

# **NATIONAL OFFICE OF CLINICAL AUDIT (NOCA)**

## **COVID-19 REPORT 1.0: SERVICE IMPACT FROM COVID-19: ANALYSIS BASED ON IRISH HIP FRACTURE DATABASE JUNE 2019-MAY 2020**

<b>Title</b>	<b>COVID-19 REPORT 1.0: SERVICE IMPACT FROM COVID-19: ANALYSIS BASED ON IRISH HIP FRACTURE DATABASE JUNE 2019-MAY 2020</b>
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Recipients should acknowledge the National Office of Clinical Audit and the HealthCare Pricing Office as the source of the data.

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## GLOSSARY

Explanation of acronyms, abbreviations and other key terms used in this report.

<b>BPT</b>	Best Practice Tariff
<b>HPO</b>	Healthcare Pricing Office
<b>HIPE</b>	Hospital In-Patient Enquiry
<b>IHFD</b>	Irish Hip Fracture Database
<b>IHFS</b>	Irish Hip Fracture Standards
<b>LOS</b>	Length of stay
<b>ED</b>	Emergency Department
<b>NOCA</b>	National Office of Clinical Audit
<b>NPHE</b>	National Public Health Emergency Team
<b>HSCP</b>	Health and Social Care Professional
<b>CI</b>	Confidence Interval (at the 95% level)

## **CHAPTER 1: INTRODUCTION**

In December 2019, a novel strain of coronavirus disease commonly known as COVID-19, was identified in the city of Wuhan in the Hubei province of China. This SARS (severe acute respiratory syndrome)-CoV-2 virus has spread globally and continues to cause huge disruption and strain on healthcare services, societal life and the economies all over the world.

On the 27th January 2020, the National Public Health Emergency Team (NPHE) for COVID-19 was created to co-ordinate the Irish response to the pandemic. Following this the Coronavirus Expert Advisory Group, a subgroup of NPHE met for the first time in Dublin on the 5th February 2020. The first confirmed case in Ireland was identified on the 29th February 2020. Containment measures were put in place initially. In early March a number of other cases were diagnosed with the first fatality recorded on the 11th March 2020. On the 12th March 2020 Taoiseach Leo Varadkar announced the closure of all schools, colleges and childcare facilities until 29th March. This followed the announcement by the World Health Organization on the previous day that the outbreak was a pandemic. By the 27th March 2020 the Taoiseach announced a national stay-at-home order. This was extended on the 10th April until 5th May 2020. By the 1st May 2020 there were 20,833 cases and 1,265 deaths leading the Taoiseach to announce a further extension of restrictions until 18th May 2020. On the 15th May 2020 the Government of Ireland confirmed that phase one of easing the COVID-19 restrictions would begin on 18th May.

During this period of extreme societal and economic strain, the healthcare system was under huge stress and turbulence in preparation for a surge of severely unwell patients with COVID-19. The requirements undertaken by the healthcare system in preparation for this surge meant most elective and routine work stopped abruptly. Work was undertaken to create capacity in the acute hospitals and in particular in the intensive care units around Ireland. The preparedness of the healthcare service enabled the hospitals to cope with the influx of COVID-19 admissions and prevent the health service becoming acutely overwhelmed as was seen in other countries such as Italy and Spain.

During this time, patients with other illnesses continued to present to the hospitals. Patients with trauma especially those with fragility fractures such as hip fractures seen typically in older persons, continued to present, albeit in slightly smaller volumes than normal. This presented a new challenge to the well-established pathways of care for such patients. Emergency departments (EDs) were split into COVID-19 and Non-COVID-19 EDs. Patients were screened for COVID-19 and isolated if they were admitted from a care facility such as a nursing home. Theatres developed processes to manage the additional infection risk between cases reducing theatre throughput.

### **HIP FRACTURES**

Hip fractures continue to be one of the most serious and costly injuries suffered by older people globally. Hip fracture care takes the patient through a complex clinical pathway involving a wide range of specialties. It is a surrogate marker for care of the older patient in our acute hospitals and indicates how well the trauma service is functioning. In Ireland, it is estimated that their acute

hospital management alone costs €45 million annually (NOCA, 2019). As life expectancy continues to improve, the number of hip fractures will increase (Kelly et al., 2018), so the need for adequate acute hospital care resources, rehabilitation services and community resources will also increase.

The Irish Hip Fracture Database (IHFD) is a clinically led, web-based audit established since 2013 under the governance of the National Office of Clinical Audit. The overarching aim of the audit is to use data to improve the care provided to older people who sustain a hip fracture. Data is collected through the Hospital In-Patient Enquiry (HIPE) portal which is supported by the Healthcare Pricing Office (HPO). The IHFD data merges with the HIPE data and each episode is only completed upon discharge. International evidence has shown that the synergy of care standards, audit and feedback, drive measurable improvements in hip fracture outcomes for patients (National Hip Fracture Database, 2015). Seven standards of care known as the Irish Hip Fracture Standards (IHFS) are audited in the IHFD (Figure 1).

This COVID-19 report based on IHFD data describes how care to hip fracture patients, was delivered during a very challenging period in our health service.

### IRISH HIP FRACTURE STANDARDS (IHFS)

The Irish Hip Fracture Database measures key clinical steps in the care of hip fracture patients.

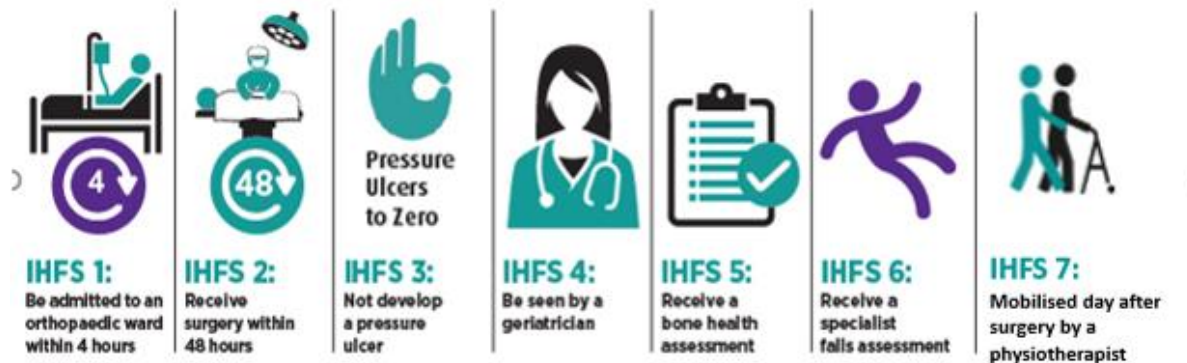


Figure 1: Irish Hip Fracture Standards (IHFS)

## CHAPTER 2: METHODS

The Irish Hip Fracture Database (IHFD) and the Hospital In-Patient Enquiry (HIPE) provided data for this report. An extract of data was obtained from the Hospital In-Patient Enquiry (HIPE) and merged with IHFD data collected via an add-on portal of HIPE (this portal is managed by the HPO). The anonymised data are routinely sent to NOCA from the HPO on a quarterly basis. Data for this report were extracted on 8th October 2020 and was the most recent extract received by NOCA. The extract was based on patients discharged from hospital between 1st January and 30th June 2020. IHFD 2019 data for the period 1<sup>st</sup> June -31<sup>st</sup> December 2019 was merged with the IHFD/HIPE extract to form the final dataset. The datafile includes a number of patients who were brought to the National Orthopaedic Hospital, Cappagh. During Wave 1 of the pandemic ambulatory orthopaedic patients and some hip fracture patients were diverted to elective orthopaedic hospitals and a small number were brought to private hospitals. As the National Orthopaedic Hospital, Cappagh was on HIPE the data was collected on these patients. Data for the hip fracture patients treated in a private hospital between 1st March and 31st May 2020, has not been included in this report.

