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It is acknowledged that, during the coronavirus pandemic, surgeons and patients will have difficult choices to management options for a wide variety of injuries and urgent conditions. They will need to balance optimum treatment with the need to reduce the risk of infection. This guidance is pragmatic and acknowledges that non-operative management of many injuries and reduced face follow up will be increasingly the norm.

This guidance forms part of a suite of documents that should not be read in isolation.

Background

The coronavirus pandemic will place unprecedented pressures on our society and the NHS. During the pandemic, we have a responsibility to maximise the use of NHS resources to provide the best possible care for all patients. Whilst social distancing may reduce the incidence of some injuries, units should strongly support local and national injury prevention initiatives to reduce pressures on the NHS. Surgeons will need to consider alternative ways to manage many aspects of urgent orthopaedic conditions and trauma. Changes to standard management plans may be required to minimise patient exposure to disease and overall impact on resources.

The NHSE Specialty Guides are the primary guidance and form the basis of all Trusts' responses to this pandemic. During this period, Trusts are obliged to only follow guides that come through the appropriate chain of command. The BOA has compiled more specific guidance to support surgeons and other clinicians who will be making decisions with patients on a day-to-day basis. The guidance is not immutable and will be modified as the situation evolves and as a result of feedback. It must also be taken in the context of national and local guidance and priorities, which may change rapidly. Up to date versions will be maintained on the BOA website and we encourage clinicians to send feedback and ideas.² Whilst written guidance may be seen as a burden, it affords clinicians a degree of confidence in communal action and may also save time for individual clinicians and departments, as each of us does not have to re-invent solutions.

We have developed this document as a common stem, supported by a series of topic-specific guidelines in the format of

- x
- x best manage a limited physical resource
- x keep the key resource of personnel operational
- x triage and contract the service as physical and personnel resources diminish

General management considerations for all units and subspecialties

1. The Lead T&O Consultant for the day has responsibility for overall resource management rather than hands-on clinical management, as outlined in the NHSE Specialty Guides.
2. Individual Trusts will make their own overall logistic decisions depending on local circumstances. However, there are areas where T&O surgeons should ensure that they have a more direct influence:
 - a. Reduction of risk to staff and patients. All clinicians should keep up to date with Public Health guidance for personal protective equipment (PPE)³ and requirements for self-isolation⁴.
 - b. Staffing. Resilience should be built in to all staff rosters to allow for likely absences. Monitor and ensure staff wellbeing at all levels, institute a sustainable staffing model and release any staff allocated to routine work. Ensure relevant staff have remote working facilities.

¹ <https://www.nhs.uk>

² Please contact us at policy@boa.ac.uk

³ NHS England letter as at 22nd March 2020 available here: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/PPE-Letter-FINAL-20-March-2020-updated-on-22-March-2020.pdf>

⁴ <https://www.gov.uk/government/publications/covid-19-stay-at-home-guidance>

- c. Theatre resources. There should be a regular appraisal of available resources, including, at minimum, daily strategy meetings with a theatre coordinator and a consultant from anaesthetics and each relevant surgical specialty. All should have a clear understanding of the issues facing their own specialty prior to the meeting, including workload, relevant clinical details, ICU bed status, sickness absence and redeployment of staff. Resource allocation and patient prioritisation should be agreed.
 - d. Equipment & resources may need to be relocated to alternative locations.
 - e. Trauma meetings should have remote access options to minimise social contact.
3. Documentation and consent. Pragmatic management decisions should be recorded in the patient's medical record including a specific note that the patient was assessed and treated during the coronavirus pandemic.

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Units should consider the below strategies when their Trust is at medium, high or very high escalation, when there is increased risk of coronavirus transmission to patients; operating, inpatient or clinic capacity is restricted; and/or staff numbers are limited.

Management of patients with traumatic injuries and urgent orthopaedic conditions treated as outpatients during the coronavirus pandemic

This guidance forms part of a suite of documents that should not be read in isolation.

Background

During the coronavirus pandemic, there will be increased emphasis on managing patients with non-operative strategies and minimising outpatient visits.

