than 25 kg/m<sup>2</sup>) and engaging in certain physical activities that exert extra pressure on the joints can increase the likelihood of meniscal tears.<sup>29</sup>

### Disease burden

In Australia, a 20-year analysis conducted between 1998 and 2018 revealed an increasing trend in knee injuries, including meniscal tears.<sup>5</sup> The report also highlighted that while men have a higher per capita incidence, the gender gap is closing. Notably, based on the 20-year data, ACL injuries among young Australian females aged 5-14 are sharply rising at 10.4% per year.<sup>5</sup> The loss of meniscal function is a risk factor for OA in the knee, and post-traumatic OA of the knee accounts for 6.3% of the overall prevalence of OA.<sup>30,31</sup> Figure 2 shows the prevalence of knee injuries presented at GPs in Victoria, stratified by age, across 2014-2018.<sup>10</sup> The prevalence rises sharply from the age of 45 and peaks at age groups 55-64 and 65-74, making these groups more likely to be prone to OA and other chronic comorbidities or complications. In 2022, OA accounted for 2.4% of the total disease burden and 19% of the burden of disease due to MSDs.<sup>32</sup>

Meanwhile, arthroscopic procedure rates have been falling in Australia over the last decade, particularly among those aged 50 years and above, due in large part to changes in clinical guidance.<sup>33</sup> The Australian Orthopaedic Association and the Australian Knee Society have clear recommendations on when arthroscopy of the knee is indicated (and when it is not), recognising that in the past, arthroscopy for the conservative management of arthritis was inappropriate in several instances.<sup>34</sup> Current guidance states that arthroscopy is appropriate when symptoms include mechanical obstruction as the source of the patient's complaint. Given that many people can have meniscal tears that are asymptomatic, being able to discern these is important.

### Rotator cuff injuries

The RC is a group of four muscles in the shoulder: subscapularis, infraspinatus, supraspinatus and teres minor.<sup>35</sup> These muscles originate on the scapula and insert into the superior humeral head to improve the stability of the shoulder joint.<sup>36</sup> RC tears can be caused by degeneration, impingement and tension overload; however, this review focuses primarily on acute traumatic RC tears.<sup>35</sup> These typically begin as partial tears of the supraspinatus tendon and eventually progress to full-thickness tears involving all four tendons.<sup>35</sup> RC tears commonly present in middle-aged to older patients, or because of repetitive overhead activities among younger athletes.<sup>35</sup> Like meniscal tears, RC tears can be asymptomatic initially, but change over time and eventually cause symptoms, leading to lower functional capacity of the musculotendinous tissues.<sup>37</sup>

### Risk factors

A 2013 systematic review of nine studies concluded that RC patients globally are on average 55 years old (range: 34-61 years), primarily male (77%), and in the majority of cases, injured by a fall onto an outstretched arm.<sup>38</sup> The review also found that supraspinatus was the most commonly torn tendon (84%), most tears were smaller than 5cm (58%), and the mean time to surgery was nine weeks (range: 3-48 weeks).<sup>38</sup> A 2017 meta-analysis of 10 studies found a higher risk for RC tears in the dominant arm (OR: 2.30, 95% CI: 1.01-5.25) and for those aged  $\geq 60$  years (OR: 5.07, 95% CI: 2.45-10.51).<sup>39</sup> The risk associated with age has been confirmed in another meta-analysis, which concluded that the prevalence of RC tears increases significantly from 9.7% amongst those  $< 20$  years old to 62% amongst those aged  $\geq 80$

years; however, patients with traumatic tears are significantly younger on average (34.2 years) as compared with those with non-traumatic tears (54.1 years).<sup>40,41</sup>

Smoking has been found to have a time- and dose-dependent relationship with a higher prevalence of large RC tears, decreased tendon quality, reduced biomechanics, increased stiffness, and degenerative changes.<sup>42,43</sup>

### Disease burden

Given that some RC tears can be asymptomatic, it is hard to estimate their true prevalence. A 2004 systematic review estimating the prevalence of shoulder pain in the general population found a point-prevalence of 6.9-26%, 1-month prevalence of 18.6-31%, 1-year prevalence of 4.7-46.7%, and a lifetime prevalence of 6.7-66.7%.<sup>44</sup> In a 2006 systematic review of studies estimating the

cadaveric and radiological prevalence of RC tears, the prevalence was found to be 30.2% (11.8% for full-thickness tears and 18.5% for partial thickness tears).<sup>45</sup>

Evidence of the impact of RC pathology on patients comes from a systematic review of qualitative studies assessing patients' experience of shoulder disorders. It was reported that RC injuries were linked with pain, difficulty in performing daily activities, avoiding movement due to fear of re-injury, work-related disruption, limited recreation and social interaction, sleep disturbance, difficulty in concentration, and emotional distress.<sup>46</sup>

