Follow us @BoneJointOpen

Freely available online OPEN ACCESS

BJO

GENERAL ORTHOPAEDICS

The orthopaedic waiting list crisis

TWO SIDES OF THE STORY

M. Hampton,
E. Riley,
N. Garneti,
A. Anderson,
K. Wembridge

From Rotherham General Hospital, Rotherham, UK

Aims

Due to widespread cancellations in elective orthopaedic procedures, the number of patients on waiting list for surgery is rising. We aim to determine and quantify if disparities exist between inpatient and day-case orthopaedic waiting list numbers; we also aim to determine if there is a 'hidden burden' that already exists due to reductions in elective secondary care referrals.

Methods

Retrospective data were collected between 1 April 2020 and 31 December 2020 and compared with the same nine-month period the previous year. Data collected included surgeries performed (day-case vs inpatient), number of patients currently on the orthopaedic waiting list (day-case vs inpatient), and number of new patient referrals from primary care and therapy services.

Results

There was a 52.8% reduction in our elective surgical workload in 2020. The majority of surgeries performed in 2020 were day case surgeries (739; 86.6%) with 47.2% of these performed in the independent sector on a 'lift and shift' service. The total number of patients on our waiting lists has risen by 30.1% in just 12 months. As we have been restricted in performing inpatient surgery, the inpatient waiting lists have risen by 73.2%, compared to a 1.6% rise in our day-case waiting list. New patient referral from primary care and therapy services have reduced from 3,357 in 2019 to 1,722 in 2020 (49.7% reduction).

Conclusion

This study further exposes the increasing number of patients on orthopaedic waiting lists. We observed disparities between inpatient and day-case waiting lists, with dramatic increases in the number of inpatients on the waiting lists. The number of new patient referrals has decreased, and we predict an influx of referrals as the pandemic eases, further adding to the pressure on inpatient waiting lists. Robust planning and allocation of adequate resources is essential to deal with this backlog.

Cite this article: *Bone Jt Open* **2021;2-7:530–534.**

Keywords: COVID-19, Waiting lists, Inpatient, Daycase, Hidden burden

Introduction

The World Health Organization declared the outbreak of COVID-19 a global pandemic on 11 March 2020. Despite long periods of strict social distancing measures with multiple local and national lockdowns, new cases and hospital admissions have continued to rise in the UK. This has had a devastating effect on the NHS, with unprecedented pressures on both primary and secondary care. In many hospitals, all elective operations and outpatient clinics were completely shut down for a period of time; this reduced footfall in hospitals and minimized the spread of COVID-19, allowing for staff sickness and deployment to understaffed and overwhelmed departments such as intensive care units and emergency departments.[1] While there has been a gradual resumption in orthopaedic services, we are not yet back to anything approaching full capacity and that will not be the case for some time to come.

Correspondence should be sent to Matthew Hampton; email: matthew.hampton@nhs.net

doi: 10.1302/2633-1462.27.BJO-2021-0044.R1

Bone Jt Open 2021;2-7:530–534.

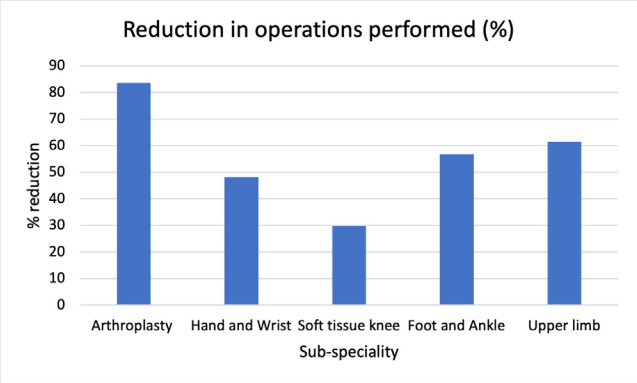

Fig. 1

The reduction of operations performed for each sub-specialty between 2019 and 2020.