For this report, key case-mix and outcome variables were examined over time. The time variable used was the date of admission rather than the date of discharge. Therefore, patients admitted to hospital between 1st June 2019 and 31st May 2020 were reported on. As the average length of stay (LOS) for hip fracture patients is around 19 days (NOCA, 2020), we can be reasonably confident that most hip fracture patients admitted up until 31st May 2020 have been included in the IHFD/HIPE extract.

### COVERAGE

Data coverage was calculated for the reporting period as follows:

IHFD portal cases  $\geq$  60 years with ICD 10 codes (S72.00-S72.2)

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HIPE cases  $\geq$  60 years with ICD 10 codes (S72.00-S72.2)

Data coverage for IHFD for this period was 98%.

### INCLUSION CRITERIA

Analysis is based on records as captured on the Hospital In-Patient Enquiry (HIPE)/ IHFD Portal software. It includes cases that were:

- (i) discharged between 1 June 2019 and 30<sup>th</sup> June 2020, inclusive
- (ii) diagnosed, on HIPE, with either a hip fracture due to injury or with a specified type of fracture, other than periprosthetic, on IHFD add-on screens
- (iii) aged 60 years or over.

### EXCLUSION CRITERIA



(i) Patients aged 59 years or younger are excluded.

### **COVID DATA PERIOD**

For the purpose of this analysis, we define the pre-COVID-19 period as 1st June 2019 to 29th February 2020 and the Wave 1 of COVID-19 period from 1st March 2020 to 31st May 2020.

### **COVID DEFINITION**

Hip fracture cases were defined as having a positive COVID-19 status if they had a secondary ICD-10-AM code recorded as:

- I. U07.1: Coronavirus identified, confirmed by laboratory testing
- II. B34.2: Coronavirus infection unspecified site
- III. B97.2 Coronavirus as the cause of diseases classified to other chapters to identify the infectious agent

### **DATA ANALYSIS**

Data analysis was conducted using STATA and SPSS. The analysis focused on identifying differences between the pre-COVID-19 period and the Wave 1 period in terms of monthly number of admissions, case-mix of admitted patients, and standards of care. Graphical presentations show the monthly data and mean values for the two periods. Where appropriate, statistical tests assessed the statistical difference between the two periods. Chi-squared statistical tests (for binary and categorical variables) were used to determine whether there was a statistical difference in the distribution of cases between the pre-COVID-19 and COVID-19 (Wave 1) periods for key outcome and process variables. As measure of statistical uncertainty 95% confidence intervals were presented for means of numerical variables as number of cases and length of stay. Where the observed p-value was less than or equal to 0.05 this was considered to indicate statistical significance.

### **DATA LIMITATIONS**

Due to the evolving nature of this pandemic, the analyses in this report should be interpreted with the following caveats:

- I. Testing for COVID-19 is new and evolving
- II. HIPE coding for COVID-19 is guided by classification releases from WHO and IPHA. Further guidance is awaited
- III. Timelines for HIPE coding of COVID-19 have been expedited
- IV. The HIPE dataset for this report has been created much earlier than normal i.e. without the usual validation processes in order to facilitate rapid learning from this evolving situation and therefore the HIPE dataset is still subject to change until the file is closed in 2021

- V. In March 2020, the Irish Government approved a proposal from the Department of Health to allow for a formal partnership with private hospitals which would make their facilities and capacity available to meet the challenges of the COVID-19 pandemic. This made 2,200 beds and approximately 8,000 staff available to the public health service (HSE, 2020). A small number of public hip fracture patients may have been treated in a private hospital between 1<sup>st</sup> March and 31<sup>st</sup> May 2020, their information has not been included in this report.

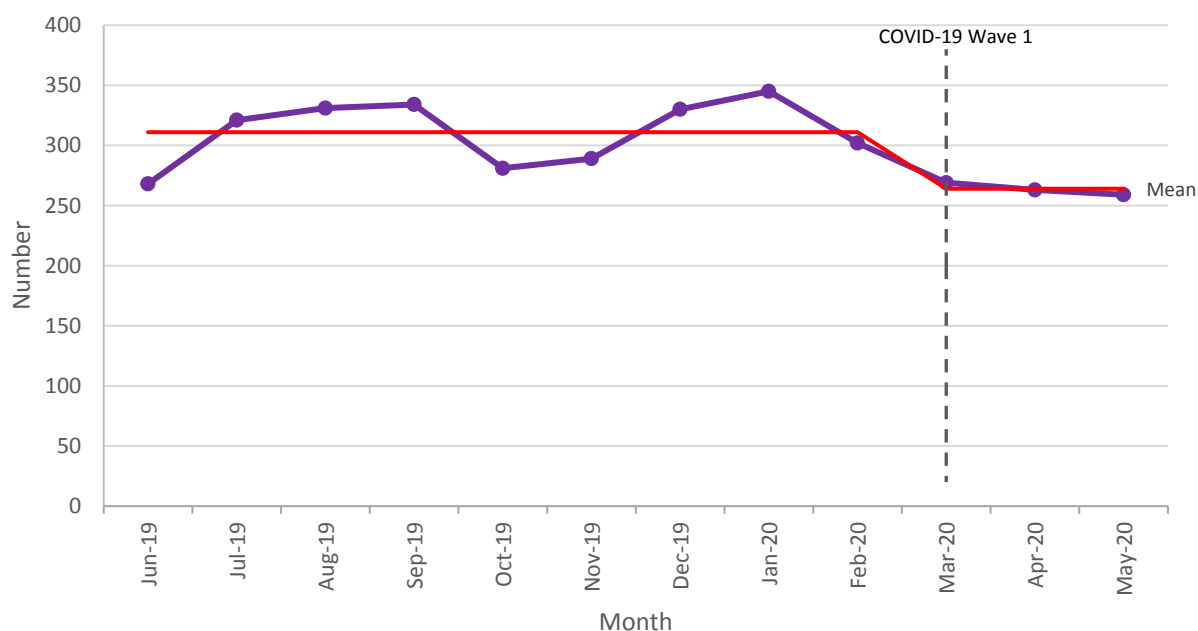
#### **SERVICES SURVEY**

From a recent organisational audit conducted by the IHFD during May 2020, additional service's survey questions related to COVID-19 were included. The questions related to COVID-19 were part of IMPACT an International Multicentre Project Auditing COVID-19 in Trauma & Orthopaedics. These descriptive data were compiled to provide an impression of the general impact of COVID-19 on the running of the trauma services in the hospitals and changes required to sustain the care for patients with hip fractures.