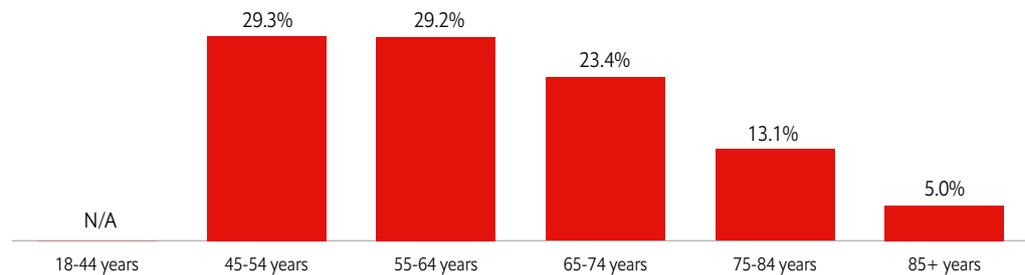
Data from Australia's "Bettering the Evaluation of Care of Health" programme database, collected over a period of five years (April 2011-March 2016), showed that RC-related shoulder pain was the most common shoulder condition managed by GPs at 5.1 per 1,000



patient encounters.<sup>47</sup> The management rate of RC-related pain was higher among male patients (5.5 per 1,000 encounters vs. 4.8 per 1,000 encounters for female patients) and in the 45-64 years age group (8.6 per 1,000 encounters).<sup>47</sup> A 2009 survey of 192 chiropractors based in New South Wales found a 12% prevalence of shoulder pain patients (among the total number of weekly patients), and about one-third (32%) of the complaints were found to be associated with overexertion.<sup>48</sup> A 2010 longitudinal cohort study of 3,206 people, aged ≥18 years in north-eastern Adelaide, found that 22.3% of participants had pain, aching or stiffness in one of their shoulders.<sup>49</sup> It was also found that women, those aged ≥50 years, current smokers, and those classified as obese were significantly more likely to experience shoulder pain.<sup>49</sup> Figure 3 shows the prevalence of shoulder injuries in Victoria, from 2014 to 2018, stratified by age.<sup>10</sup>

Tania Pizarri, Associate Professor of Physiotherapy at La Trobe University, shared that RC injuries in Australia pose a significant burden, with about one in four people experiencing shoulder pain at some point in their lives, and about one in three people presenting with injuries or pain being referred further for physiotherapy. She added that an estimated 50% of these patients would still be in pain six months after their first episode, indicating the chronic nature of these injuries. Experts also agreed that the frequency of shoulder surgeries has increased over time, and that they have become easier to perform with newer procedures, instruments, and increased surgical expertise being available. These observations have been reflected in more recent literature as well.<sup>50</sup>

**Figure 3: Shoulder injuries stratified by age in Victoria, Australia, from the POLAR database, 2014-2018<sup>10</sup>**



# Musculoskeletal injuries care pathways in Australia: patient-centred care perspective

## Diagnostic modalities and referral mechanisms

When patients experience knee or shoulder pain, or workplace or sports injuries, their first touchpoint of care is often their GP or physiotherapist. The choice of GP versus physiotherapist is usually based on past experiences with care, personal preference or convenience. Many people might have a trusted relationship with their GP and prefer to consult them for non-life-threatening injuries, especially to avoid long waiting times at hospitals.

A patient's clinical examination and medical history are first reviewed to assess the different factors that could be causing pain. In

instances where there is a lack of certainty or confidence in the diagnosis, imaging is usually requested; in other cases, physiotherapy exercises and/or appropriate referrals are suggested. In the biomedical treatment model in Australia, GPs often rely on ultrasound scans for shoulder injuries because they are quick, cheap and non-invasive.

Dr Hugh Seward, a sports physician with WorkSafe Victoria, remarked that for knee injuries following significant trauma, it is common to have an X-ray to rule out fractures, followed by an MRI scan, if necessary. However, X-rays are not recommended for low-level pain. Recent reductions to fully funded MRI scans within Australia's public health system may cause some GPs to send their patients less frequently for MRIs of the knee and may instead rely on a clinical diagnosis, unless there has been a high-force impact, suspicions of structural damage, or if the patient is very young. These funding cuts have led to clinicians and physiotherapists having to become better at subjective clinical reasoning.

One of the challenges with these different care pathways is that patients are subject to different narratives and treatments

**“Every injury is different. No two RC injuries are the same. The cuff tear might look the same, but the person that it's attached to is very different, and that's where people get lost.”**

Mark Jacobs, Injury Management Consultant, Brisbane

depending on whether they go to a GP or a physiotherapist as their first point of contact. GPs often have limited knowledge of soft tissue conditions and tend to either refer patients for imaging (which is costly) or to a surgeon for specialist advice. This often leads to GP referrals that are not timely or appropriate. Referral to a physiotherapist with more detailed knowledge of soft tissue injuries may improve the specificity of referrals to a surgeon, but physiotherapists are unable to make direct referrals to surgeon themselves.<sup>51</sup> This makes the triage and escalation process unsystematic and time-consuming and increases the risk of inappropriate or unnecessary referrals. Alternatively, some patients who go straight to a physiotherapist may require support or medication from a GP with a good understanding of the condition. This is further compounded by whether a patient is seeking care within a private, fee-for-service health system, or a public setting.

