Review Article

Recommendations for the Care of Pediatric Orthopaedic Patients During the COVID-19 Pandemic

Abstract

The COVID-19 pandemic has necessitated modifications to pediatric orthopaedic practice to protect patients, families, and healthcare workers and to minimize viral transmission. It is critical to balance the benefits of alterations to current practice to reduce the chances of COVID-19 infection, with the potential long-term impact on patients. Early experiences of the pandemic from orthopaedic surgeons in China, Singapore, and Italy have provided the opportunity to take proactive and preventive measures to protect all involved in pediatric orthopaedic care. These guidelines, based on expert opinion and best available evidence, provide a framework for the management of pediatric orthopaedic patients during the COVID-19 pandemic. General principles include limiting procedures to urgent cases such as traumatic injuries and deferring outpatient visits during the acute phase of the pandemic. Nonsurgical methods should be considered where possible. For patients with developmental or chronic orthopaedic conditions, it may be possible to delay treatment for 2 to 4 months without substantial detrimental long-term impact.

Since the first case of the novel coronavirus (COVID-19) was reported in Wuhan, China in December 2019, viral infection has spread at an alarming rate. On January 30, 2020, the World Health Organization (WHO) announced COVID-19 as a Public Health Emergency of International Concern, and by March 11, 2020, it was officially declared a pandemic. As of April 5, 2020, the United States has 330,891 reported cases and 8,910 deaths in total, with 64,966 of those cases and 2,472 deaths attributed to New York City alone. The rapid progression of COVID-19 infection rates has stimulated the international implementation of social distancing practices and temporary cessation of all nonessential businesses. Because COVID-19 is primarily transmitted through respiratory droplets and close contact, strict adherence to social distancing procedures is critical to limit the spread of infection and mitigate the foreseeable impact on healthcare systems. Within the healthcare setting, adaptations to regular clinical procedures are necessary to reduce the risk of infection in patients, families, and healthcare providers alike while balancing the risks and benefits of delaying or altering typical patient care.

Overall Principles

The COVID-19 pandemic has necessitated substantial changes to the current practice. These guidelines are meant to offer a framework for safe and ethical management of the pediatric orthopaedic patient in these...
uncertain times. We trust that each surgeon considers whether the benefits of typical treatment protocols before the COVID-19 crisis outweigh the risks in this unusual time. This is likely to require constant re-evaluation as the situation evolves and be based on the local healthcare constraints, rather than a “one-size-fits-all” approach.

These guidelines are based on an accumulation of expert opinion and evidence-based recommendations where possible, with the aim to reassure surgeons that pediatric patients can be safely and ethically managed with minimal negative long-term consequences. Once some post-pandemic normalcy has been restored, it will be imperative to use data obtained at this time to inform future management on the safety of these approaches that were necessitated by the risk of COVID-19.

During the COVID-19 pandemic, there will be an increased emphasis on nonsurgical strategies. Patients who need urgent orthopaedic management, such as serious traumatic injuries or tumors, will be managed according to the typical standard of care. The COVID-19 pandemic will more dramatically affect practice regarding elective procedures and the ensuing follow-up.

These changes in clinical practice are guided by following three overarching principles:

(1) Clinical urgency
(2) Patient and healthcare worker safety
(3) Conservation of healthcare resources

### General Changes in the Time of COVID-19

Liang et al from Singapore recently published their experiences on managing orthopaedic patients during the pandemic. Their advice, along with recommendations from China, the British Orthopaedic Association (BOA), and the British Society for Children’s Orthopaedic Surgery (BSCOS), have formed the basis for a lot of the strategies discussed below.

The Singapore Group identified the need for balance between continuing care and safety for patients, caregivers, and healthcare workers. They concluded that day-case procedures could continue, given their limited impact on healthcare resources, especially allowing for rapid turnover of hospital beds potentially needed for acute admissions. In addition, same-day discharge minimizes the risk to the patient and family of nosocomial exposure to COVID-19.

Here at British Columbia Children’s Hospital (BCCH), Vancouver, Canada, we have implemented a rotating team approach in these unusual times. Splitting the department into self-reliant cells allows groups to be physically quarantined and avoids cross-contamination. There is a backup, or “Surge” team available each day, if the primary team is overwhelmed or unable to perform their duties—for instance, if a team member becomes unwell themselves from COVID-19. The lead surgeon for each day manages the trauma and delegates tasks to the other team members, aiming to minimize personnel exposure while maintaining quality care.