The majority of elective operations requiring admission have been postponed while we await an increase in surgical bed capacity as the number of COVID-19 cases occupying hospital beds slowly decreases.[2] While inpatient surgery has been temporarily postponed, hospitals have been able to perform daycase surgeries at a reduced capacity. The national contract between the NHS and independent sector hospitals has also allowed day-case surgery to be performed as an NHS 'lift and shift' service during the pandemic.

As elective outpatient clinic activity resumed, it was perceived that the number of new patient referrals from primary care and physiotherapy services would increase. However, there has been an awareness that the number of referrals has in fact decreased in comparison to previous years. The exact extent of this reduction is currently unknown and raises concerns that the actual number of patients requiring orthopaedic surgery is actually much higher than the current waiting lists would suggest.

The aim of this study is to gain a greater understanding about the current waiting list crisis by reviewing the number of surgeries performed, waiting list lengths, and new patient primary care referrals into secondary care during the COVID-19 pandemic. We aim to determine if there are disparities between inpatient and day-case waiting lists. We also aim to quantify the reduction in outpatient referrals in an attempt to comprehend the hidden waiting list burden.

Methods

The study was registered with the hospital research and development department; formal ethical approval was not required. Data for the study were collected retrospectively at a single District General Hospital within the UK. Consecutive data were collected using electronic records, operative theatre lists, and hospital coding databases. Data on surgeries performed (day-case vs inpatient), number of patients currently on the orthopaedic waiting list (day-case vs inpatient), and number of new patient referrals from primary care and therapy services were collected between the corresponding time periods.

Data were collected between 1 April 2020 and 31 December 2020 and compared with the same nine-month period the previous year (1 April 2019 to 31 December 2019). Data were only collected on planned elective operations; any trauma or emergency operations were excluded from the analysis. We also excluded trauma patients referred to fracture clinic and referrals from the emergency department to outpatient clinics, leaving purely elective orthopaedic referrals only.

All NHS patients treated under the care of the NHS foundation trust were included. This included all surgery performed on the NHS trust site as well as the NHS 'lift and shift' work performed within the independent sector during the pandemic. A direct comparison between datasets was made to determine the changes in workload and waiting list numbers seen during the pandemic.

Table I. Table showing the number of operations performed during the corresponding time periods.

Time period	Inpatient	Daycase	Total
April 2019 to Dec 2019	569	1,237	1,806
April 2020 to Dec 2020	114	739 (349 IS)	853
Reduction, %	80	40.3	52.8

IS, independent sector.

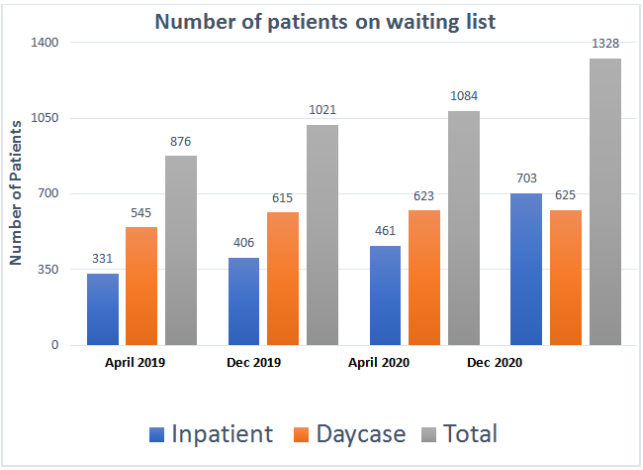

Fig. 2

The number of patients on waiting lists at different timepoints.

Results

Operations performed. Between April 2019 and December 2019 there were 1,806 elective orthopaedic operations performed. Of these, 1,237 were day-case procedures (68.5%) and 569 required inpatient admission (31.5%). All operations performed in this