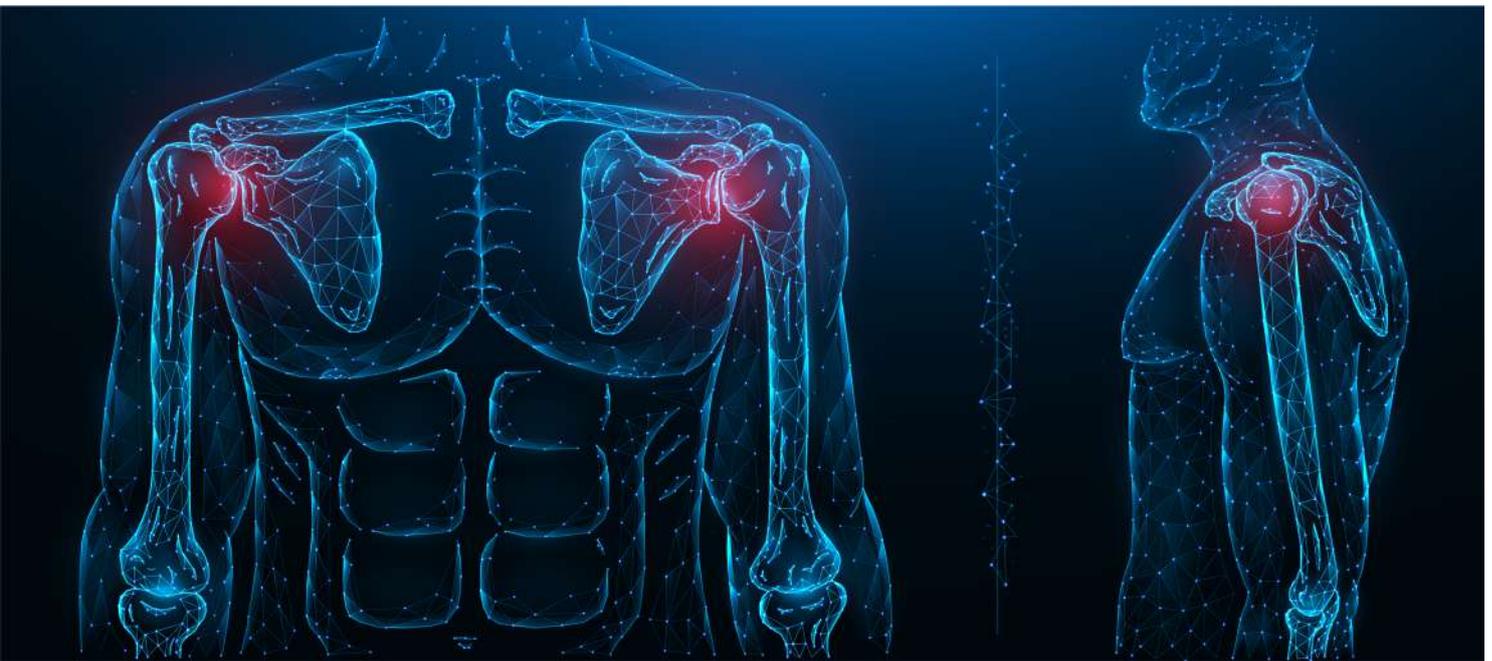
Patients are also often hesitant about surgery as a first option, especially for shoulder injuries – for which surgical interventions may be perceived as more complex and less normalised than knee surgeries. The reluctance of patients to opt for shoulder surgeries as a first course of action may result in them being directed towards more conservative management, and our research suggests that GPs are also much more likely to refer a patient with an RC tear to a physiotherapist first rather than directly to an orthopaedic surgeon. Patients with knee injuries who have been referred for an MRI, on the other hand, are very likely to be referred to a surgeon, without any other intervention in between.

Either pathway could eventually lead to a surgical referral, but as noted, physiotherapists are unable to directly refer patients to a

surgeon without a physician's consult. If a GP is uncertain about the diagnosis, this might lead to a quicker referral to the surgeon; on the other hand, a GP who feels more certain of an injury's diagnosis and treatment approach may take longer to refer the patient for a surgical consult.

Though the care pathways in Australia ensure that one's GP is kept in the loop, these referral mechanisms can be a source of delay in patients receiving care, while also adding to the workload of already stressed GPs, prompting in some cases the use of inappropriate imaging techniques. There has also been an increase in GP referral for early ultrasound imaging and injection therapy, which is not consistent with guideline recommendations.<sup>47</sup> Unnecessary imaging often results in increased costs, can potentially influence patients' expectations of care, and may drive early referrals for surgical opinion, which may eventually lead to unnecessary surgery.