Overall, a pragmatic approach should be taken to treatment decisions and a specific note that the patient was assessed and managed during the coronavirus pandemic will be imperative in the future to assess quality maintenance and the long-term impact of COVID-19 in the pediatric orthopaedic setting. These recommendations should be viewed as guidance and be modified based on locally available resources. Specific reorganization procedures will depend on the practice setting. Considerations to take into account include the number of attending staff surgeons, support staff (clinic/nursing/extended providers/therapy team), and junior staff. Smaller units might have to contact larger centers if staffing becomes an issue.

Units should also consider whether they are in the acute phase and perhaps temper their response as the situation improves.

Recommendations—General considerations

1. Limit in-person patient review to definitive decision-maker (Attending surgeon)
2. Separate in-patient teams attending to ward patients, operating, and covering on-call and an out-patient team managing clinic
3. Keep team prepared and informed—regular briefings, public health guidance, access to PPE, requirements for self-isolation, and facilitate remote working
4. Train and prepare allied health staff in cast application and removal
5. Plan trauma clinic for minor injuries to offload ED
6. Maximize remote management of injuries via increasing access for GPs in remote areas
7. Maximize the use of removable casts and splints
8. Minimize in-person visits.
9. Maximize follow-up via video or teleconference
10. Perform follow-up imaging ONLY if likely to make a significant change to care
11. Use web-based information or written guidelines to minimize rehabilitation options
12. Consider postponement of all elective work requiring admission, especially PICU admission
13. Monitor the mental health of your staff
14. Practice rational management of limited resources—for instance, PPE
Recommendations—Operating room considerations

1. Minimize personnel—excuse medical students and company representatives
2. Avoid laminar flow
3. Use N-95 masks and goggles—power tools may be associated with significant droplet and fine particle generation
4. Use additional face shield—can be reusable
5. Do not use pulse lavage
6. Limit team in the operating room during high-risk periods—intubation/extubation
7. Use electrocautery with smoke evacuator
8. Use absorbable sutures as much as possible
9. Use clear dressings
10. Avoid PICO dressings
11. Use splints and removable casts

Recommendations for Mitigating Risk to the Orthopaedic Surgeon

The risk to all healthcare workers is significant, and orthopaedic surgeons can learn from the early experiences of surgeons in Italy and China. In Italy, front-line healthcare workers were disproportionately prone to COVID-19 infection, and often contracted the most severe form of the disease. The risk specifically to surgeons is that the virus is transmitted primarily through aerosols—droplets containing the virus. This puts anesthesiologists at particular risk during intubation and extubation, but the rest of the team is also susceptible. The risk of aerosol-generating procedures has led centers to minimize personnel in the operating room. Orthopaedics often requires the use of power tools with aerosolization of material putting the team at further increased risk in comparison to other surgical procedures. Although blood is not the preferred route of the virus, research supports the idea that COVID-19 is an opportunistic invader. Consequently, blood donors in Wuhan are now screened for the virus.

Guo et al surveyed orthopaedic surgeons in Wuhan, China, infected with COVID-19 and provided recommendations to safeguard the surgeon according to their experiences as the first province to experience the outbreak. They recommended that healthcare workers have a high level of vigilance and take all necessary precautions to protect themselves from infection with COVID-19. They should use PPE and consider urging patients to wear masks. Orthopaedic surgeons need to be able to manage often limited resources, particularly PPE, and be flexible in their schedules, such as canceling elective work and being ready to be redeployed as necessary. They should avoid close contact with family members after being in known exposed environments and practice the usual social distancing measures to keep the community safe in all situations.

Surgeons should also be careful to monitor their own health regarding both COVID-19 symptoms and also manage fatigue and stress which could compromise their own immunity.

Management of Trauma

During the COVID-19 pandemic, prevention is better than cure. However, traumatic injuries will need to be considered for both surgical and nonsurgical management, regardless of clinic closures. Although social distancing and isolation might serve to limit trauma numbers, there will still be a clinical need to proceed with surgery in many instances. With parks closed, there has been a recent spike in purchase of home play equipment and trampolines. An average of 40% of pediatric injuries requiring hospitalization or emergency department review occur in the home. Consequently, being isolated at home will not prevent all injuries. Minimizing the number of interactions during treatment for traumatic injuries will help protect the patient, caregiver, and healthcare workers.