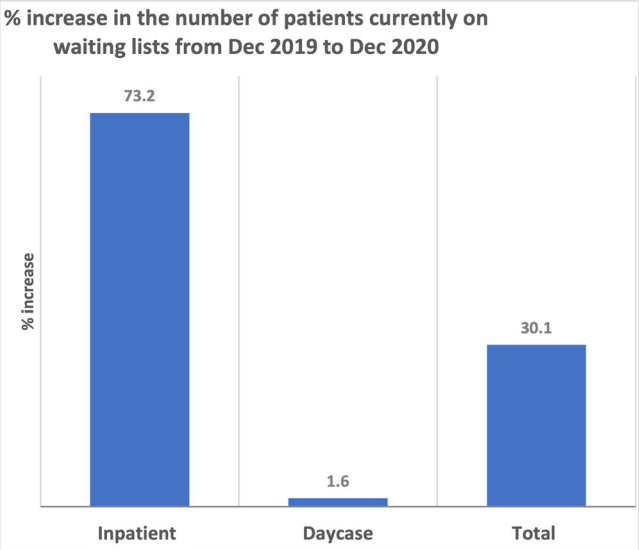

Fig. 3

Differences seen between waiting lists. There was a 73.2% increase in inpatient waiting lists, compared to a 1.6% increase in day-case waiting lists.

time period were carried out at the treating NHS trust hospital. Between April 2020 and December 2020 there were 853 elective orthopaedic operations performed. Of these, 739 were day-case procedures (86.6%) while only 114 were procedures requiring inpatient admission (13.4%). Of the 739 day-case procedures performed, 349 were carried out in the local independent sector hospitals on a 'lift and shift' lists (47.2%). All elective inpatient work in 2020 was performed between August and October.

In comparison to the same period in 2019, we saw a 52.8% reduction in our elective surgical workload in 2020, with an 80% reduction in inpatient procedures and a 40.3% reduction in day-case procedures (Table I). When comparing the reduction in operations performed between different sub-specialties the biggest reduction was seen in the number of hip and knee arthroplasties performed (Figure 1). There was an 83.7% reduction in the number of arthoplasties performed between the two periods, this can be compared to a 29.8% reduction in day-case soft-tissue knee procedures.

Elective orthopaedic waiting list. Dramatic changes in the total number of patients on elective orthopaedic waiting lists were observed. In December 2019 we had 1,021 patients waiting for surgery; 406 were awaiting inpatient surgery (39.8%), while 615 patients were awaiting day-case surgery (60.2%). By December 2020, we had 1,328 patients on the waiting list. Of these, 703 were awaiting inpatient surgery (52.9%), with 625 awaiting day-case surgery (47.1%) (Figure 2).

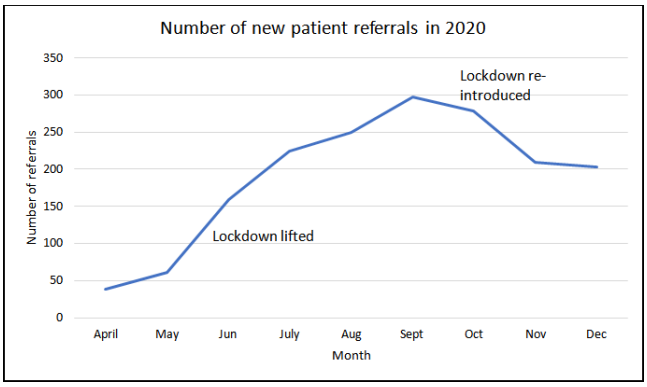

Fig. 4

Graph showing the correlation between new patient referrals and the national lockdown measures.

This equates to a 30.1% increase in the total number of patients on the waiting list in just 12 months; interestingly the observed increase was found to be much more problematic in those patients awaiting inpatient surgery with a 73.2% increase in inpatient waiting lists compared to a 1.6% increase in day-case surgery waiting lists (Figure 3).

New patient referrals to orthopaedic outpatient clinics. There was a substantial reduction in the number of new patient referrals to the elective orthopaedic clinic. In 2019, 3,357 new patients were reviewed; this was reduced to 1,722 in the corresponding period in 2020. This is a 49.7% reduction in new patients seen.

There was a reduction in the number patients seen in all months of 2020, but this was most apparent in April to July, with the number of referrals again decreasing from September to December of 2020 (Table II).

