

NCPA/HPO Annual Report 2021

*General anaesthetics, Neuraxial blocks
and Regional blocks, Administered in
Public Hospitals in Ireland in 2021
as captured in HIPE*

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Introduction

This NCPA/HPO Annual Report contains data for the year 2021, the most recent available from the Hospital Inpatient Enquiry (HIPE). The data were compiled and validated by our colleagues at the Healthcare Pricing Office (HPO) and we acknowledge their continued support and expertise with this project.

This Report retains the format of previous Annual Reports and describes the number of general anaesthetics, neuraxial blocks and regional blocks administered in public hospitals in Ireland in 2021 as captured in HIPE. These data are set out alongside data from the previous four years to allow comparisons to be made and patterns observed. Information on patient's age, gender, ASA status, urgency of the procedure and the Australian Classification of Health Interventions (ACHI) is also included. All previous Annual Reports published to date are available online¹.

Organ Donation and Transplant Ireland (ODTI) continues to assist us in identifying the number of patients with an ASA 6 patient status - these are patients with a diagnosis of brain stem death whose organs are retrieved for transplantation. ODTI Annual Reports describe the total number of deceased organ donors which includes patients with an ASA 6 diagnosis as well as "non-beating heart" donors and both these figures are included in this Report.

Two new elements are included in this Report.

1. Figures for the total number of anaesthetics administered for the years 2017 to 2021 along with the number of anaesthetics given for emergency, obstetric and day case procedures are presented together in figure 6.
2. Data on the number of patients admitted to hospital who tested positive for Covid-19 are presented under the heading Occasional Data.

The authors acknowledge that this Annual Report describes only part of the work of anaesthesiologists.

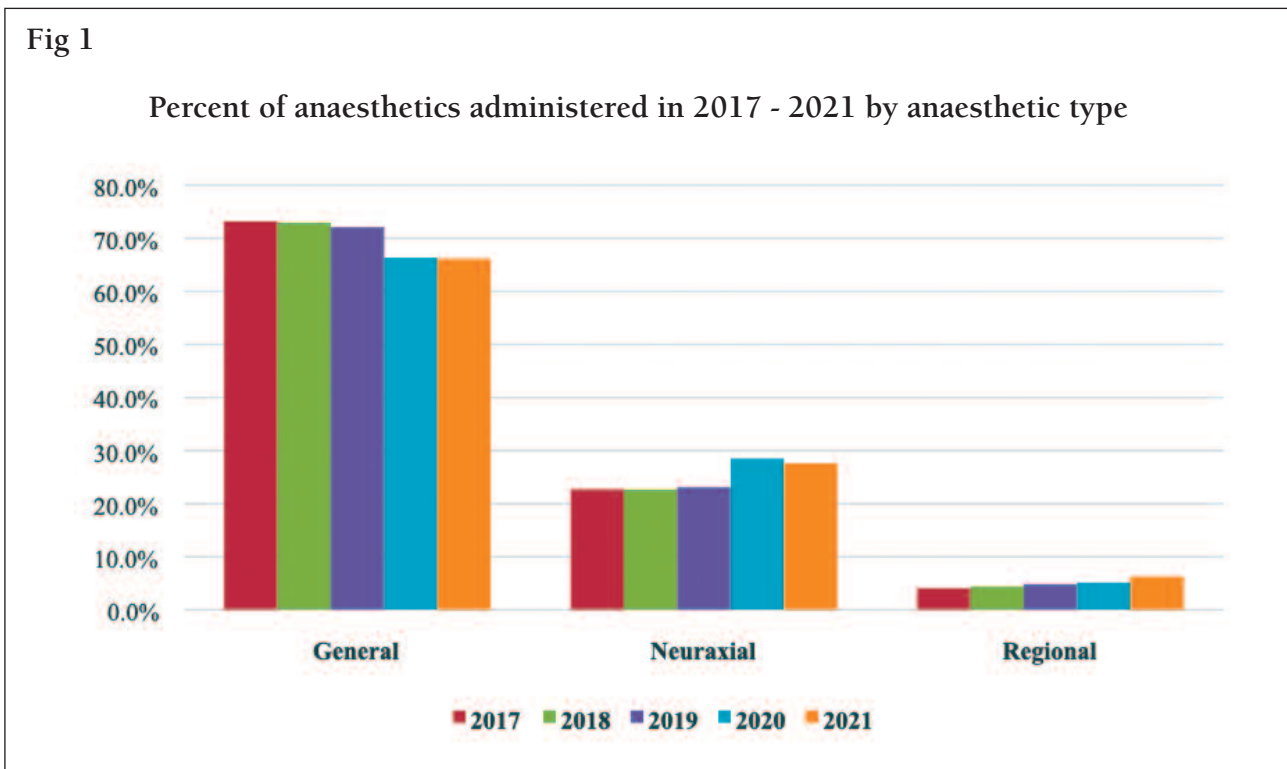
Part 1: Principal Data

Table 1 & Figure 1 describe the number and type of anaesthetic administered in 2017 – 2021 as reported to HIPE