It is also worth noting that not all surgical referrals are necessary or appropriate. Alison Thorpe, Director of Perth Shoulder Rehabilitation & Researching Clinician at Curtin University, pointed out that the guidelines for care of non-traumatic shoulder pain recommend an initial non-surgical approach, encompassing simple analgesia, education, activity modification and an active exercise programme. Imaging, injection therapy or surgical referral may be recommended in those cases where non-surgical care for up to three months has not afforded relief from shoulder pain.<sup>52</sup> Physiotherapists play an important role in the initial stages of the care pathway and should encourage active rather than passive shoulder exercises and maintenance of physical activity with appropriate modifications while



symptomatic.<sup>53</sup> This guideline-based care may prevent unnecessary surgery or facilitate timely surgical referral where appropriate.

Once a patient sees a surgeon, the clinical decision results in one of two outcomes depending on the nature and severity of the diagnosis: surgery, or further investigation with ongoing rehabilitation. In cases where there is some uncertainty over the severity of the damage and the impact on quality of life, surgeons may choose a “watchful waiting” option, supplemented by diagnostic imaging with an MRI, for instance, to make a more informed decision.

Care pathways should indicate that if no changes or improvements are seen after three months of initial physiotherapy, a referral should be made to a physician in sport and exercise medicine, or a senior physiotherapist with a more advanced scope of work. These health professionals often get direct visits from patients with MI and RC injuries, who are then followed up with a referral to community care physiotherapists. Physiotherapists often also evaluate psycho-social outcome measures, which can better indicate whether patients should be referred to surgery.

Decision-making about the appropriate care could be facilitated by tools that simplify the multiple factors and treatment options that need to be considered. An example shared by Peter Choong, Sir Hugh Devine Professor of Surgery at the University of Melbourne, is an app on a surgeon’s desktop, with very simple data inputs to generate a score for responsiveness/non-responsiveness to a particular procedure. Based on the score obtained, a surgeon ascertains if a patient is in the red zone (highly unlikely that surgery is recommended), the orange zone (where advice would be to optimise the patient), or the green zone (the data suggests the patient would respond well to the procedure). Given that failure rates can be quite variable even for well-performed surgeries, the ability to identify patients who should have surgery, and those who should not, could be a game changer. This could also apply to primary care physicians, physicians in sport and exercise medicine, community physicians, GPs and physiotherapists who need to assess if their patients require a surgical referral.

## Patient awareness about MI and RC injuries

Awareness and recognition of knee and shoulder injuries as serious conditions among the general population is often due to news stories about sports professionals sustaining such injuries. Knee injuries, particularly to the cartilage or ACL, tend to be more prominent in the news, likely due to more trauma and dislocations during sports. Among shoulder injuries, RC injuries, together with frozen shoulders, may occur among a large portion (70-80%) of the population who report shoulder pain,<sup>47</sup> but patients often do not know much about these conditions or how to fix them. Health literacy and enhancing knowledge is important to support self-determination and autonomy in both individuals and communities, leading to better health outcomes.<sup>54</sup>

Improving health literacy is a shared responsibility of the wider healthcare sector.<sup>55</sup> Educational efforts and levels of information around MSDs among patients in Australia have seen improvements in recent years. The “Better Knee, Better Me” programme, for instance, aims to increase knowledge among the public on topics such as the benefits of exercise and proper nutrition, and managing weight loss to prevent OA.<sup>56</sup> This programme, coupled with the plethora of information sources online, and news of MSDs among athletes and sports professionals, has led patients to question their care approaches more, which in turn offers an opportunity for discussions around better pathways of care and alternatives to immediate surgery or invasive interventions. However, the ability to discern the quality of online information needs improvement, and messaging around possible

non-surgical or non-invasive care options needs to be better communicated to patients and the general public.

## Gaps in value-based health care

Australia’s healthcare system has been transitioning towards value-based care in recent years, accelerated by the launch of the Australian Centre for Value-Based Healthcare in 2019. Covid-19 has also led to added pressure on hospital systems, waiting lists, elective procedures, and GP visits. Rising costs of living and private health insurance premiums have also potentially caused many Australians dropping out of the private healthcare sector. These factors have amplified the focus on patient outcomes, cost-effective care, and incentives to encourage task-sharing and collaboration between GPs, allied health professionals, nurses and specialists.<sup>57</sup> A system of value-based healthcare centres integrated with patient-reported outcome measures (PROMs) puts patients front and centre of their care pathway, and enables the country to more accurately quantify and evaluate the effectiveness of their care.<sup>58</sup>

In the case of MSDs, GPs, physiotherapists, primary care practitioners and surgeons need to better understand the guidelines on the care pathways and approaches for MI and RC injuries, as well as the costs associated with the different treatment options. Care delivered to patients prior to surgery is critically important, and therefore, a range of allied health professionals, including exercise physiologists, chiropractors and osteopaths, need to be more effectively included in this pathway. Graduate and specialist physiotherapists could also be equipped to do independent reviews and offer alternative treatment approaches, which could enable some cost savings.