There was no difference seen in the type of referrals received between the two time periods, simply a reduction in the total number. The number of referrals received directly correlated with the timings of both national and regional restrictions on activity (Figure 4).

Discussion

This study further highlights the growing concerns about the ever-increasing elective orthopaedic waiting lists, as a consequence of the COVID-19 pandemic. We saw a 30.1% increase in the number of patients on our waiting lists in a 12-month period. We observed significant differences between the changes in inpatient and day-case waiting lists, with a worrying 73.2% increase in the number of patients waiting for inpatient surgery. It is also of concern that there is a clear "hidden burden" yet to present to our hospital services, with a 49.7% reduction in new patient referrals over the course of the pandemic to date.

Table II. Table showing the number of new patient referrals from primary care and therapy services. There was a 49.7% total reduction, the reductions in referrals corresponded with the local and national lockdowns.

Year	April	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Total
2019/2020 referrals	369	428	402	434	360	363	360	330	311	3,357
2020/2021 referrals	38	61	159	225	249	298	279	210	203	1,722

Throughout the pandemic, the NHS has faced many challenges; multiple surging waves of new infections has prevented any sense of normality in NHS hospitals within the UK. As the number of patients in hospital with COVID-19 falls, the NHS is going to face new challenges in the wake of the pandemic. For orthopaedics, this will be reflected by the escalating waiting list times and associated pressures. We observed an 80% reduction in inpatient operations performed in 2020; this is consistent with global data collected from the COVIDSurg collaborative showing orthopaedic surgery to have the largest cancellation rate compared to other specialties, with 82% of all cases being cancelled.[3]

The independent sector has been invaluable in helping reduce the burden on the NHS during the pandemic. We were able to perform 349 (47.2%) of our day-case procedures within the independent sector. This, along with still having capacity to use a day surgery list at our NHS Trust hospital, has meant that the day-case inpatient list has only increased by 1.6% over the course of the pandemic. The disparities between the ability to perform day-case surgery over inpatient surgery is apparent. We saw an 83.7% reduction in the number of hip and knee arthroplasties performed during the pandemic. This has led to the majority of orthopaedic patients on inpatient waiting lists awaiting hip and knee arthroplasty surgery.

A cross-sectional analysis by Scott et al[4] highlighted the significant morbidity patients experience while awaiting arthroplasty, with 19% of patients awaiting total hip arthroplasty in a health state 'worse than death'. This worrying statement is compounded by a study by Morris et al,[5] which showed that 71.2% of patients who have been delayed surgery during the pandemic have experienced a further deterioration of their health while waiting. Clement et al[6] showed that the number of patients 'worse than death' while awaiting hip and knee arthroplasty surgery has almost doubled during the COVID-19 pandemic.

We identified a 49.7% reduction in new patient referrals to our orthopaedic clinics. This alarming reduction is likely to be multifactorial. The national lockdowns and concerns about virus transmission may have made patients anxious about attending hospital appointments.[7] The number of patients being seen in primary care has reduced, leading to a reduction in secondary care referrals[8] and the restrictions in face-to-face therapy sessions has led to a decrease in referrals from therapy services.[9] Demand and requirement for hip and knee arthroplasty in the UK shows a predictable yearly increase.[10,11] While it is possible that the pandemic has made patients permanently reluctant to pursue arthroplasty, it is more likely that we will experience an influx of new patient referrals when the pandemic eases. This will further increase the already excessive number of patients on waiting lists across the country. We saw a direct correlation between the number of referrals received and the changes in national lockdown measures. We anticipate that as restrictions ease in 2021 we will experience increasing numbers of referrals into orthopaedic departments across the country. Unless capacity to perform operations increases at the same rate, we should anticipate the number of patients on waiting lists to increase further.