**CHAPTER 3: COVID-19 DATA**

**HIP FRACTURE ACTIVITY**

The activity in terms of number of patients admitted with hip fracture per month is illustrated in Figure 2. There was a statistically significant difference in the mean monthly number of hip fracture admissions, from an average of 311 admissions per month pre-COVID-19 to an average of 264 admissions per month during COVID-19. This represents a reduction of 15% (47 fewer admissions per month;  $p < 0.001$ ; 95% CI: 26.2-68.9) and a cumulated reduction of 141 admissions over the three-month COVID-19 period (March 2020 – May 2020).



**Figure 2: Monthly Hip Fracture activity based on admission date (June 2019-May 2020)**

## SEX AND AGE

Table 1 and Table 2 show the number and percentage of patients admitted to hospital during the two time periods, pre-COVID-19 (June 2019-February 2020) and COVID-19 Wave 1 (March 2020-May 2020), broken down by sex and age group. The mean age of patients with hip fracture was 80 years. Overall, there was no statistically significant difference in the sex ( $p=0.26$ ) or age ( $p=0.34$ ) of hip fracture patients in the two time periods. Sixty-eight percent of patients with hip fracture were female and 58% were aged 80 years or more during both time periods.

**Table 1: Sex of hip fracture patients in the pre-COVID-19 (June 2019-February 2020) and COVID-19 (March 2020 –May 2020) time periods**

SEX	PRE-COVID		COVID		TOTAL	
	n	%	n	%	n	%
Male	865	31%	261	33%	1126	31%
Female	1936	69%	530	67%	2466	69%
Total	2801	100%	791	100%	3592	100%

**Table 2: Age of hip fracture patients in the pre-COVID-19 (June 2019-February 2020) and COVID-19 (March 2020 –May 2020) time periods**

AGE	PRE-COVID		COVID		TOTAL	
	n	%	n	%	n	%
60-69 years	371	13%	104	13%	475	13%
70-79 years	846	30%	218	28%	1064	30%
80-89 years	1159	41%	332	42%	1491	42%
>90 years	425	15%	137	17%	562	16%
Total	2801	100%	791	100%	3592	100%

*(Note: percentages may not sum to 100% due to rounding)*

### ADMISSION SOURCE

Table 3 shows where hip fracture patients were admitted from during the two time periods. There was a statistically significant difference in admission sources between the two periods ( $p < 0.001$ ). There were fewer admissions from home and more admissions from nursing home and other hospitals during the COVID-19 Wave 1 period.

**Table 3: Admission Source in the pre-COVID-19 (June 2019-February 2020) and COVID-19 (March 2020 –May 2020) time periods**

TRANSFER FROM	PRE-COVID		COVID		TOTAL	
	n	%	n	%	N	%
Home	2429	87%	643	81%	3072	86%
Transfer from nursing home/convalescent care	256	9%	97	12%	353	10%
Transfer from hospital	110	4%	48	6%	158	4%
Other	6	0%	3	0%	9	0%
<b>Total</b>	<b>2801</b>	<b>100%</b>	<b>791</b>	<b>100%</b>	<b>3592</b>	<b>100%</b>

*(Note: percentages may not sum to 100% due to rounding)*

#### AMERICAN SOCIETY OF ANAESTHESIOLOGISTS GRADE AND PRE-FRACTURE MOBILITY

Table 4 displays the ASA grade of hip fracture patients admitted to hospital (using the categories outlined in Table 5), while Table 6 illustrates the pre-fracture functional mobility. There was no statistically significant difference ( $p=0.07$ ) in ASA grade between the two time periods. There was however, a statistically significant ( $p=0.003$ ) higher proportion of patients recorded with a low level of functional mobility in the COVID-19 period relative to the pre-COVID-19 period. Functional mobility is an indicator of frailty and these data may indicate that the cases admitted during COVID-19 Wave 1 were in poorer health than those admitted in the pre-COVID-19 period. A small number of these patients ( $n=45$ ) were also diagnosed with the coronavirus during this period (see page 25 for further information about this cohort) which may explain the increase in ASA grade and the increase in the low level of functional mobility between the two time periods.

**Table 4: ASA grade for Hip fracture patients admitted during the pre-COVID-19 (June 2019-February 2020) and COVID-19 (March 2020 –May 2020) time periods**

ASA GRADE	PRE-COVID		COVID		TOTAL	
	n	%	n	%	n	%
ASA grade 1 - 2	976	38%	266	37%	1242	38%
ASA grade 3	1387	54%	418	58%	1805	55%
ASA grade 4 - 5	204	8%	42	6%	246	7%
<b>Total</b>	<b>2567</b>	<b>100%</b>	<b>726</b>	<b>100%</b>	<b>3293</b>	<b>100%</b>

(Note: ASA Grades 1&2 were combined; ASA Grades 4&5 were combined / ASA grade was not recorded for  $n=299$  cases)

**Table 5: ASA physical status classification**

ASA grade	Description
Grade 1	Healthy person
Grade 2	Mild systemic disease
Grade 3	Severe systemic disease
Grade 4	Severe systemic disease that is a constant threat to life
Grade 5	A moribund person who is not expected to survive without the operation

(Note: percentages may not sum to 100% due to rounding)

**Table 6: Pre-Fracture Mobility for Hip fracture patients admitted during the pre-COVID-19 (June 2019-February 2020) and COVID-19 (March 2020 –May 2020) time periods**

FUNCTIONAL MOBILITY	PRE-COVID		COVID		TOTAL	
	n	%	n	%	n	%
Low Functional Mobility	1319	50%	397	56%	1716	51%
High Functional Mobility	1335	50%	311	44%	1646	49%
<b>Total</b>	2654	100%	708	100%	3362	100%

*(Note: Pre-Fracture Mobility score ASA was not recorded for n=230 cases)*

*(Note: percentages may not sum to 100% due to rounding)*

### IRISH HIP FRACTURE STANDARDS

The Irish Hip Fracture Standards (IHFS) measure the pathway of patient care, from admission to ED, timing to surgery and key interventions by nursing, physiotherapy and geriatricians. The standards are evidence-based measures of care that support better patient outcomes.

Figure 3 shows the performance in all seven Irish Hip Fracture Standards on a monthly basis during the 12-month period. There was a change in the adherence to some of the IHFS during COVID-19 Wave 1, however adherence appear to return back to normal level in May 2020.

Data gathered in a hospital services survey conducted by NOCA in May 2020 (see Chapter 4) shows that during March and April many of the key specialists i.e. geriatricians, nurses, junior doctors and physiotherapists were redeployed to other services or had their practice altered to support the hospitals reconfiguration for COVID-19. This almost certainly contributed towards the change in compliance with the IHFS. Of note, the percentage of patients receiving operative treatment for their hip fracture was unchanged during Wave 1 of the COVID-19 pandemic. Each standard is presented separately in Figures 4-10 below.