Social and physical distancing preventive measures remain critical to reduce spread. A normal trauma clinic would present many situations capable of facilitating viral transmission. Take the scenario of a child sustaining a both bones forearm fracture that requires reduction in the ED. This child and their family come in contact with ambulance paramedics, the ED booking clerk, nurse, ED physician, radiology booking clerk and technician, orthopaedic staff, and all the staff members required for follow-up. If this same child requires surgery and a short in-patient stay, the potential transmission contact will be exponentially high. Therefore, it is ethically logical to implement changes to minimize these potential transmissions.

When considering surgical management, in-patient care should be kept to a minimum and used only when no alternative is available. Every effort should be made to maximize day surgery options.

During the COVID-19 pandemic, there will be increased emphasis on managing children with nonsurgical strategies and limiting outpatient visits. The aim is to minimize long-term consequences by prioritizing conditions that have immediate, permanent morbidity, or lack a practical remedial option.

Day-Case Surgery

Day-case surgery can be an option for many injuries requiring surgical management.
(1) Reduction of joint dislocations
(2) Fractures with abnormal neurology or soft-tissue compromise that is resolving
(3) Periarticular fractures
(4) Extra-articular femoral fractures in children aged less than six years

**General Trauma Management Considerations**

Management of nonaccidental injury should not change.8 In many instances of traumatic injury, minimizing postoperative imaging can be done safely. A 2018 systematic review found that immediate postoperative imaging led to an absolute benefit increase in identifying complications of only 0.22%.15 This can be a valuable application in the current situation, and all imaging that will not change management should be avoided.

With open fracture cases, consideration should be given to wash-out and application of a windowed cast. Cases of septic arthritis and osteomyelitis with subperiosteal collection are likely to require operative surgery and ongoing inpatient management. Aim to minimize procedures as much as possible, and use a PICC line at time of surgery. Keep imaging to a minimum, choosing the single, most useful imaging modality to limit contacts and transmissions between patients and healthcare workers. Where possible, consider the use of at-home intravenous antibiotic treatment. Dislocations should be reduced in emergency wherever possible and managed as day surgery if admission is required.

**Fracture Management**

These treatment protocols should serve as a framework for the management of common fractures in this time. At our center, trauma referrals are reviewed by the day’s attending surgeon. As much as reasonably possible, required follow-ups are done using video or teleconferencing, and conditions which can wait are postponed during this period. Much of the clinical assessment can be done via videoconference or teleconference with the family. Imaging is only performed if it is likely to change the treatment plan. When not in-person, follow-up needs to be carefully organized to ensure patients are not lost to follow up, and parents have appropriate support for the extra tasks with which they are being entrusted.

Most upper limb fractures can be managed conservatively. As an overarching principle, aim to maximize the use of removable casts and splints. Accept that there will be more initial deformity than what might previously have been tolerated; the high remodeling potential in pediatric patients mitigates the risk of residual deformity, and there are options for highly successful corrective procedures at a later date if needed.16

Please refer to Table 1 for a summary of recommendations for pediatric orthopaedic trauma management.

**Management of Nontraumatic Pediatric Orthopaedic Conditions**

Many orthopaedic units in hospitals across the globe have begun to take preventive measures by reducing or closing clinics to most outpatients. Taking lessons learned from early experiences with the COVID-19 pandemic in Singapore and China, the BCCH Orthopedic Surgery department has scaled back clinics as much as possible for a 3-month period. Key decisions have been made to limit or postpone treating children with developmental, congenital, or chronic orthopaedic conditions, such as developmental dysplasia of the hip (DDH), Legg-Calvé-Perthes disease (LCPD), clubfoot, scoliosis, and orthopaedic conditions secondary to cerebral palsy.

The decision to defer clinic visits for up to three months may be fraught with concern over the long-term impact of delayed treatment. This is particularly true in conditions, such as DDH, where early detection and treatment are widely regarded to optimize outcomes. However, the risks of deferring treatment must be weighed against the risks of continuing treatment as usual during the COVID-19 crisis. A unique feature of pediatric care is the number of caregivers and/or family members who typically accompany an infant or child to a clinic appointment. It is common to see two or three caregivers in clinic along with the child. In addition, there are typically a minimum of four healthcare workers in contact with the family during the visit. Each family member present could potentially be an asymptomatic or presymptomatic vector for viral transmission, increasing the chance of spreading infection to healthcare workers or other patients and families. Eliminating as many of these visits as possible during the peak of the pandemic can greatly reduce the chances of viral spread.