Treatment gaps experienced by patients can result in them being bounced around between different providers and physiotherapists, which could have significant impacts on their well-being, as well as that of their families. Patients often stop seeking care if it is not covered by their insurance or compensation scheme, which can further exacerbate their condition, increase pain and morbidity, and cause disruptions to work and daily life. Long waiting times for surgeries in the public health system also cause delays in care, especially if

patients on these waitlists were receiving some form of conservative care or physiotherapy during this time to manage their injury and pain. In recognising these delays as a gap in service provision, private health insurers like Medibank have launched initiatives such as the “No Gap Joint Replacement Program” across a network of specialists and hospitals, which ensures that no out-of-pocket costs are charged for a wide range of services that are part of hospital admission for elective surgery for a joint replacement.<sup>59</sup>

# Structural challenges in musculoskeletal injury management in Australia: health system perspective

## Public health priority focus

Though MSDs rank as one of the highest expenses to health systems around the world, and despite a global push to address MSDs in order to save money and achieve economies of scale across healthcare services, the Australian government does not currently recognise these injuries as a health priority. A registry for MI and RC injuries therefore does not exist in Australia; furthermore, shoulder pain and injuries, in particular, are not as well recognised as knee injuries in contributing to the MSD burden, except among older populations. These factors exacerbate the collective burden of MI and RC injuries on patients as well as the health system.

**“The Global Burden of Disease Study ranks MSDs as one of the biggest expenses to healthcare systems around the world.”**

Alison Thorpe, Director, Perth Shoulder Rehabilitation, and Researching Clinician, Curtin University

## Communication barriers between providers and patients

The structuring of interactions between providers and patients, as well as the language used in these discussions, can have a significant impact on how injuries and pathways of care are understood and chosen. The way a problem is framed and addressed can also change the narratives that patients are presented with, especially in instances where surgery is an option.

Surgeons play an influential role in determining patients' perceptions about the care options available, particularly if they arrive at a consultation with a preconceived notion that they need surgery for a tear or injury, when in fact they might not. While sports physicians and physiotherapists have the technical terminology and language covered in their medical training, other allied health disciplines may not incorporate the vocabulary into their curricula. Language and technical terms may also be a challenging area for GPs and primary care physicians when they have to address the specifics of shoulder and knee injuries.

**“There has to be communication happening. The biggest thing that you can do wrong is not talk to each other because then you lose control of the case.”**

Mark Jacobs, Injury Management Consultant, Brisbane

### **The role of primary care physicians in the care pathway**

Given that many patients will first visit a GP before proceeding along the care continuum, GPs are a very influential touchpoint and one of the main drivers for different treatment pathways. Unfortunately, Australia has an overburdened GP workforce at present. While it is the hope that these stresses will lessen with the end of the covid-19 pandemic, this situation is compounded by a decreasing number of medical students opting for general practice after medical school.<sup>60</sup> Health system constraints create further case backlogs, and restrict consultation times to 10-15 minutes for GPs. In many cases, this duration is insufficient to obtain a full case history and

make an accurate diagnosis of musculoskeletal complaints. GPs may also be unfamiliar with the appropriate tests required for a diagnosis, or might rely heavily on radiology reports, without having the breadth of technical knowledge to be able to interpret them wisely.

The education of GPs, and accessibility to guidelines such as the American Academy of Orthopaedic Surgeons' RC management guidelines and the European Society for Sports Traumatology, Knee Surgery and Arthroscopy's guidelines on traumatic meniscal tears, therefore, become paramount to enabling an effective care plan.<sup>61,62</sup> Providing GPs with easily accessible and timely information about advances in diagnostic and treatment modalities for MSDs could better equip and support them in their role as gatekeepers of the care pathway.

In a recent budget update, the Australian government shared measures to enhance access to primary healthcare to facilitate increased coordination among multidisciplinary teams, backed by substantial investments.<sup>63</sup> However, the specific impact of these initiatives on the management of MSDs remains to be seen.

**“There's a time pressure to come to a diagnosis quickly because you've got a full waiting room. You're limited to probably 10 minutes in your schedule to make the diagnosis, and sometimes the pain complaint for a shoulder or knee is not the only thing that's presented in that 10 minutes.”**

Hugh Seward, Sports Physician, WorkSafe Victoria

### Digital health usage along the care pathway

Though the covid-19 pandemic has accelerated the uptake of digital and telehealth technologies, their role remains limited in the area of MSDs, as an initial clinical diagnosis still largely relies on a physical examination of a patient's injury. An unintended consequence of using telehealth (via phone or computer) for initial consultations, particularly for GPs, has been an immediate request for imaging, followed by a referral to physiotherapists, which might not always be the ideal or preferred pathway.