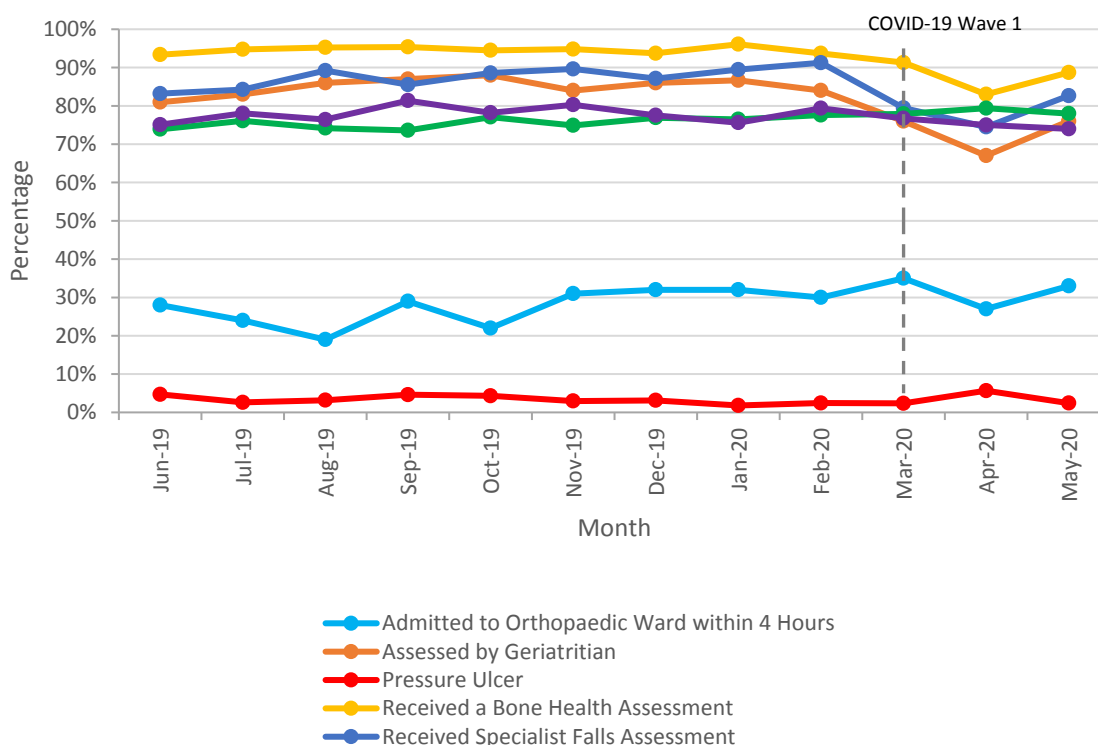


Figure 3: Percentage of hip fracture patients who met each of the seven standards by month (June 2019-May 2020)

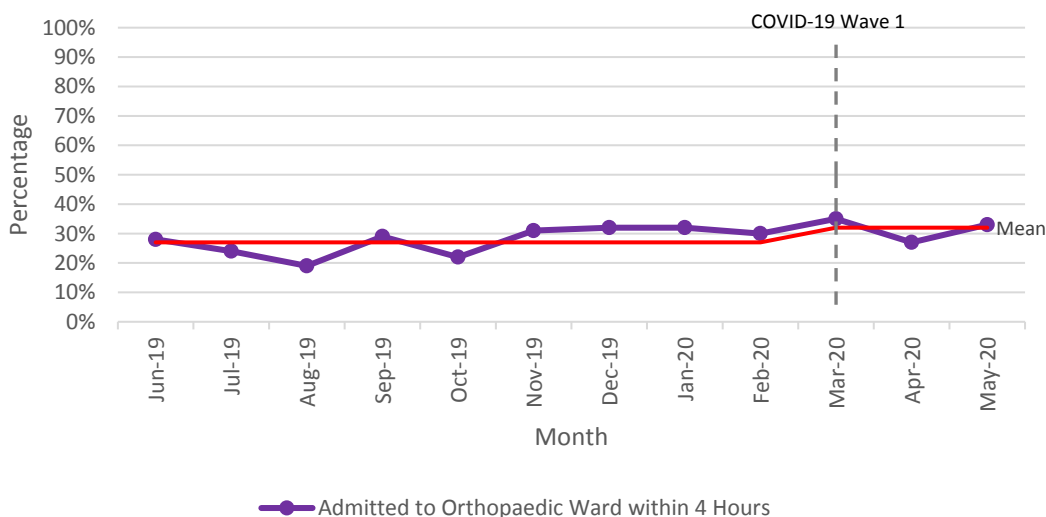


## IHFS 1

**IHFS 1: PERCENTAGE OF PATIENTS ADMITTED TO AN ORTHOPAEDIC WARD WITHIN 4 HOURS OF FIRST PRESENTATION OR ADMITTED TO THEATRE FROM THE EMERGENCY DEPARTMENT WITHIN 4 HOURS**



Figure 4 shows the percentage of patients admitted to an Orthopaedic ward within 4 hours displayed over the 12-month period. There was a statistically significant increase in the proportion of patients who met this standard ( $p=0.027$ ) between the two time periods. Increasing from an average of 27% in the pre-COVID-19 period ( $n=768/2801$ ) to 32% ( $n=250/791$ ) during the COVID-19 Wave 1 period. This may in part be due to the overall reduced trauma activity and the additional capacity created across the acute hospitals to receive additional patients.



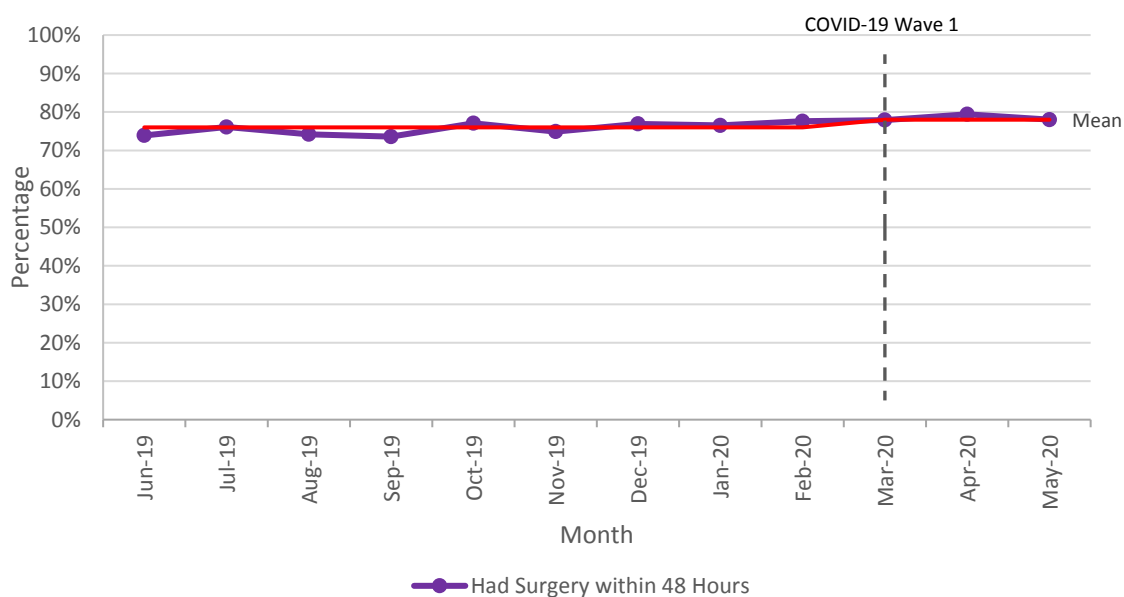
**Figure 3: Percentage of patients admitted to an Orthopaedic ward within 4 hours**

## IHFS 2

### IHFS 2: PERCENTAGE OF PATIENTS RECEIVING SURGERY WITHIN 48 HOURS OF FIRST PRESENTATION (AND WITHIN NORMAL WORKING HOURS)



Figure 4 displays the proportion of patients who received surgery within 48 hours over the 12-month period. The compliance with this standard increased during the COVID-19 Wave 1 period from 76% (n=2031/2684) pre-COVID-19 to 78% (n=585/746), however this difference was not statistically significant (p=0.12).