Another primary concern is for the safety of the child. Although initial impressions of COVID-19 have been that children are not as susceptible to infection, a recent retrospective review of the epidemiology of pediatric cases in China suggested that infants were more susceptible to the severe infection than older children, with 10.6% of cases severe or critical in infants younger than one year of age.20 For a condition such as DDH, most children coming to the orthopaedic clinic for DDH are younger than one year of age; therefore, these patients represent a potentially vulnerable cohort during this time. Children with cerebral palsy also represent a particularly at-risk
Table 1

Recommendations for Orthopaedic Pediatric Trauma Management8,17

| Injury | Immediate | Follow-up |
|--------|-----------|-----------|
| Clavicle fracture18 | Sling in ED | None required |
| | Commence ROM in 1 week | Offer teleconference |
| Shoulder dislocation | Reduce in ED | Teleconference at week 4–6 |
| | Sling for comfort | |
| | Commence ROM in 1 week | |
| Midshaft humeral fracture | Minimally displaced—Collar and cuff | Teleconference at week 4–6 |
| | Displaced—Well-fitting high above elbow splint | |
| | Commence ROM from 2 weeks | |
| Supracondylar fracture (no neurovascular compromise)19 | Gartland 1—Collar and cuff, removed by family at 3 weeks | None required |
| | Avoid high-risk activities for further 3 weeks | 2A (manipulation only)—Family to remove cast at week 4 |
| | Gartland 2A—Manipulation under anesthetic | Teleconference at week 6 |
| | Above elbow removable splint, removed by family at 3 weeks | 2B (wires)—Fracture clinic at week 4—removal of splint and wires |
| | Avoid high-risk activities for further 3 weeks | No high-risk activities for a further 3 weeks |
| | Gartland 2B—Manipulation under anesthetic ± K-wires | Teleconferencing visits to monitor ROM |
| | Above elbow removable splint, removed by family at 3 weeks | Fracture clinic at week 4—removal of splint and wires |
| | Avoid high-risk activities for further 3 weeks | No high-risk activities for a further 3 weeks |
| | Gartland 3—Surgical management with K-wires | Teleconferencing visits to monitor ROM |
| | Document COVID status | |
| Lateral Condyle fracture | Undisplaced—Well-fitting above elbow backslab | Radiograph at week 2 to ensure no displacement and then family to remove cast at week 6 |
| | | Follow-up after COVID pandemic |
| | Displaced—Surgical management with screwa fixation and removable cast or wires | Family to remove cast at week 4 |
| | | Teleconference at week 6 |
| | | Follow-up after COVID pandemic |
| | | If wires—fracture clinic at 6 weeks—removal of splint and wires |
| | | No high-risk activities for a further 3 weeks |
| | | Teleconferencing visits to monitor ROM |
| Monteggia and Galeazzi fractures | Admit for surgical management | Soft cast removal by family at week 6 |
| | Manipulation under anesthetic first line | Teleconference at week 6 |
| | If unsuccessful or requires open reduction—recommend platinga | |
| Single bone forearm fracture | Apply above elbow backslab or soft cast | Cast removal by family at week 4 |
| | | Teleconference at week 6 |
| Both bone forearm fractures | Minimally displaced—Above elbow backslab or soft cast | Family to remove cast at week 5–6 |
| | Displaced—Surgical management or reduction in ED | Teleconference at week 8–10 |
| | Anatomical reduction not necessary | |
| | Apply molded cast with soft gutter | |
| | If >10 years—check radiograph at 2 weeks | |
| | If surgical management then plate fixationsa | |

ED = emergency department; ROM = range of motiona Significant change in usual management in the setting of COVID

(continued)
### Table 1 (continued)

