



Recommendations of the British Society of Skeletal Radiologists

# The safety of corticosteroid injections during the COVID-19 global pandemic

19th March 2020

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# Introduction

Within musculoskeletal radiology there are a number of important considerations for patient safety and operational pressures which may require a temporary change of practice whilst the SARS-CoV2 (COVID-19) virus is prevalent.

Both non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids form a significant majority of the formulary utilised in musculoskeletal and pain medicine for a wide range of joints, soft tissue, and perineural treatments.

Although NSAIDs are not considered in this paper, we are aware of the fast-evolving debate around the safety of ibuprofen in patients with COVID-19. Consequently, a cautionary preference for paracetamol has been recommended by some health services, including the National Health Service (NHS)<sup>1</sup>.

## Steroids

Corticosteroids are known to cause a transient reduction in immunity and suppress the hypothalamic-pituitary-adrenal axis<sup>2</sup>.

In a small study of patients in China, steroids were shown to increase symptoms of the disease and some biochemical and radiological severity markers in young patients (median 39yrs) infected with SARS-CoV2 who were treated with steroids. The study was not in the context of musculoskeletal medicine and the steroid doses used were considerably higher than typical intra-articular, soft tissue or perineural doses. Mortality was not increased, though the cohort findings are to be treated with caution due to the very young median age compared to the typical musculoskeletal patient population<sup>3</sup>.

Further evidence from a large study carried out in the context of influenza showed a reduction in vaccine efficacy in patients treated with steroids for musculoskeletal pain management, presumed to be due to immunosuppressive effects of steroids even when used at lower doses<sup>4</sup>.

The absorption of intra-articular steroids into the bloodstream to enter systemic circulation is proportional to the solubility of the steroid preparation used, but all steroids injected into a joint show passage into the systemic circulation and result in adrenal suppressant effects<sup>5</sup>.

### **Triamcinolone (Triamcinolone acetonide)**

Based on available data on intramuscular usage, Kenalog causes adrenal suppression within 48-hours of administration and these effects persist for 30-40 days<sup>6</sup>.

## **Depomedrone (Methylprednisolone acetate)**

After intra-articular injection, methylprednisolone acetate causes maximum adrenal suppression in a dose-independent manner by 48-hours post-injection (i.e. even lower doses of 40mg induce full adrenal axis suppression)<sup>7</sup>. The drug passes into the systemic circulation over the following 7-days during which time it causes hypothalamic-pituitary-adrenal axis suppression after which time systemic cortisol levels begin to recover<sup>8,9</sup>.

## **Dexamethasone & Betamethasone**

The non-particulate steroids are predominantly used for perineural pain injections around the spine in the context of musculoskeletal practice. They also suppress the hypopituitary adrenal axis but effects do not seem to persist as long as the particulate steroids, as evidenced by a return to normal blood cortisol levels when measured at 3-weeks post epidural injection<sup>10</sup>.

## **Patient Population**

The prevalence pattern of osteoarthritis within the general population predisposes older patients to using musculoskeletal services for both diagnostic imaging and interventional pain management procedures. This group has been identified as a high mortality risk from COVID-19 in data from both Wuhan, China and Northern Italy<sup>11,12</sup>.

Patients with comorbidities are also at increased exposure risk by attending hospital or clinic appointments which may be in contravention to quarantine advice. These patients often hold great faith in health services and their goodwill to honour an appointment may threaten breaking sensible quarantine conditions for their risk group.

Social distancing is an important recommendation in the containment of viral spread and unnecessary or readily deferred hospital and clinic attendance can help prevent the exposure of at risk patients.

A decision on whether to use intra-articular, perineural or soft tissue steroid injections for the management of pain in a patient with complex medical needs should be made in conjunction with the relevant specialist medical team as there may be situations where low dose steroid pain management is the best of the considered treatment options for the individual even during the pandemic.

# Recommendations

- Intra-articular steroid, soft tissue, and perineural injections should be avoided, whenever possible during the COVID-19 pandemic to reduce the risk of reduced immunity to viral exposure
- Vulnerable patients in high-risk groups (older patients and those with comorbidities) should not attend hospital or clinic appointments and should not receive steroid injections during the pandemic in an MSK radiology context.
- Alternative non-steroid pain injections or interventions may still be carried out, though this decision must be balanced against operational pressures and prioritisation of medical services in the individual institution.
- Unnecessary patient exposure to viral infection remains a concern even with non-steroid treatments and must be avoided whenever possible in the highest risk groups.
- Patients with complex medical conditions should be reviewed by the relevant specialist clinical teams before a decision is made on the suitability of steroid injection during the pandemic. Some conditions will necessitate the continued use of steroids.

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