On the other hand, telehealth has been very effective for follow-ups after the initial assessment and diagnosis, as well as for monitoring care after a procedure, particularly for patients who are unable to visit their physicians in person for various reasons. There is also a real opportunity to use digital health technology in the form of a website, or an app, to provide information that is evidence-based, simple and easily accessible for patients. This addresses the confusion and challenges that many patients face when they have multiple

healthcare providers, or when they attempt their own research and need to navigate the complexity of information online, which may not always be user-friendly or factually accurate.

### Cost, compensation and reimbursement for MI and RC injuries

In recent years, the Australian government has pledged to increase funding for public hospitals through the National Health Reform Agreement. However, musculoskeletal injuries remain neglected when it comes to government funding. Based on an estimated direct cost of A\$14,830 for the surgery and rehabilitation associated with an ACL injury, such injuries are projected to cost A\$314,946,148 by the year 2030-2031. This estimate does not account for indirect costs (e.g., disability), which can be substantial. The average cost to the government for public hospital care for shoulder pain is A\$4,961.28 per patient per year.<sup>64</sup> Experts estimate these costs to be approximately A\$250-300 for a consult with a specialist, A\$2,400-2,700 for 12 sessions of post-operative physiotherapy (with a graduate physiotherapist), and A\$1,100-1,200 for an arthroscopy.

These costs could be covered in a few ways in Australia. Medicare is a publicly funded, universal health insurance scheme that covers the costs of most surgeries and five to six sessions of physiotherapy, when referred through a GP.<sup>65</sup> While patients spend little to nothing if they go through the public healthcare system, the downside is the long waiting times.

Patients with private health insurance can expect some proportion of the costs of specialist consultations and physiotherapy to

**“The internet is probably the dominant source of information for most patients before and after seeing their healthcare provider. However, the literature tells us that neither patients nor providers are able to discern the quality of information that is available on the net.”**

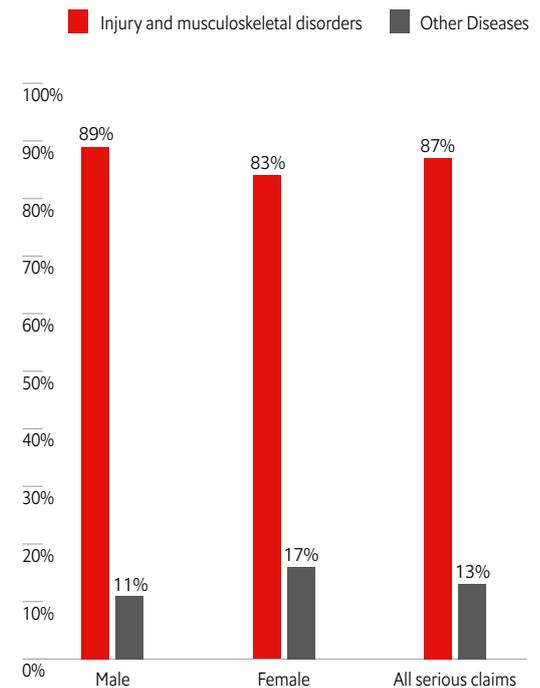
Peter Choong, Sir Hugh Devine Professor of Surgery, University of Melbourne

be covered or reimbursed. These services often fall under ancillary insurance cover, which includes non-operative services not covered by Medicare or performed in a hospital setting. Depending on the coverage of a patient’s insurance plan (gold, silver, bronze, etc.), operative or hospital-based care is covered to varying degrees;<sup>66</sup> for example, patients can only get a hip or knee replacement when they have the highest level of insurance. In the 2021-22 period, it was observed that 71% of patients with private health insurance who underwent a hip replacement in a private setting had to bear out-of-pocket costs.<sup>67</sup> Similarly, 68% of patients who had a knee replacement and 69% of patients who had a shoulder replacement in a private setting also encountered out-of-pocket expenses.<sup>68, 69</sup>

Finally, workers’ compensation is an insurance scheme provided by all employers in Australia, which includes protection and cover for employees if they suffer a work-related injury.<sup>70</sup> Figure 4 shows a snapshot of serious claims made under the workers’ compensation scheme between 2020 and 2021, grouped by type of injury and gender. Claims for MSDs far outweigh those made for other diseases such as cancer, respiratory or nervous system diseases, or mental health conditions.<sup>71</sup>

The unfortunate reality is that many people are unaware of the restrictions and nuances in their health insurance coverage. Furthermore, the coverage of certain services precludes other services that may be more beneficial for patients. For example, a patient may need 10 sessions of exercise physiotherapy, followed by supervised exercise in a group for a knee injury. This rehabilitation plan, however, may not be funded under the patient’s insurance, which only covers five one-to-one sessions that are likely to be insufficient for the scope of

**Figure 4: Proportion and categories of serious claims made through the workers’ compensation scheme, 2020-2021<sup>71</sup>**



rehabilitation needed.