Principles for outpatient management

1. Patients should have consultant-delivered, definitive decision-making at first attendance and, in particular, should not be scheduled for surgery without senior input.
2. Units should deliver a Trauma Clinic for all patients who attend the Emergency Department (ED) with minor injuries, including those who would usually be managed by ED staff, with patients directed to the Trauma Clinic from ED triage. Timing of the clinic will depend on local requirements but it should be a seven-day service.
3. If possible, use segregated but adjacent facilities to provide safely-spaced waiting areas, assessment and treatment cubicles. Plan space to store, don and remove personal protection equipment (PPE).
4. Patients who potentially need immediate management that requires sedation facilities, such as those with dislocations, may need to remain in the ED, but T&O teams should aim to manage these patients.
5. GPs and Minor Injury Units (MIU) should have direct telephone access to senior T&O advice to minimise the need for patients to attend the Trauma Clinic. The risk of hospital attendance may outweigh the potential benefit of intervention, particularly for patients in vulnerable groups.
6. Impact on radiology services should be minimised. Imaging should be requested after the patient has been assessed in the Trauma Clinic to minimise requests and avoid repeat imaging. Avoid use of multiple imaging modalities and consider immediate use of the modality most likely to give a definitive diagnosis. Arrange for use of a mini C-arm in the Trauma Clinic if possible. CT scanning should be minimised as this is the investigation of choice for coronavirus pneumonitis.
7. Use of removable casts or splints should be maximised to reduce follow-up requirements.
8. Patient-initiated follow-up should be the default, with booked appointments only where this is unavoidable. Junior doctors should not arrange follow-up without senior agreement.
9. Follow-up appointments should be delivered by telephone or video call if at all possible. Existing appointments should be cancelled, postponed or conducted remotely.
10. Follow-up imaging should only be performed when there is likely to be a significant change in management. There is no role for imaging to check for fracture union in most injuries.
11. Rehabilitation services are likely to be very limited. Alternative resources such as written and web-based information should be maximised.

Management of specific injuries

12. Dislocations of native and replaced joints should be reduced in the ED, MIU or Trauma Clinic wherever possible. If the joint is stable after reduction, the patient should be discharged with appropriate follow-up.
13. Most upper limb fractures, including clavicle, humeral and wrist fractures, have high rates of union and may be managed non-operatively, recognising that some patients may require late reconstruction.
14. Ligamentous injuries of the knee may be managed with bracing in preference to early ligament reconstruction.
15. Penetrating injuries (stab wounds) to the limbs that are not contaminated and have no neurological or vascular deficit may be sutured in the ED, MIU or Trauma Clinic.
16. Abscesses in patients without systemic sepsis may be incised and drained under local anaesthetic in the ED, MIU or Trauma Clinic.

Specific guidance for hand injuries and injuries in children is detailed later in this document.

Management of patients with traumatic injuries and urgent orthopaedic conditions requiring inpatient care during the coronavirus pandemic

This guidance forms part of a suite of documents that should not be read in isolation.

Background

During the coronavirus pandemic, there will be increased emphasis on reducing hospital admission and minimising length of stay.

Principles for inpatient management

1. Patients should only be admitted to hospital if there is no alternative. Day-case facilities, including NHS, elective treatment centres and independent sector facilities, should be used for ambulatory trauma.
2. Major Trauma and other networks should develop solutions for communication and distribution of workload.
3. Appropriate personal protective equipment (PPE) should be used by all staff in line with most recent Public Health guidance⁵.

Life and limb threatening injuries

4. Patients with multiple injuries, pelvic & acetabular fractures with major haemorrhage, open fractures, compartment syndrome and exsanguinating injury all require emergent resuscitation and management.
5. Consider alternative techniques for patients who require soft tissue reconstruction to avoid multiple operations or the need for critical care input (local flaps, intentional deformity, skin grafting for fasciotomy wounds).
6. Consider early amputation in patients for whom limb salvage has an uncertain outcome and is likely to require multiple operations and a prolonged inpatient stay.
7. Surgeons may need to base decisions about vascular injuries on clinical assessment alone if imaging is not readily available.

Lower limb fragility fractures

8. The care of patients with hip and femoral fractures remains urgent and a surgical priority. It is reasonable to offer hemiarthroplasty rather than total hip replacement if suitable surgeons are not available, in order to facilitate early surgery. Further guidance for management of this group of patients is available as an NHSE Specialty Guide.⁶
9. All patients with fragility fractures of the pelvis, acetabulum or lower limb, whether treated non-operatively or with surgery, should be allowed to bear full weight immediately to allow rehabilitation, reduce inpatient stay and reduce exposure to coronavirus.

General orthopaedic trauma

10. Patients with complex fractures should have surgery planned to minimise length of stay. If a staged approach is used, aim to discharge and readmit the patient if possible.
11. Consider day-case treatment of simple peri-articular fractures and foot & ankle injuries. Where possible, use non-operative treatment and removable splints, recognising that some may require later reconstruction.
12. Patients with upper limb fractures that require surgery (e.g. forearm fractures) should be managed as day cases.
13. Wrist fractures may be treated with removable casts or splints to reduce unnecessary follow-up.
14. Use absorbable sutures and warn patients of the small risk of a mild inflammatory reaction to the sutures.
15. Consider non-operative management and bracing of patients with spinal fractures
16. Non-union of upper limb fractures may be managed in a delayed fashion. Non-union of lower limb fractures with failed implants or increasing deformity and a significant impact on daily function may require relatively urgent treatment.