(Note: This standard is based on patients who received surgery. Surgery was not reported for n=162 cases)

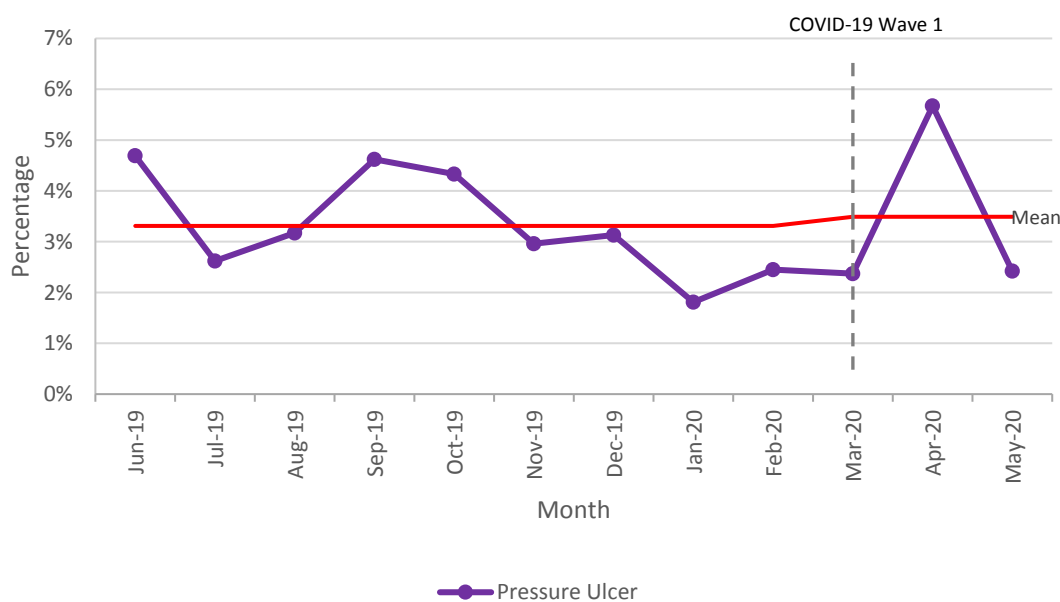
**Figure 4 Percentage of patients who received surgery within 48 hours**



### IHFS 3

#### IHFS 3: PERCENTAGE OF PATIENTS DEVELOPING A PRESSURE ULCER FOLLOWING ADMISSION

Figure 5 presents the proportion of patients who developed a pressure ulcer over the 12-month period. Overall, there was no significant difference between the proportions of patients who developed a pressure ulcer in the two time periods. However, in April 2020 the number of patients who developed a pressure ulcer more than doubled from six (2.4%) in March to 14 (5.7%) in April. In May, the proportion of patients who met this standard seemed to return to normal, perhaps suggesting that patient pathways, care and staffing levels began to return to pre-COVID-19 levels. The numbers for this standard are small and thus should be viewed and interpreted with caution.



(Note: This standard excludes in-hospital mortality n=182 cases)

**Figure 5 Percentage of patients who developed a pressure ulcer between pre-COVID-19 and during COVID-19 Wave 1 periods**

## IHFS 4

### IHFS 4: PERCENTAGE OF PATIENTS REVIEWED BY A GERIATRICIAN AT ANY POINT DURING ADMISSION



Figure 6 presents the percentage of patients who were reviewed by a geriatrician at any point during their admission. There was a statistically significant decrease in the proportion of patients who met this standard during the two time periods ( $p < 0.001$ ). Decreasing from 85% ( $n = 2384/2801$ ) in the pre-COVID-19 period to 73% ( $n = 577/791$ ) in the COVID-19 period. The number and proportion of patients who met this standard began to return to normal levels in May 2020 which may suggest that redeployed staff during the COVID-19 Wave 1 period were reinstated very quickly after the surge.



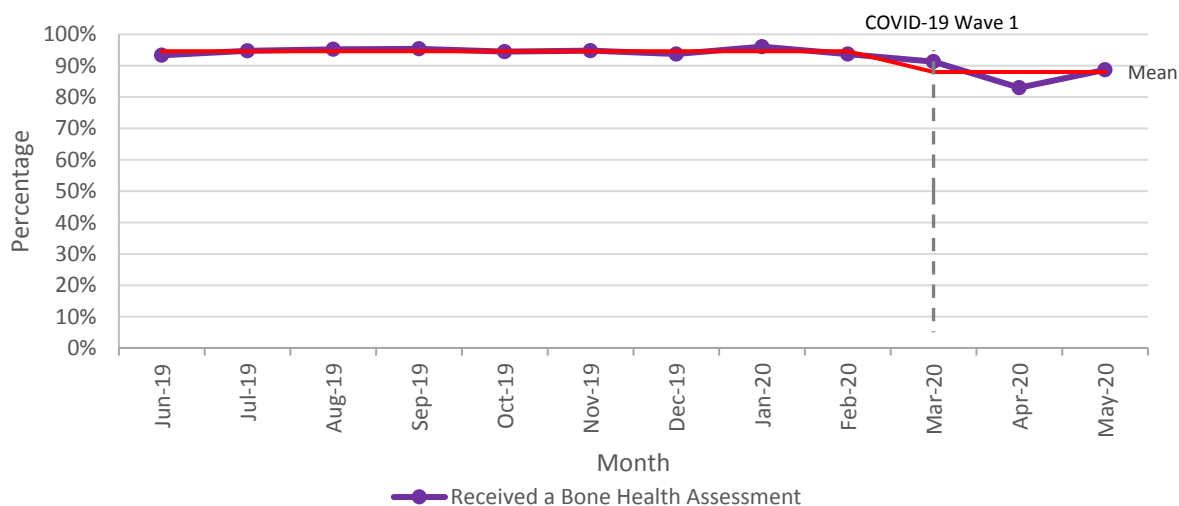
**Figure 6: Percentage of patients who were reviewed by a geriatrician at any point during their admission (June 2019 – May 2020)**

## IHFS 5

### IHFS 5: PERCENTAGE OF PATIENTS RECEIVING A BONE HEALTH ASSESSMENT



Figure 7 shows the percentage of patients who received a bone health assessment during their admission. There was a statistically significant decrease in the proportion of patients who met this standard during the two time periods ( $p < 0.001$ ). Decreasing from 95% ( $n = 2520/2662$ ) in the pre-COVID-19 period to 88% ( $n = 656/748$ ) in the COVID-19 period. The number and proportion of patients who met this standard began to return to normal levels in May 2020 which again may suggest that redeployed staff during the COVID-19 Wave 1 period were reinstated to their positions very quickly after the surge.