**Recommendations for Orthopaedic Pediatric Trauma Management**

| Injury | Immediate | Follow-up |
|--------|-----------|-----------|
| Grade 1 open forearm fracture | Irrigation and one dose of IV antibiotics Manage as fracture pattern | As per fracture pattern |
| Buckle fracture—Distal radius | Apply removable wrist splint | Family to remove at week 3 No follow-up required |
| Distal radius fracture | Undisplaced—Apply wrist splint | Family to remove in 4–6 weeks No follow-up required |
| Distal radius fracture | Displaced—Apply below elbow molded gutter cast, extend above elbow and reinforce with soft cast | Family to remove cast at week 6 Teleconference at week 8 |
| Potential scaphoid fracture | Apply thumb extension splint | Family to remove splint at week 6 Teleconference at week 8 Review at month 3–4 with radiograph to exclude non-union |
| Knee ligament injuries/Patellar dislocations | Brace for 7–10 days, then commence ROM and directed written physiotherapy program | Teleconference at week 6 MRI at month 3 to 4—late reconstruction |
| Closed femoral shaft fracture | Apply thomas splint and admit <7 years—Hip spica >7 years—Surgical stabilization | Spica removal at week 6 Review operatively fixed fracture at week 8–10 |
| Closed distal femoral/proximal tibial physeal fracture | Admit for surgical stabilization | Dependent on procedure undertaken |
| Intraarticular fracture of the knee | Surgical management if displaced | Dependent on procedure undertaken |
| Toddler fracture | Apply above knee soft cast | Family to remove cast at week 4–6 No follow-up required |
| Potentially unstable distal tibial metaphyseal fracture | Apply a below knee backslab and reinforce with soft cast | Family to remove cast at week 4–6 Teleconference at week 6 Radiograph at week 8 Teleconferencing after radiograph review Family informed when to remove cast guided by radiograph | |
| Tibial shaft fracture >10 years | Minimally displaced—Apply above knee backslab and reinforce with soft cast Consider admission for compartment monitoring depending on mechanism | Displaced—If soft tissues amenable; molded cast or internal fixation If soft tissues not amenable; consider ex-fix and involvement of limb recon team | |
| Salter-Harris 2 fracture—distal tibia | Below knee backslab reinforced with soft cast Non–weight-bearing | Family to remove cast at week 6 Teleconference at week 8 |
| Triplane and tillaux fractures | Undisplaced—Below knee backslab reinforced with soft cast | Family to remove cast at week 6 Teleconference at week 8 |
| Fibular fracture | Apply walking boot Weight-bear as tolerated | Family to remove boot at week 4 Teleconference week 6 |
| Foot fractures (excluding Lis Franc injuries) | Apply walking boot or below-knee backslab reinforced with soft cast Weight-bear as tolerated | No follow-up required |

ED = emergency department; ROM = range of motion

* Significant change in usual management in the setting of COVID-19
Table 2

Recommendations for Orthopaedic Pediatric Elective Management\(^{19,20}\)

| Management | Rationale | Follow-up |
|------------|-----------|-----------|
| Hip disorders | Postpone risk factor screening | Outcomes remain good with bracing treatment started at month 2–4 | Advice on hip healthy swaddling habits Follow-up after COVID pandemic Aim to commence harness at month 2–4 Risk factor screening can restart after the COVID pandemic |
| Developmental dysplasia of the hip (DDH)—Unstable and dislocated hips | | | |
| Slipped capital femoral epiphysis (SCFE)—Including mild-severe stable and unstable | Admit for in-situ pinning Avoid open reduction No prophylactic pinning | Severe/Unstable slip—open reduction will necessitate longer in-patient stay Minimize surgical intervention | Non-weight-bearing for 6 weeks Teleconference at week 6 Further follow-up after COVID pandemic |
| Legg-Calvé-Perthes disease (LCPD)\(^{23,24}\) | <7 years—ROM or bracing treatment >7 with >50% head involved ± extrusion and before fragmentation—Recommend containment with brace | Bracing treatment has good results\(^a\) | Consider teleconference with radiograph to assess stage Follow-up after COVID pandemic to determine whether surgical intervention is necessary |
| Foot disorders | Clubfoot—new | Do not commence ponsetti casting | Casting requires multiple reviews and potential for transmissions | Ponsetti casting started later can be successful Review after COVID pandemic (3 months) Consider teleconferencing with stretching advice |
| | Clubfoot—Residual | Postpone—can wait without likely ill-effect | Each treatment option requires multiple reviews and potential for transmissions | Follow-up after COVID pandemic Consider teleconferencing with stretching advice |
| | Tarsal coalition | Postpone—can wait without likely ill-effect | Each treatment option requires multiple reviews and potential for transmissions | Follow-up after COVID pandemic |
| | Charcot-Marie-Tooth (CMT) | Postpone—can wait without likely ill-effect | Each treatment option requires multiple reviews and potential for transmissions | Follow-up after COVID pandemic |
| Spine\(^{25}\) | Adolescent idiopathic scoliosis (AIS) | Minimize routine follow-up | Minimal ill effect from 2- to 3-month delay | Follow-up after COVID pandemic Ideally 2–3 months |
| | Neuromuscular scoliosis | Minimize routine follow-up | Minimal ill effect from 2 to 3 month delay | Follow-up after COVID pandemic Ideally 2–3 months |
| Limb reconstruction | Minor deficiencies/Defects | Postpone and minimize reviews | Usual follow-up requires multiple reviews and potential for transmissions | Follow-up after COVID pandemic Ideally 3 months Guided-growth procedures likely to increase after this (continued) |