Other orthopaedic emergencies

17. Patients with cauda equina syndrome require emergency treatment.
18. Patients with septic arthritis, prosthetic joint infection or infected fractures and features of systemic sepsis require emergency treatment. Those who are not septic may be managed as out-patients in appropriate clinics. Suppression therapy should be considered.

⁵ NHS England letter (22nd March 2020): <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/PPE-Letter-FINAL-20-March-2020-updated-on-22-March-2020.pdf>

⁶https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/C0086_Specialty-guide-Fragility-Fractures-and-Coronavirus-v1-26-March.pdf

Management of patients with hand injuries during the coronavirus pandemic

This guidance forms part of a suite of documents that should not be read in isolation. This section on hand injuries is supported by the British Society for Surgery of the Hand (BSSH), British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS) and British Association of Hand Therapists (BAHT).

Background

During the coronavirus pandemic, there will be increased emphasis on managing patients with non-operative strategies and minimising outpatient visits. There should be a focus on providing essential care for patients with hand injuries with the minimum burden on the NHS and we acknowledge that a point may be reached where there is little or no resource available for patients with hand trauma, other than remote advice. Departments should aim to provide the best level of care for patients with hand trauma possible, determined by the level of safe resources available at the time. Units should consider the following strategies when their Trust is at medium, high or very high escalation, when there is increased risk of coronavirus transmission to patients; operating, inpatient or clinic capacity is restricted; and/or staff numbers are limited.

Service reconfiguration for hand surgery services

1. Implement a rota for a designated Lead Consultant for Hand Trauma.
2. Clinicians should immediately facilitate a radical reduction in hospital attendances and face to face appointments.
3. Start triage of external referrals by a senior clinician preferably by video or telephone.
4. Institute pathways to deliver rapid same or next day day-case operating for emergency surgery for complex injuries.
5. Adopt a "one-stop" model of care involving a streamlined, safe system of triage, assessment, treatment and discharge, with a package of care designed to ensure no or minimal face to face follow-up.
6. Prepare for rapid deployment of acute hand service as the first point of contact for Emergency Department (ED) patients directly from ED triage, streamed to the Trauma or Hand Clinic, prior to examination or imaging. Further guidance about organization of outpatient services is outlined earlier in this document.
7. Explore the scope for advice to be provided remotely by retired staff.

Management of hand injuries

8. The British Society for Surgery of the Hand maintains a hand injury triage website and app, which will provide up-to-date triage & management guidance during the pandemic.⁷ Evidence-based guidance is also available from FESSH⁸.
9. Aim for non-operative management for the majority of injuries where this is possible and safe.
10. If possible, arrange additional outpatient or minor operations space to perform manipulations and immediate surgery under local anaesthetic with application of removable splints, preferably with access to a mini C-arm used according to local rules.
11. Aim to perform all hand and wrist surgery under local anaesthetic block or "wide-awake local anaesthetic no tourniquet" (WALANT)⁹
12. Arrange appropriate plaster room technician support and a supply of easily removable splints which should be used wherever possible.
13. Use absorbable sutures and warn patients of the small risk of a mild inflammatory reaction to the sutures.
14. Consider leaving K-wires un-buried to reduce the need for an additional procedure for wire removal.
15. Use easily removable post-operative dressings & splints so remote follow-up may be performed by the hand therapy team.
16. Provide discharge packs for patients with dressing packs, dressings, antibiotics, analgesia, written self-follow-up instructions on wound care and where to find on-line therapy resources.
17. Anticipate that hand therapists will be rapidly redeployed to other duties. Reconfigure any remaining therapy resources into the acute clinic to provide a one-stop shop and video or telephone follow-up.

⁷ https://www.bssh.ac.uk/hand_trauma_app.aspx

⁸ <http://fessh.com/down/Evidence%20Based%20Data%20In%20Hand%20Surgery%20And%20Therapy.pdf>

⁹ <https://walant.surgery/>

Management of children with orthopaedic trauma during the coronavirus pandemic

This guidance forms part of a suite of documents that should not be read in isolation.

Background

During the coronavirus pandemic, there will be increased emphasis on managing children with non-operative strategies and minimising outpatient visits. The aim is to minimise long-term consequences by prioritising conditions that have immediate, permanent morbidity or lack a practical remedial option.