(Note: This standard excludes in-hospital mortality  $n = 182$  cases)

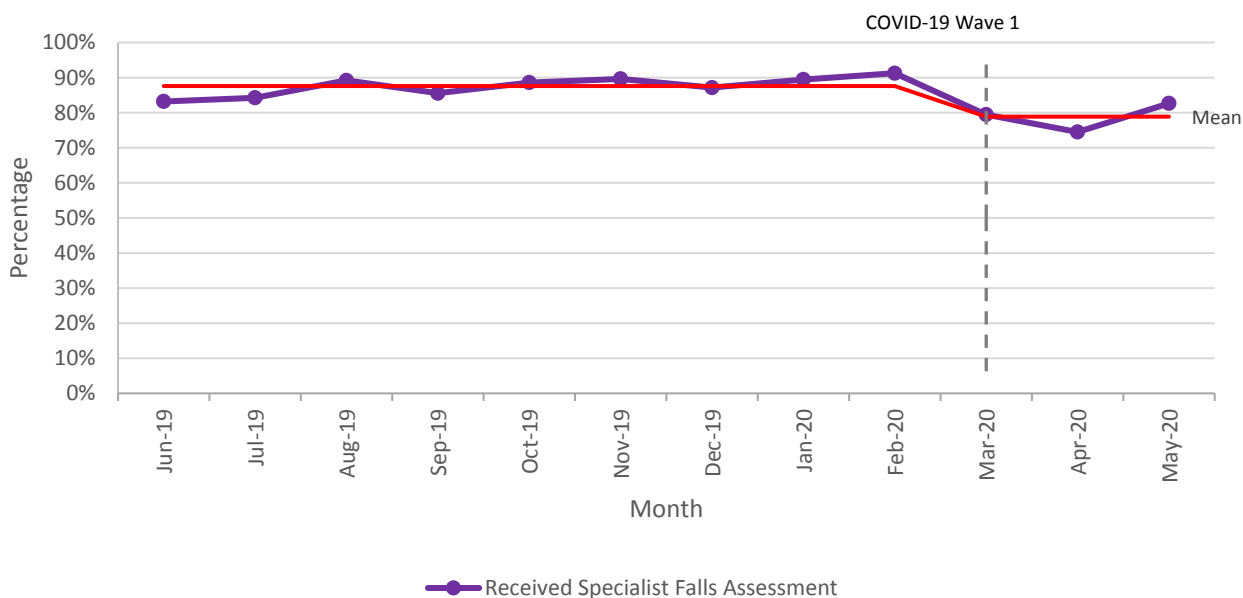
**Figure 7: Percentage of patients who received a bone health assessment (Jun 2019 – May 2020)**

## IHFS 6

### IHFS 6: PERCENTAGE OF PATIENTS RECEIVING A SPECIALIST FALLS ASSESSMENT



Figure 8 displays the percentage of patients who received a falls assessment during their admission. There was a statistically significant decrease in the proportion of patients who met this standard during the two time periods ( $p < 0.001$ ). Decreasing from 88% ( $n = 2332/2662$ ) in the pre-COVID-19 period to 79% ( $n = 590/748$ ) in the COVID-19 period.



(Note: This standard excludes in-hospital mortality  $n = 182$  cases)

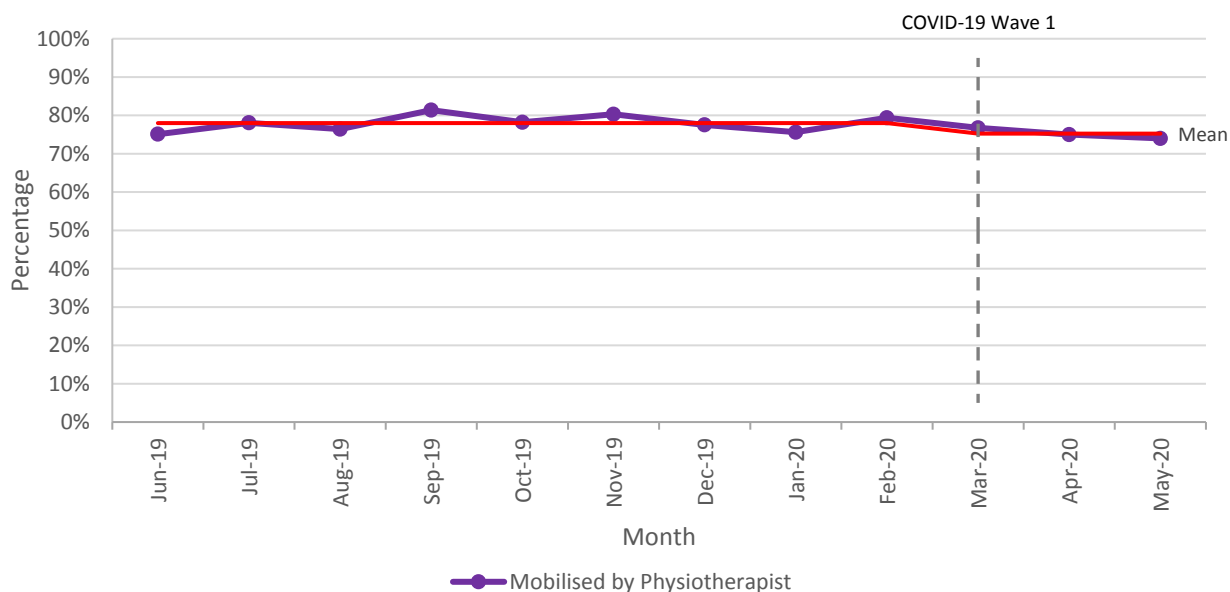
**Figure 8: Percentage of patients who received a falls assessment**

**IHFS 7**

**IHFS 7: PERCENTAGE OF PATIENTS MOBILISED ON THE DAY OF OR AFTER SURGERY BY A PHYSIOTHERAPIST**



Figure 9 shows the percentage of patients mobilised on the day of or day after surgery by a physiotherapist. The compliance with this standard decreased during the COVID-19 Wave 1 period from 78% (n=2086/2674) in the pre-COVID-19 period to 75% (n=569/755), however this difference was not statistically significant (p=0.12).



(Note: This standard is based on patients who received surgery. Surgery was not reported for n=162 cases)

**Figure 9: Percentage of patients mobilised on the day of or day after surgery by a physiotherapist**

## DISCHARGE DESTINATION

The place in which patients were discharged to was significantly different in the two time periods ( $p < 0.001$ ). In the pre-COVID-19 period 26% (N=719) of patients were discharged home from hospital compared to 32% (n=970) during the COVID-19 Wave 1 period (Table 7). Furthermore, the percentage of patients going to rehabilitation decreased from 32% (n=885) in the pre-COVID-19 period to 25% (n=199) in the COVID-19 period. Similarly, there was a reduction in the proportion of patients discharged to convalescence and nursing home care, from 29% (n=812) to 27% (n=214) between the two time periods.