Table 1

Number of anaesthetics administered in 2017- 2021 by anaesthetic type

Year	2017	2018	2019	2020	2021
Anaesthetic type	Anaesthetic Count				
General	169,640	170,012	165,913	124,534	136,000
Neuraxial Block	52,692	52,825	53,157	53,555	56,774
Regional	9,466	10,250	11,076	9,644	12,911
TOTAL *	231,798	233,087	230,146	187,733	205,685



*The total number of anaesthetics is the sum of all three types of anaesthetics administered. The anaesthetic count (Table 1) exceeds the discharge count (Table 2) because some patients had more than one anaesthetic at the same time (e.g. GA and Neuraxial block) or more than one anaesthetic during the same admission.

Table 2 & Figure 2 describe the number of patient discharges reporting an anaesthetic procedure(s) in 2017 – 2021 by gender as reported to HIPE

Table 2

Number of patient discharges reporting an anaesthetic procedure(s) in 2017 - 2021 by gender

Year	2017	2018	2019	2020	2021
Gender	Discharge Count				
Male	85,003	84,572	82,976	63,569	69,794
Female	134,336	135,360	134,481	112,549	122,734
TOTAL	219,339	219,932	217,457	176,118	192,528

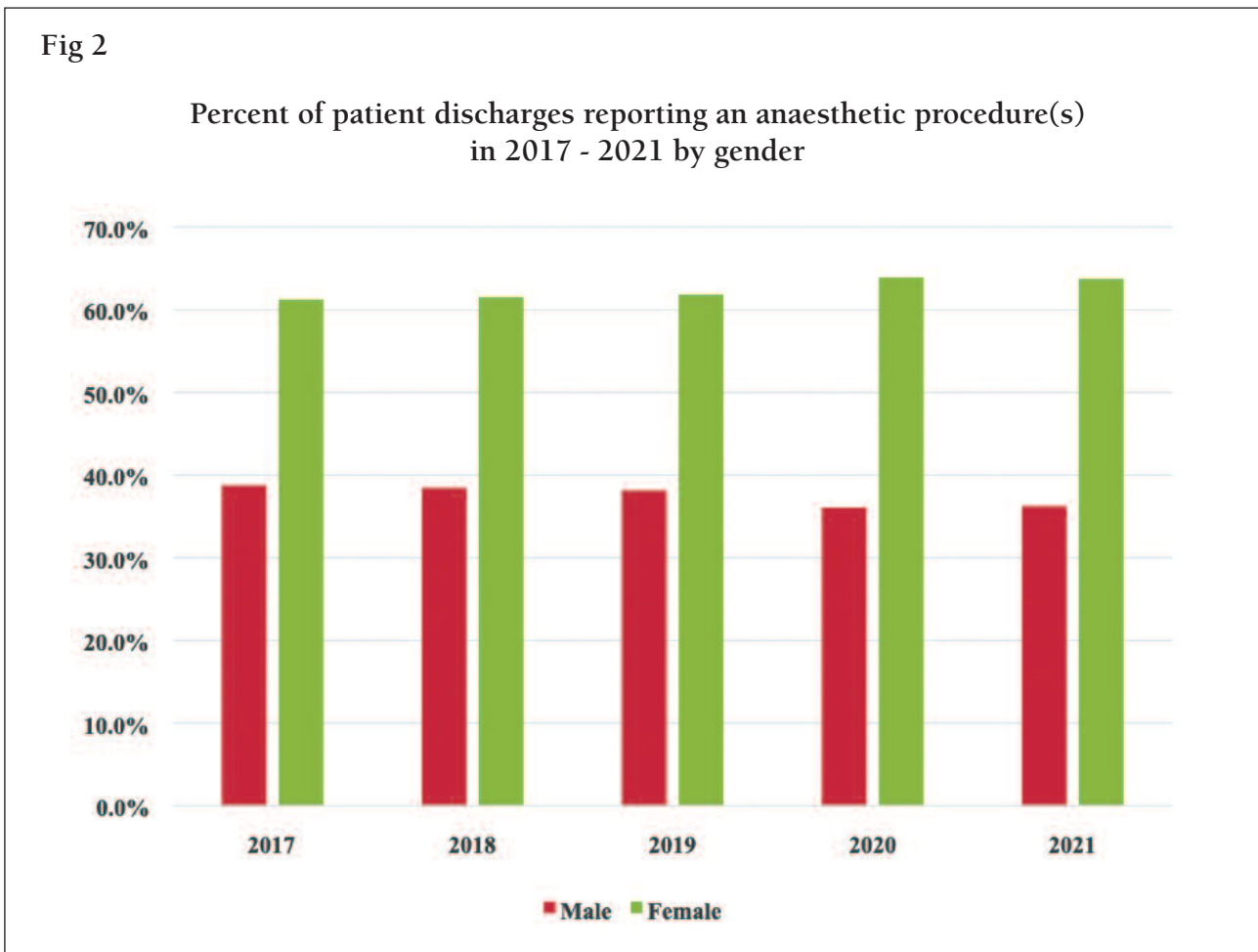
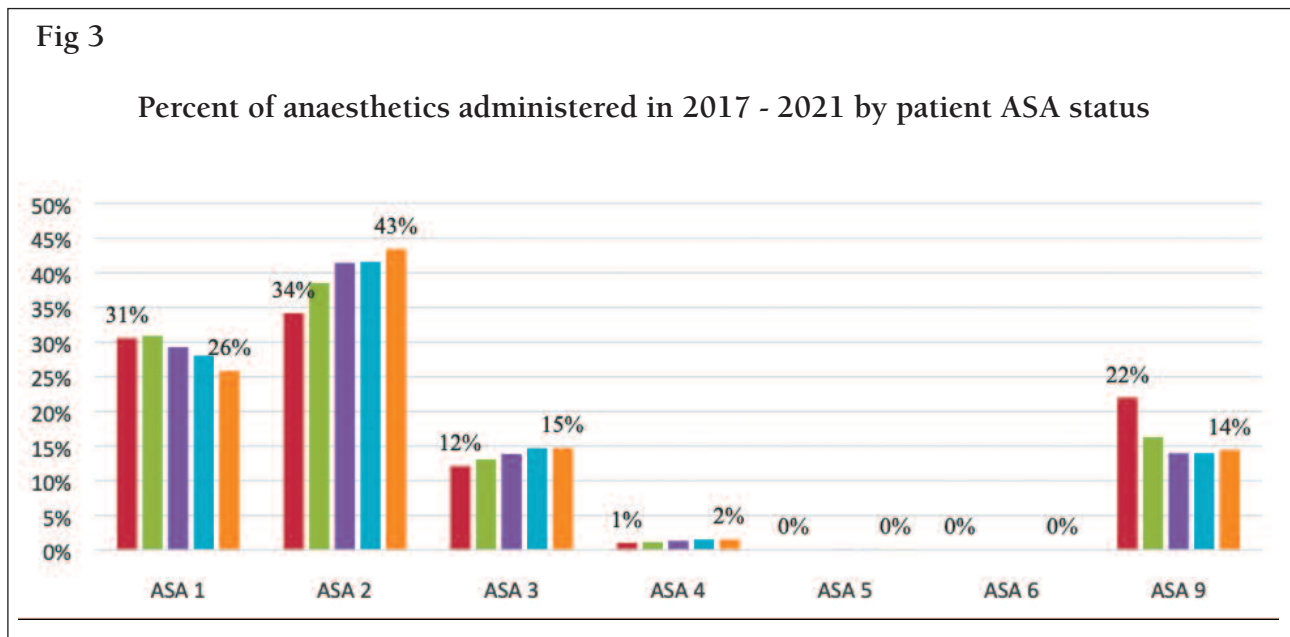