Principles of first contact and clinics:

1. **Always consider the possibility of non-accidental injury. The principles of management are unchanged.**
2. If necessary, children with the following suspected diagnoses may be managed without radiology at presentation:
 - a. Soft tissue injuries.
 - b. Wrist, forearm, clavicle and proximal humeral fractures.
 - c. Long bone fractures with clinical deformity.
 - d. Foot fractures without significant clinical deformity and swelling.
3. The following injuries may be managed without a cast at presentation:
 - a. Knee ligament and patellar injuries may be managed with bracing.
 - b. Stable ankle fractures may be managed with a fixed ankle boot or Softcast.
 - c. Hindfoot, midfoot and forefoot injuries may be managed with a fixed ankle boot or plaster shoe.
4. A single follow-up appointment at 4 to 12 weeks, depending on the limb or bone fractured, is acceptable for the majority of injuries. Patient-initiated follow-up is appropriate for the following conditions:
 - a. Patellar subluxations and dislocations, knee ligament and meniscal injuries, excluding locked knees.
 - b. Lateral malleolar fractures and suspected ankle avulsion fractures.
 - c. Foot injuries, except suspected mid- and hindfoot injuries.
 - d. Wrist, forearm, clavicle and humeral fractures, including proximal humerus.
 - e. Gartland type 1 and 2 supracondylar fractures.

Non-operative management

5. Many children's injuries may be definitively managed in a cast at presentation. Wherever possible, use reinforced Softcast for home removal:
 - a. Extra-articular tibial fractures without neurovascular or soft tissue compromise. A small number of these patients may require intervention:
 - *Admit if high risk of compartment syndrome (adolescent or high energy injuries).*
 - *Consider sedation for reduction of clinically important deformity.*
 - *Accept that residual deformity or malunion may require corrective surgery.*
 - b. Displaced wrist fractures in children aged under ten years.
 - c. Undisplaced ankle and forearm fractures.
 - d. Gartland types 1 and 2 supracondylar fractures.

Operative management

Day-case surgery

6. Most children who require operative management may have surgery as a day-case:
 - a. Reduced joint dislocations.
 - b. Fractures with abnormal neurology or soft tissue compromise that is resolving after treatment.
 - c. Peri-articular fractures.
 - d. Extra-articular femoral fractures in children aged under six years (spica cast).
 - e. Displaced forearm fractures.

Management of obligatory inpatients

7. A small number of patients require inpatient treatment with anaesthesia and operative management:
 - a. Open fractures (*consider wash out with windowed cast*).
 - b. Septic arthritis and osteomyelitis with subperiosteal collection.
 - c. Femoral fractures in children aged over six years (operative stabilisation).
 - d. Displaced articular or peri-articular fractures, including Gartland type 3 supracondylar fractures and acute slipped upper femoral epiphysis.

Management of children with non-traumatic orthopaedic conditions during the coronavirus pandemic

This guidance forms part of a suite of documents that should not be read in isolation.

Background

During the coronavirus pandemic, there will be increased emphasis on managing children with non-operative strategies and minimising outpatient visits. The aim is to minimise long-term consequences by prioritising conditions that have immediate, permanent morbidity or lack a practical remedial option.

Emergency conditions (require review or surgery within 24 hours):

1. Non-accidental injury (Any child considered to be at risk, or a victim, of abuse should be referred immediately to child protection services according to standard local guidelines)
2. Suspected septic arthritis/osteomyelitis (osteoarticular infection should always be considered as a differential diagnosis in a febrile child and not be assumed that this is due to Covid -19)
3. Children with new neurological dysfunction or limb ischaemia (including suspected compartment syndrome)

Urgent conditions (require review or surgery as soon as possible and within 72 hours):

4. Suspected Slipped Upper Femoral Epiphysis (unless associated with sudden onset leg pain and difficulty weight-bearing, requiring emergency admission)
5. Severe pain, which is not responding to standard analgesia
6. Exposed metalwork from previous surgery

Time-dependent conditions (require review or surgery as soon as possible and within 4-6 weeks):

7. MDT directed, suspected bone or soft tissue malignant tumours and suspected aggressive benign bone tumour
8. DDH Suspected cases and those currently undergoing harness or plaster immobilisation
9. CTEV Currently undergoing cast treatment

Time-dependent conditions (require review or surgery as soon as possible and within 3 months):

10. DDH Primary open reduction
11. CTEV Initial management including tenotomies
12. Limb length discrepancy/malalignment already undergoing treatment

Non-urgent conditions (require review or surgery beyond 3 months but as soon as normal service resumes):

Definitive management of the majority of children's orthopaedic conditions is not time critical and can therefore be postponed for the duration of the Covid-19 pandemic

13. All other patients previously referred to paediatric orthopaedic clinics,
14. All patients under routine paediatric orthopaedic clinic review, including:
 - DDH (secondary joint reconstruction)
 - CTEV (Late presenting or relapsed)
 - Corrective surgery for established deformity
 - Reconstruction for established joint instability
 - Planned metal-ware removal

Resources

BSCOS have also produced other documentation relevant to care of children requiring orthopaedic treatment at this time, which is available online at: <https://bscos.org.uk/covid19/resources.php>

There is also an NHS Specialty guide specific to paediatrics available online at: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/Specialty-guide_paediatrics-and-coronavirus_V1_17-March.pdf