**Table 7: Discharge Destination of hip fracture patients in the pre-COVID-19 (June 2019-February 2020) and COVID-19 (March 2020 –May 2020) time periods**

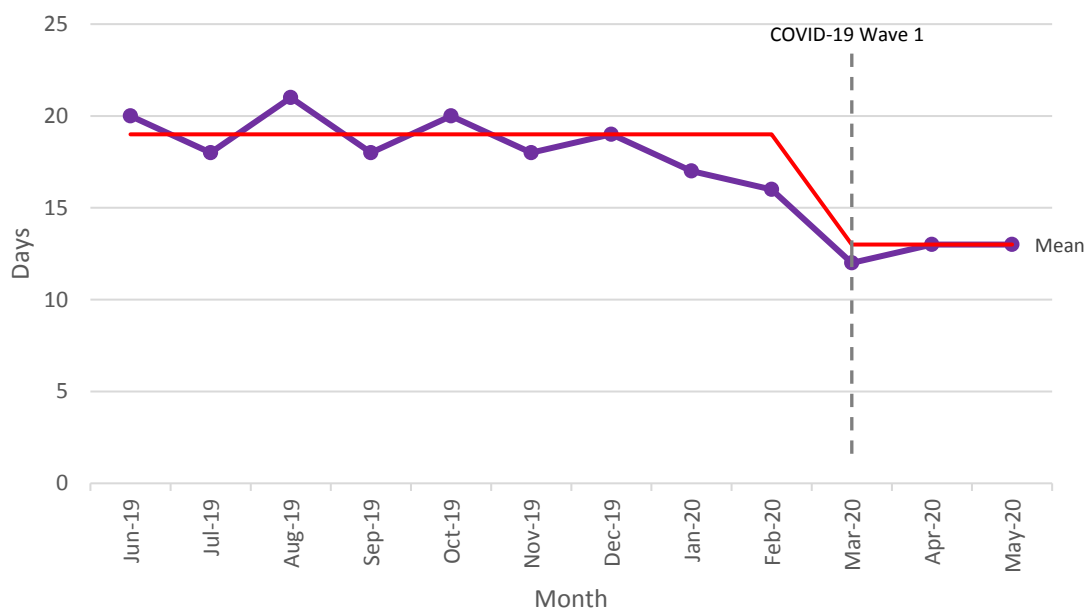
DISCHARGE DESTINATION	PRE-COVID		COVID		TOTAL	
	n	%	n	%	n	%
Home	719	26%	251	32%	970	27%
Rehabilitation	885	32%	199	25%	1084	30%
Nursing Home/Convalescence Care	812	29%	214	27%	1026	29%
Other	385	14%	127	16%	512	14%
<b>Total</b>	<b>2801</b>	<b>100%</b>	<b>791</b>	<b>100%</b>	<b>3592</b>	<b>100%</b>

*(Note: percentages may not sum to 100% due to rounding)*



**LENGTH OF STAY**

Figure 10 shows the length of stay of hip fracture patients over the 12-month reporting period. There was a statistically significant difference ( $p < 0.001$ ; 95% CI: 3.7 – 8.0) in the mean length of stay of patients admitted during the pre-COVID-19 period (mean LOS=19 days) and the mean length of stay of patients admitted during the COVID-19 Wave 1 period (mean LOS=13 days). Further work is required to understand the mechanisms leading to and implications of such a stark reduction in LOS both positive and negative.










**Figure 10: Length of stay of hip fracture patients (June 2019-May 2020)**

### HIP FRACTURE PATIENTS WITH COVID-19 DIAGNOSIS

Preliminary data from the IHFD show that 45 patients admitted to hospital between January 1<sup>st</sup> and May 31<sup>st</sup> 2020 had a hip fracture and a diagnosis of COVID-19 (Table 8). This cohort has been compared to hip fracture patients admitted to hospital in 2019. Hip fracture patients with a COVID-19 diagnosis had a lower level of achievement in all IHFS compared to patients in 2019. Compliance with IHFS 4, 5, 6 and 7 was lower among the COVID-19 group compared to the 2019 cohort. Furthermore, patients admitted to hospital during the COVID-19 period had a mean length of stay of 32 days (median 26 days) compared to 20 days (median 12 days) for patients admitted in 2019. In-patient mortality was recorded at 28% (n=13/45) in the COVID-19 group compared to only 5% in the 2019 cohort. Although we need to err on the side of caution due to the small numbers in the COVID-19 group, a recent study by Hall et al. (2020) in Scotland also showed that COVID-19-positive patients had a significantly lower 30-day survival compared to those without COVID-19 (64.5%, 95% confidence interval (CI) 45.7 to 83.3 vs 91.7%, 95% CI 88.2 to 94.8;  $p < 0.001$ ). It must be noted that the numbers in the COVID-19 cohort were extremely small, until we have more data we cannot conclusively state that there was any significant difference between these two cohorts.

**Table 8: Hip Fracture Patients with COVID-19**

	Outcomes	2019 IHFD patients (n=3701)	2020 IHFD COVID-19 patients (n=45)
	Admitted to Orthopaedic ward within 4 hours	25%	~
	Had surgery within 48 hours*	76%	73% (n=29/40)
	Pressure ulcer**	3%	~
	Reviewed by geriatrician	82%	73% (n=33/45)
	Received a bone health assessment**	94%	84% (n=27/32)
	Received specialist falls assessment**	83%	84% (n=27/32)
	Mobilised by physiotherapist*	78%	68% (n=27/40)
	In-patient mortality***	5%	28% (n=13/45)
	Mean LOS	20 days	32 days
	Median LOS	12 days	26 days

\*Includes only patients who had surgery, \*\* Includes only alive patients, \*\*\* Cause of death is unknown

~ Denotes 10 or fewer cases

## CHAPTER 4: HOSPITALS SERVICES SURVEY

In May 2020, NOCA conducted an organisational audit of all participating hospitals in the IHFD. In addition to the organisational audit, questions related to service restructuring due to COVID-19 were included. These questions are part of IMPACT: International Multicentre Project Auditing COVID-19 in Trauma & Orthopaedics global study.

Below is a summary of responses from all participating hospitals who reported on their experiences during Wave 1 of COVID-19.

### **Question 1. How has the COVID-19 pandemic impacted your Trauma Orthopaedic Services?**

Overall, all hospitals (n=15) felt that their Trauma Orthopaedic Services were negatively impacted. Some of the key issues were related to:

- Delays in theatre
- Patient transfers to private hospital
- Redeployment of staff to COVID-19 services
- Admission delays from the emergency department

### **Question 2. How has your weekday access to trauma theatre sessions changed since 1<sup>st</sup> March 2020?**

The majority of hospitals (n=8) reported an overall decreased weekly access to trauma theatre. Some hospitals reduced their capacity by 25% to 75%, others reported decreased access due to patient transfers to private hospitals. A small proportion (n=3) reported less access, mainly due to COVID-19 screening and cleaning, and the remaining hospitals reported no change to trauma theatre weekly access.

### **Question 3. How has theatre efficiency changed since 1<sup>st</sup> March 2020?**

Most hospitals (n=9) reported an overall decrease in efficiency across theatres. Decreased efficiency was mainly due to slower perioperative pathways as a result of enhanced safety protocols, and cancellation of elective theatre lists. The remaining hospitals reported less efficiency (n=3) and no change in efficiency (n=2) since Wave 1 of COVID-19.

