MUSCULOSKELETAL CONDITIONS

1. Medical Condition

Musculoskeletal conditions including those arising from injuries are common in sport. However, athletes are also susceptible to arthropathies with a familial or degenerative aetiology such as osteoarthritis, rheumatological or autoimmune diseases.

In the setting of sport we traditionally classify injury according to a mechanism of acute macrotrauma or repetitive overuse ranging from minor injuries to muscle, tendon and other "soft tissues" to more serious fractures, dislocations and spinal cord trauma. Consequently the use of pharmacological agents and hence the need for TUE will vary.

The management of musculoskeletal conditions requires some understanding of the inflammatory response and the biochemistry of pain production. Potent anti-inflammatory agents, powerful analgesics and even so called "disease-modifying agents" are amongst the agents used to treat musculoskeletal conditions This is especially so for conditions such as rheumatoid arthritis, systemic lupus erythematosus (SLE) and ankylosing spondylitis which may require long-term or intermittent administration of medications.

Relevant to the TUE process, there are two classes of prohibited substances commonly used in the management of musculoskeletal conditions. These are glucocorticoids (GCs) and narcotic analgesics, both of which are only prohibited "in-competition". Therefore a TUE is required only when these substances are necessary during a defined in-competition period and, in the case of GCs, if they are administered via oral, rectal, intramuscular or intravenous routes.

GCs are commonly used to manage musculoskeletal injuries and conditions because of their potency as anti-inflammatory agents. However, in some instances their use in competitive sport has become excessive and inappropriate with little regard for potential side effects. The scientific and clinical evidence supporting the liberal use of systemic GCs in sports injuries remains contentious and a conservative approach to their use is recommended.

2. Diagnosis

All musculoskeletal conditions demand an accurate diagnosis invariably involving a complete history and thorough physical examination. In addition, appropriate investigations including imaging modalities such as MRI, CT, nuclear medicine and ultrasonography plus laboratory tests may be necessary to confirm a diagnosis and rule out any relevant co-morbidity.

The results of appropriate imaging and other investigations should accompany the history and physical examination in the TUE application. The opinion of a specialist in musculoskeletal medicine will strengthen the application.

NOTE: Particular care should be invested in the diagnosis of musculoskeletal conditions affecting the young athlete where premature degeneration or impeded skeletal development may result from inadequate management.

3. Medical Best Practice Treatment

A. Classes of the prohibited substances:

1. Glucocorticoids
2. Narcotic analgesics

1. Indications

1. <u>Glucocorticoids</u>

There is little, if any, evidence to indicate that GCs favorably alter the outcome of the majority of musculoskeletal injuries. While glucocorticoids have potent anti-inflammatory effects that may be beneficial in the treatment of selected conditions, the most commonly accepted indications for short-term use are conditions associated with nerve compression such as a herniated vertebral disc or transient brachial neuropraxia. However, it should be noted again that the use of GCs invokes the TUE process only when these agents are administered via oral, rectal, intramuscular or intravenous routes. GC administration via all other routes is permitted without a TUE.

For rheumatological and autoimmune conditions, GCs may be necessary to control inflammatory symptoms on an ongoing basis, with transient increase in dosage from time to time during exacerbations of the disease.

2. Narcotic analgesics

Narcotic analgesics are usually indicated for short-term pain relief following acute injury or post-surgery (typically between 1-7 days). They are seldom prescribed beyond seven days however this may depend on circumstances including the complexity of a surgical procedure. The use of narcotic analgesics administered through any route is prohibited in-competition.

NOTE: Refer to the TUE Physician Guidelines document on Neuropathic Pain for further discussion on narcotics as well as the use of cannabinoids.

B. Typical Dosage, Frequency and Duration of Treatment

1. Glucocorticoids

GCs may be administered as a single dose via intra-muscular, intra-articular, intra-bursal or epidural routes, followed by a sufficient period of time for monitoring and clinical re-evaluation (usually a minimum of 7 days). Administration of further doses is determined by the effectiveness of the initial treatment and the severity of the condition. The use of GCs for the treatment of most musculoskeletal conditions via these application routes rarely exceeds three doses.