As the resumption of elective services progresses slowly, with anticipation of increased demand for surgery to come, the wait for inpatient surgery is expected to grow. It has been estimated that the number of patients on elective orthopaedic waiting lists is three times the pre-COVID-19 level.[12] Aside from the devastating effects this has on our patients' wellbeing, there is also a significant cost implication to the NHS.[12]

Robust plans need to be in place to prioritize patients on inpatient waiting lists.[2,13,14] Before we can make any attempts to clear the backlog, we require inpatient bed capacity. While this may not happen quickly, units could consider a move toward day-case hip and knee arthroplasty. Multiple studies have now shown this to be safe and effective when using careful patient selection with reproducible pathways.[15-17] It is also encouraging that the rates of postoperative COVID-19 in patients undergoing hip and knee arthroplasties does not appear to be higher than the prevalence within the general population.[18,19] The perceived risk of transmission to patients should therefore not be a reason to further delay patients awaiting arthroplasty.

This study does have limitations; the retrospective nature of the study leads to potential difficulties with data collection. We attempted to minimize the possibility of missed data by cross-checking between both hospital coding data and formal operative list, therefore we believe our dataset to be complete and accurate.

This study explores trends seen in a single hospital within the UK. However, given comparable measures were put in place on a national level, we anticipate similar trends will have been experienced in most orthopaedic departments across the country. The pressures on the NHS and the reduction in elective services is a well-recognized national problem in all regions of the country. Although the absolute numbers of surgeries performed are likely to vary, we suspect the majority of units will have observed similar findings as presented in this study. Unfortunately, we also anticipate the reduction of services will progress slowly nationally and the demand for our services will rise quickly.

This study has exposed two sides to the orthopaedic waiting list crisis: a manageable day-case waiting list and an inpatient list that is spiraling out of control. The orthopaedic inpatient waiting list has risen by 73.2% in only 12 months. This is largely due to the lack of hospital beds available for admission post-surgery. The number of new patient referrals is down by 49.7% and we anticipate a large influx of new patient referrals when the pandemic eases, further increasing the number of patients on waiting lists. Provision needs to be in place to deal with this backlog; day-case hip and knee arthroplasty in selected patients could be a reliable solution while bed capacity remains low.

Take home message

- The number of patients on inpatient waiting lists has dramatically increased
- New patient referrals have reduced by 49.7% and we need to be prepared for the hidden burden of referrals to come.
- Robust plans need to be in place to deal with the waiting list crisis, and same-day surgery could be a solution to the problem.

Twitter

Follow M. Hampton @hampton_ortho
Follow E. Riley @ellarileyy
Follow K. Wembridge @KevinWembridge