While Medicare funding for allied health professionals allows for earlier and more timely access to services for those with injuries, the structure of Medicare can sometimes prevent patients from getting the most appropriate care, particularly for those who do not have private health insurance or cannot afford a private physiotherapist. Instead, they are referred straight to a surgeon because surgeries, regardless of the severity of the injury or the patient’s eligibility for the procedure, are covered under Medicare.

The reimbursement procedures for musculoskeletal injury costs via private insurance and workers’ compensation vary slightly. For private insurance, claims managers oversee patient cases, ensuring that services

**“The way Medicare is set up, there are a lot of perverse incentives that can actually steer people away from the most appropriate care, especially for people who don’t have private health insurance, or can’t afford to go to a private physiotherapist. For them, it might actually be quicker to go to a surgeon because the surgeon is covered under Medicare. Those incentives that are built in may actually direct people to potentially inappropriate and more expensive care.”**

Sarah Griffin, Director, MedTechnique Consulting

like physiotherapy, for example, are funded for three months before alternatives are pursued in cases where there is no improvement. A critique of this system is that claims managers often do not hold the healthcare practitioners, physiotherapists or stakeholders accountable for patient outcomes, and instead roll over to alternatives as part of a standard operating procedure. The private health insurance system is also bound by legislation that does not allow for coverage of preventive health services.

Under the workers’ compensation scheme, a GP, referred to as the “Nominated Treating Doctor”, is the primary touchpoint and coordinator of the care journey in the event of a workplace injury.<sup>72</sup> The insurers who oversee the workers’ compensation scheme for a company are also notified when there is a workplace injury, and an injury management coordinator at the company sorts through the paperwork with the injured employee. If surgery is required, it should be scheduled as soon as possible, to avoid any possible delays to the care and recovery process.

Approval has to be sought via the workers’ compensation scheme if surgery is recommended for a workplace injury – a key difference from the public healthcare system, where the patient and surgeon collectively decide if a surgery will go ahead. This approval process has two steps: determining if the workplace accident in question actually caused the injury, and evaluating whether the surgical intervention is appropriate. If the claims manager overseeing the case is unsure, a clinician is asked to review the case, which allows for an assessment of psychosocial complexities and other factors related to the injury that a surgeon may not be able to ascertain. This level of scrutiny allows for some degree of oversight and caution on the part of insurers, particularly for withstanding any legal challenges against these decisions, while ideally filtering out inappropriate or unreasonable surgical requests. However, insurance companies have also been criticised for complicating the care reimbursement process for doctors and patients, and for

being overly involved in deciding the course of action based on which costs can be covered by existing insurance plans, including referrals for second opinions and/or independent medical examinations.

The Australian government has recently been looking into the feasibility and acceptability of bundled care options to reduce costs and streamline care pathways. The key challenges with such models would be how to best include all the care stakeholders (GPs, physiotherapists, surgeons) in a holistic care pathway, who would manage these care pathways, and who would pay for them. The Independent Health and Aged Care Pricing Authority under the National Health Reform Agreement has been tasked with

studying bundling and capitation models, and other possible options that could be transformative by bringing the public and private health systems together under one united health system, which aligns with Australia's Primary Health Care 10-year Plan.<sup>73</sup> This would ensure a much stronger incentive for health ownership, both within the healthcare system and for patients. Unfortunately, the primary focus of bundled care models is cost-effectiveness, whereas a focus on quality would require measures such as shorter waiting times for surgeries, better discharge rates, more satisfied patients, fewer recurrences and fewer complications, so that patients are ultimately paying for fewer visits in the most efficient way.

# Conclusions

This report has highlighted that patient well-being and cost are the two biggest considerations in determining the different pathways of care for musculoskeletal injuries, and these can have a profound impact in changing the narratives around care management recommendations for patients, the health ecosystem and the government. At present, a combination of variable quality and siloed care results in exacerbated healthcare costs for private health insurers and Medicare, and significant personal costs to patients. Poor recognition of the disease and financial burden of MSDs add further barriers to accessing timely care. For a value-based care model to work effectively for these injuries, coordination, collaboration and information-sharing among the different stakeholders involved across different settings of the patient care pathway are critical.



## Key takeaways

We have identified five key points that are important to improve the management of MI and RC injuries.

### 1. Increase awareness of the burden of MI and RC injuries

Recognition of the health and economic burden of musculoskeletal injuries, especially MI and RC injuries, is needed at a patient, health system and government level. It is imperative that key stakeholders continue to advocate for evidence-based interventions and policy action for MSDs to be seen as a priority by the government, private and other medical industry bodies. Collective action is also needed to reduce the associated costs of care and the significant indirect costs to society, in the form of lost productivity and reduced physical function. Further data, possibly through the establishment of a registry, would be helpful to illustrate this.