### **Question 4. Have Trauma Orthopaedic staff been redeployed to provide other services?**

Almost all hospitals (n=13) had to redeploy their staff to provide other services. Among these, the main staff redeployed were:

- Nurses – across 9 hospitals
- Orthopaedics – across 8 hospitals
- Geriatrics – across 6 hospitals
- Health and Social Care Professionals (HSPC) – across 3 hospitals
- Theatre staff – across 2 hospitals
- Medical social worker – in 1 hospital

Redeployed staff were primarily allocated to COVID-19 services – dedicated COVID-19 wards, COVID-19 ICUs, COVID-19 tracing and to provide cover for services of other staff.

**Question 5. Have Trauma Orthopaedic areas been repurposed?**

Most hospitals (n=9) repurposed their orthopaedic wards in response to COVID-19. The main types of reconfiguration were among:

- Wards – across 8 hospitals
- Theatres – across 7 hospitals
- Clinics – across 5 hospitals

Some trauma wards were reconfigured into COVID-19 wards and medical clinics. Additionally, usual clinical activity was replaced by virtual clinics.

**Question 6. Have any formal/informal local policies been in place at any time regarding the requirement for COVID-19 laboratory testing prior to surgery?**

All hospitals who completed the services survey reported that a formal/informal local policy was in place at any time regarding the requirement for COVID-19 laboratory testing prior to surgery.

**Question 7. Did the presence of confirmed or suspected COVID-19 alter your strategy in management of hip fracture patients?**

Most hospitals (n=12) reported alterations due to COVID-19 in the management of hip fracture patients. The following key alterations were reported:

- **Relative indication for operative/non-operative management:**

COVID-19/ non-COVID-19 theatre pathway was required pending the swab result. All suspected and non-suspected cases were swabbed on arrival to hospital. COVID-19 required no laminar air, non-COVID-19 required laminar air in theatre. Delays to theatre were linked to awaiting COVID-19 results.

- **Relative urgency of surgical management:**

Urgency was the same as there were two separate pathways and theatre access to an isolation theatre was readily available.

- **Decision-making approach with patient/family/other health professionals:**

Due to visiting restrictions there were more phone communication with families.

- **Treatment escalation planning (e.g. resuscitation status, intensive care):**

Resuscitation status was a clinical decision based solely on clinical judgement. COVID-19 positive status did not affect this in the initial stages.

**Question 8. How has the COVID-19 pandemic impacted your Elective Orthopaedic Services?**

The majority of hospitals (n=10) reported that all elective surgery had stopped due to COVID-19, except for urgent elective surgery across certain hospitals (n=4). Similarly, most elective orthopaedic clinics were stopped by most hospitals (n=2) or were held on a virtual basis (n=2). Only a few hospitals continued elective surgery if the cases were urgent (n=2).

**Question 9. When was your Elective Orthopaedic operating suspended?**

Most hospitals (n=11) suspended all their elective orthopaedic operating activity in phases between the 9<sup>th</sup> of March and 1<sup>st</sup> of April. This is illustrated below.



**Question 10. What effect did the suspension of your Elective Orthopaedic service have on:**

- **Arthroplasty waiting list times**

Waiting list times increased across 8 hospitals.

- **Arthroplasty waiting list number of cases**

There was an increase in the number of cases on waiting lists across 8 hospitals.

- **Non-arthroplasty waiting list times**

There was an overall increase in the waiting list times for non-arthroplasty cases across 8 hospitals.

- **Non-arthroplasty waiting list number of cases**

There was an overall increase in non-arthroplasty waiting list number of cases across 8 hospitals.

- **Cancer Services**

Cancer services were limited to urgent care in 2 hospitals, and 1 hospital transferred all cancer patients to Cappagh hospital.

- **Hospital income**

Overall reduction in hospital income was reported by 2 hospitals.

- **Physical income**

A reduction in physical income was reported by 1 hospital

**Question 11. When will Elective Orthopaedic services resume?**

Most hospitals resumed (n=9) all their elective orthopaedic operating activity in phases between May and the 1<sup>st</sup> of July. This is illustrated below.



**Question 12. What long term NEGATIVE effects did the COVID-19 disruption have on your service?**

The surveyed hospitals reported the following key negative effects on orthopaedic services due to COVID-19:

- Delays in presentation
- Delays to theatre
- Additional screening
- Staff redeployment
- Patients with more complications
- Fear for patients & staff
- Less patients meeting the IHFD standards

**Question 13. What long term POSITIVE effects will COVID-19 disruption have on your service?**

The surveyed hospitals reported the following key positive effects on orthopaedic services due to COVID-19:

- Greater team work
- Better infection control awareness
- Virtual fracture clinics
- New anaesthetic equipment

## CONCLUSION

The preliminary data from IHFD and HIPE presented in this report are intended to provide rapid learning for the health system during this ongoing pandemic. The data so far show that hip fracture activity remained high although at a slightly reduced level throughout Wave 1 of the pandemic. Overall there appeared to be a reduction in the compliance with some of the Irish Hip Fracture Standards during Wave 1. There was widespread disruption to the pathway of care and staff redeployment as seen from the services survey. It has yet to be seen if the expedited discharge of patients to home has had a positive or negative impact on the outcomes and readmissions of patients and warrants further monitoring.

When making assertions about hip fracture patients based on the data analysed in this report we must err on the side of caution. The data analysed for this report has not been fully validated either by NOCA or by the HPO. Although we have reported on hip fracture patients who have had a diagnosis of COVID-19, we must bear in mind, not only that we are dealing with small numbers but also that the testing for COVID-19 is currently new and evolving and timelines for HIPE coding of COVID-19 have been expedited in order to facilitate rapid learnings from this evolving situation. Nevertheless, based on the early findings presented in this report we can provide some points that should be considered when caring for hip fracture patients during subsequent Waves of the COVID-19 pandemic; these include:

- Frontline healthcare staff such as geriatricians, HSCP's, orthopaedic doctors and orthopaedic nurses involved in the care of older patients with hip fracture should be preserved throughout any subsequent waves of the COVID-19 pandemic.
- Expedited discharge from hospital should be supported with the appropriate community services in place to avoid any unnecessary hospital readmissions.
- Patients with a hip fracture and COVID-19 should be given enhanced pressure ulcer prevention care, mobilised as early and safely as possible and offered the same standard of care as non-COVID-19 hip fracture patients including secondary prevention.

This report is the first of a series of NOCA reports aimed at providing timely data to the health service which can in turn be used to improve patient care in the future. When new and validated data are included in HIPE and IHFD, subsequent reports will provide a more accurate picture of patient care during Wave 1 of the COVID-19 pandemic. Notwithstanding this, it is still essential to report on data (even if it is recent and not fully validated) that may help improve our understanding of patient care at a time when our health care system is experiencing unprecedented pressure. These reports will be produced by NOCA going forward as data becomes available from each of the audits including hip fracture, stroke, ICU, heart attack and major trauma during the Wave 1 pandemic and subsequent Waves of COVID-19.

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