\(^a\) Significant change in usual management in the setting of COVID.
patient cohort because of the substantial comorbidities typically involved. Although a decision to defer patients with these conditions for three months does introduce concerns about long-term impact, the heightened risk of viral transmission between patients, caregivers, and healthcare workers outweighs the risk of treatment deferral for three months in many cases.

Please refer to Table 2 for a summary of recommendations for non-traumatic pediatric orthopaedic condition management.

### DDH

Clinic visit deferrals rightly prompt concerns about late detection/treatment for DDH patients. However, data from the International Hip Dysplasia Registry (IHDR) suggest that harness or brace treatment can still be effective in older infants and that if necessary, closed reduction is successful in 91% of cases in infants up to one year of age. An Ortolani positive hip that remains untreated for three months may eventually require open reduction, but the success rates of both closed

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**Table 2 (continued)**

| Management | Rationale | Follow-up |
|------------|-----------|-----------|
| Postpone and minimize reviews | Usual follow-up requires multiple reviews and potential for transmissions. Rehabilitation will not be available | Follow-up after COVID pandemic. Ideally 3 months. Guided-growth procedures likely to increase after this. |
| Only consider in situations of intractable pain or complications of previous procedures | Surgical success dependent on rehab and surgery — access to rehab will not be available/would result in multiple reviews and potential for transmissions. | Follow-up after COVID pandemic. |
| Postpone | Surgical success dependent on rehab and surgery — access to rehab will not be available/would result in multiple reviews and potential for transmissions. | Follow-up after COVID pandemic. |
| Postpone | Surgery can have excellent outcomes with period of delay | Follow-up after COVID pandemic. Offer prehab program. |
| Admit for surgery — Arthroscopy ± repair | Urgent surgical procedure | Use surgical recommendations. Give written physiotherapy instructions. Teleconference at week 6 — with advice depending on surgery performed. |
| Postpone | Surgery can have excellent outcomes with period of delay | Follow-up after COVID pandemic. Teleconference and implement activity modification measures. |
| Postpone | Surgery can have excellent outcomes with period of delay | Follow-up after COVID pandemic. Offer prehab program. |

* Significant change in usual management in the setting of COVID.
and open reduction even in older infants seen within IHDR can allay some of these concerns.

At present, the main priority is reducing the spread of COVID-19-19. After careful consideration of the risk/benefit ratio of delaying treatment to reduce odds of infection, BCCH is choosing to postpone assessment and treatment of DDH for the next 2 to 4 months. There is evidence to suggest that good outcomes for DDH can still be achieved, either conservative or surgical approaches, beyond 4 months of age. Even when treated by conservative methods, infants require frequent hospital visits throughout their treatment course. Given the emerging evidence showing infants may be vulnerable to COVID-19-19 infection, this would put them at increased risk.

Consideration should be given to provide extensive educational tools and guidance to parents on hip healthy swaddling techniques and hip healthy baby carriers.

Postpandemic Impact Assessment

Once the COVID-19 pandemic has settled, it will be important for surgeons to look back on the results of the way trauma and elective care have been managed during this period. Research will be needed to look at what the negative consequences of these interventions have been. We expect there to be more residual deformity to correct, conditions that might have been addressed more simply sooner might require more extensive procedures, and all surgeons will have to manage their own surgical backlog as best they can according to their available resources.

COVID-19-necessitated practice changes provide the potential for positives lessons that can result in meaningful long-term improvements in care. With a greater emphasis on videoconferencing and teleconferencing, it might be possible to see more routine patient reviews in this manner, freeing up personnel and resources for more involved or complicated new patients. Managing without such frequent imaging might highlight which conditions truly require the routine follow-up radiograph and which do not, ultimately reducing unnecessary exposure to radiation and unnecessary clinic visits.

Teams may also gain unexpected new experience in the management of limited resources. They will likely learn to be more adaptable and resilient, having worked in today’s constantly changing environment. These are valuable skills which are ultimately learned best through experience. Adapting to perform clinical practice during this unusual time of COVID-19 could galvanize the pediatric orthopaedic community both locally and worldwide.

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