When GCs are administered orally, the initial dose may be high (e.g. 50 mg) and then tapered over 5-7 days. In a request for the use of oral GCs in the treatment of an acute disc injury, the permitted alternatives of an epidural or a nerve sleeve injection need to be demonstrated as being inappropriate or ineffective.

For chronic inflammatory musculoskeletal diseases, a low maintenance dose of oral GCs may be indicated with transient increased dosage for exacerbations. The use of a disease activity score and laboratory markers help to guide the use and dosage of GCs in these conditions, however they are unlikely to be seen in elite athletes. Intra-articular GCs may be also administered and do not require a TUE.

2. Narcotic analgesics

Narcotic analgesics are administered in a dosage and frequency sufficient to control severe pain during the acute phases of injury or surgery and during the period of post-operative convalescence. However it would be highly unlikely that an athlete requiring narcotic analgesia for an acute injury would be competing in elite sport. Narcotics may be prescribed, rarely, for chronic pain. (See TUE Physician Guideline on Neuropathic Pain for more details).

4. Alternative Non-Prohibited Treatments

The accepted management of acute musculoskeletal injuries begins with simple modalities of rest, ice, compression and elevation. Initial medication may include non-steroidal anti-inflammatories, non-narcotic analgesics and/or muscle relaxants. Other treatment options include modalities such as heat, cryotherapy, traction, ultrasound, electrical stimulation, manual therapy, bracing and therapeutic exercises.

In rheumatological and autoimmune diseases, other immunosuppressive drugs referred to as disease-modifying anti-rheumatic medications may be added as necessary to control the progression of disease. These may include anti-malarials, cytostatics (e.g. methotrexate, azathioprine), TNF-binding proteins (e.g. adalimumab) which are not prohibited.

5. Consequences to Health if Treatment is Withheld

1. Glucococorticoids

GCs are known to have a powerful anti-inflammatory effect, thereby providing relief of pain and swelling in selected conditions. GCs have not been shown to accelerate or promote better healing in musculoskeletal tissues (ligament, tendon, hyaline cartilage, bone, muscle).

2. Narcotic analgesics

The consequences of not treating a musculoskeletal injury with narcotic analgesics are continued pain and possible reduced function.

6. Monitoring Treatment

The pain and swelling of acute inflammation and the loss of movement typically associated with acute musculoskeletal injuries and conditions are usually short-lived, typically less than one week. While there are certain conditions that require prolonged treatment, these are much less common. The continued use of GCs and/or narcotic analgesics may adversely affect the general health and sport performance of the athlete. Systemic GCs use, for example in the management of chronic rheumatological disease, is routinely tapered to a low maintenance dose.

7. TUE Validity and Recommended Review Process

The indications, dosage and duration of the use of GCs and narcotic analgesics are dependent on the specific musculoskeletal condition or injury. Typically, neither of these medications is administered for longer than one week. If it becomes necessary to extend the use of these agents, the athlete deserves a full review and diagnostic reassessment. This is of particular importance in the management of pre-adolescent and adolescent athletes, and for chronic inflammatory musculoskeletal conditions which may require long-term or recurrent GCs.

8. Appropriate Cautionary Matters

The prolonged use of GCs, even at low dosages, has the potential for a number of serious side-effects such as avascular necrosis of the hip or suppression of the hypothalamic/pituitary/adrenal axis resulting in secondary adrenal insufficiency.

Particular attention should be paid to the treatment of young athletes who may be more susceptible to the effects of GCs due to ongoing musculoskeletal development.

The most serious potential side effect of the prolonged use of narcotic analgesics is that of drug dependency.

While the use of narcotic analgesics may be acceptable from a medical and TUE perspective, the relevant sport association may decide that in certain situations, their use poses an unacceptable safety risk to the athlete and/or other competitors. Sport safety issues are outside the realm of anti-doping.

9. References

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