### 2. Simplify and streamline patient pathways

There is a need for better definition and clarity of the current care pathways, together with healthcare providers engaging in collaborative communication and following evidence-based guidelines that optimise the care pathway for individuals. This is to ensure that patients are at the centre of their care, and are involved in the discussions and decisions about the treatment that is delivered. Referral mechanisms need better planning and resourcing, together with a consideration of the costs of the different alternatives available to a patient. GP education, enhancing the role of physiotherapists, and clarifying best practices on diagnosis and surgical intervention would reduce inconsistencies in the care pathways.

Digital health technology could provide the opportunity and platform to optimise some of these processes and reduce waiting times and delays in care.

### 3. Recognise and provide support for the different roles played by healthcare professionals, especially GPs, along the patient pathway

As the primary gatekeepers of the patient pathway, GPs are crucial to determining the best care approaches and possible outcomes for patients with these injuries. Recognising the extent and multitude of medical information that GPs need to stay updated on, resources for education, building confidence and upskilling in the area of MSDs should be made more easily accessible. These could include physician-friendly guideline updates, training in clinical orthopaedic examinations, and continuing education webinars by experts in the field (surgeons, specialist physiotherapists, sports physicians, etc.) that enable GPs to process a lot of information in a short amount of time, thereby making them feel more confident in handling musculoskeletal injuries.

### 4. Improve elements of the health system, including better access to and use of clinical data

Given the confusion and delays with referrals, long waiting times and heavy costs that can be incurred when a patient seeks care for MI or RC injuries, evidence-based, systems-level changes are needed to focus on both clinical care and compensation schemes. For value-based care to be effectively established, better information-sharing between different providers along the entire spectrum of care is needed. Setting up a centralised registry for MI and RC injuries will ensure shared access to the enormous amounts of existing and new data to

**“What I really like to see in terms of pathways is much better education of our GPs in two things. One is in clinical orthopaedic examinations. And second, in their access to the new and enormous amounts of data that’s coming out in this area.”**

Kieran Fallon, Professor, Musculoskeletal, Sport and Exercise Medicine, Australia National University Medical School

better inform and guide clinical decisions and referral patterns, and will thereby improve the quality and timeliness of care delivered.

#### **5. Review costs and existing compensation/reimbursement schemes for MI and RC injuries**

The direct costs of care for MI or RC injuries fall on health systems (both public and private) and patients. However, the indirect costs of lost productivity and opportunity costs for patients, their caregivers, and society should not be neglected or ignored as they continue to be a major challenge. Reviews of Medicare costs take place approximately every 10 years, and provide an opportunity for rebalancing funding mechanisms to consider the broader benefits to society. Accountability and follow-up for patient outcomes through funded pathways of

care should be established. Better relationships, cooperation and information-sharing between insurers, employers and the health system could reduce wastage of resources and time for both providers and patients, while increasing the cost-effectiveness of care. Private and social insurance companies, personal injury insurers and motor vehicle accident groups have a vested interest in better care pathways as their budgets are significantly impacted by musculoskeletal injuries. A review of existing data pertaining to MI and RC injuries from insurance claims and the workers’ compensation schemes could shed more light on current gaps in care and the opportunities for improvement. Industries should also take a more proactive role in injury prevention and management among employees, looking at lead indicators instead of lag indicators.

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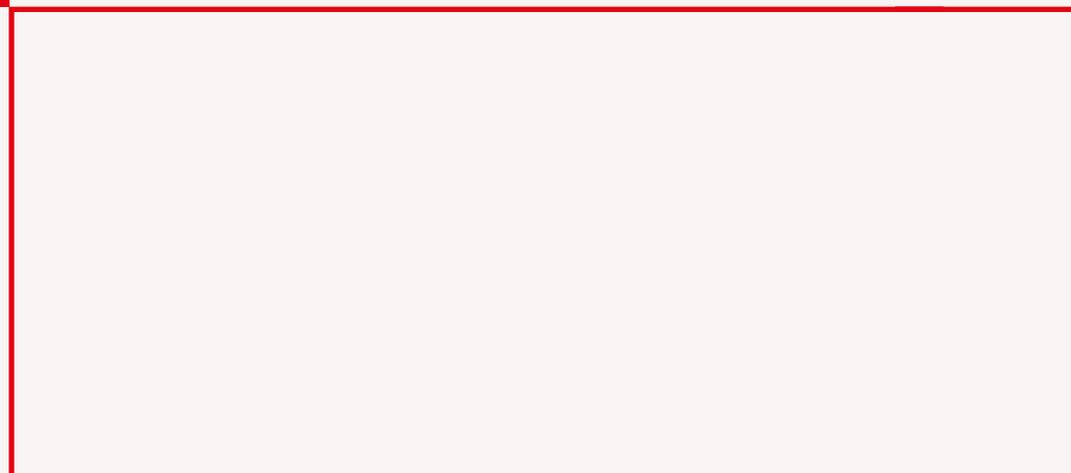
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