References

1. **Oussedik S**, **Zagra L**, **Shin GY**, **D'Apolito R**, **Haddad FS**. Reinstating elective orthopaedic surgery in the age of COVID-19. *Bone Joint J.* 2020;102-B(7):807–810.
2. **Wallace CN**, **Kontoghiorghe C**, **Kayani B**, **Chang JS**, **Haddad FS**, **Haddad FS**. The impact of COVID-19 on trauma and orthopaedic surgery in the United Kingdom. *Bone Jt Open.* 2020;1(7):420–423.
3. **COVIDSurg Collaborative**. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *Br J Surg.* 2020;107(11):1440–1449.
4. **Scott CEH**, **MacDonald DJ**, **Howie CR**. "Worse than death" and waiting for a joint arthroplasty. *Bone Joint J.* 2019;101-B(8):941–950.
5. **Morris JA**, **Super J**, **Huntley D**, **Ashdown T**, **Harland W**, **Anakwe R**. Waiting lists for symptomatic joint arthritis are not benign: prioritizing patients for surgery in the setting of COVID-19. *Bone Jt Open.* 2020;1(8):508–511.
6. **Clement ND**, **Scott CEH**, **Murray JRD**, **Howie CR**, **Deehan DJ**, **IMPACT-Restart Collaboration**. The number of patients "worse than death" while waiting for a hip or knee arthroplasty has nearly doubled during the COVID-19 pandemic. *Bone Joint J.* 2021;103-B(4):672–680.
7. **Dimelow J**, **Lowe D**, **Rogers SN**. Balancing patients' fears of recurrence and fears of COVID-19 when considering their preference for review consultations. *Eur Arch Otorhinolaryngol.* Epub February 2021.
8. **Majeed A**, **Maile EJ**, **Bindman AB**. The primary care response to COVID-19 in England's National Health Service. *J R Soc Med.* 2020;113(6):208–210.
9. **Keeney T**. Physical therapy in the COVID-19 pandemic: Forging a paradigm shift for rehabilitation in acute care. *Phys Ther.* 2020;100(8):1265–1267.
10. **No authors listed**. 16th Annual Report. National Joint registry of England, Wales, and Northern Ireland. 2019. https://reports.njrcentre.org.uk/ (date last accessed 25 June 2021).
11. **No authors listed**. NHS England, consultant-led referral to treatment waiting times. 2020. https://www.england.nhs.uk/statistics/statistical-work-areas/rtt-waiting-times/(date last accessed 1 September 2020
12. **Oussedik S**, **MacIntyre S**, **Gray J**, **McMeekin P**, **Clement ND**, **Deehan DJ**. Elective orthopaedic cancellations due to the COVID-19 pandemic: where are we now, and where are we heading. *Bone Jt Open.* 2021;2(2):103–110.
13. **Parvizi J**, **Gehrke T**. Krueger Ca, et al.Resuming elective orthopaedic surgery during the COVID-19 pandemic: guidelines developed by the International consensus group (ICM. *J Bone Joint Surg Am.* 2020;102-A(14):1205–1212.
14. **Mouton C**, **Hirschmann MT**, **Ollivier M**, **Seil R**, **Menetrey J**. COVID-19 - ESSKA guidelines and recommendations for resuming elective surgery. *J Exp Orthop.* 2020;7(1):28):28.
15. **Coenders MJ**, **Mathijssen NMC**, **Vehmeijer SBW**. Three and a half years' experience with outpatient total hip arthroplasty. *Bone Joint J.* 2020;102-B(1):82–89.
16. **Thompson JW**, **Wignadasan W**, **Ibrahim M**, **et al**. Day-case total hip arthroplasty: a literature review and development of a hospital pathway. *Bone Jt Open.* 2021;2(2):93–102.
17. **Bemelmans YFL**, **Keulen MHF**, **Heymans M**, **van Haaren EH**, **Boonen B**, **Schotanus MGM**. Safety and efficacy of outpatient hip and knee arthroplasty: a systematic review with meta-analysis. *Arch Orthop Trauma Surg.* Epub February 15, 2021.
18. **Kader N**, **Clement ND**, **Patel VR**, **Caplan N**, **Banaszkiewicz P**, **Kader D**. The theoretical mortality risk of an asymptomatic patient with a negative SARS-CoV-2 test developing COVID-19 following elective orthopaedic surgery. *Bone Joint J.* 2020;102-B(9):1256–1260.
19. **Clement ND**, **Hall AJ**, **Kader N**, **et al**. The rate of COVID-19 and associated mortality after elective hip and knee arthroplasty prior to cessation of elective services in UK. *Bone Joint J.* 2021;103-B(4):681–688.

Author information:
- M. Hampton, MBChB, MRCS, ST7 Specialist Orthopaedic Registrar
- N. Garneti, MSc (Tr), MRCS, MCh (Orth), FRCS (Tr&Orth), Consultant Orthopaedic Surgeon
- A. Anderson, MBBS, BCh, FRCS (Tr&Orth), Consultant Orthopaedic Surgeon
- K. Wembridge, MBChB, FRCS, FRCS (Tr&Orth), Consultant Orthopaedic Surgeon

Rotherham District General Hospital, Rotherham NHS Foundation Trust, Rotherham, UK.
- E. Riley, Medical Student, University of Sheffield Medical School, Sheffield, UK.

Author contributions:
- M. Hampton: Conceptualization, Investigation, Formal analysis, Writing - original draft.
- E. Riley: Investigation, Formal analysis, Writing - review & editing.
- N. Garneti: Supervision, Writing - review & editing.
- A. Anderson: Supervision, Writing - review & editing.
- K. Wembridge: Supervision, Writing - review & editing.

Funding statement:
- No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

Ethical review statement:
- Ethical approval was not required for this study.