Table 3 & Figure 3 describe the number of anaesthetics administered in 2017 – 2021 by patient ASA status as reported to HIPE

Table 3
Number of anaesthetics administered in 2017 - 2021 by patient ASA status

Year		2017	2018	2019	2020	2021
#ASA						
Score	Patient status	Anaesthetic Count				
1	Normal healthy patient	70,879	72,055	67,358	52,697	53,091
2	Mild systemic disease	79,199	89,756	95,378	78,094	89,315
3	Severe systemic disease limiting activity	28,050	30,472	31,928	27,588	30,238
4	Severe systemic disease posing a constant threat to life	2,463	2,662	3,079	2,898	3,144
5	Moribund patient not expected to survive longer than 24 hrs without surgery	199	*	241	200	220
6	Brain stem death and organ donation for transplant	8	~	0	0	0
9	No documentation on ASA status	51,000	37,957	32,162	26,256	29,677
TOTAL		231,798	233,087	230,146	187,733	205,685



#ASA scores -This information must be documented on the anaesthetic form before assigning these codes. Where there is no documentation of ASA score or the emergency modifier is not indicated, filler digits 9 should be assigned. Cells with discharges between one and five inclusive are not reported. In the table above such cells have been replaced by ~. Where further suppression is necessary to ensure that such cells are not disclosed it is necessary to suppress the cell with the next lowest discharges with *.

Table 4 & Figure 4 describe the number of anaesthetics administered in 2017-2021 by urgency of procedure as reported to HIPE

Table 4

Number of anaesthetics administered in 2017 – 2021 by urgency of procedure

Year	2017	2018	2019	2020	2021
Anaesthetic Count					
Emergency	27,550	32,187	33,650	33,394	37,655
Non emergency or not known	204,248	200,900	196,496	154,339	168,030
TOTAL	231,798	233,087	230,146	187,733	205,685

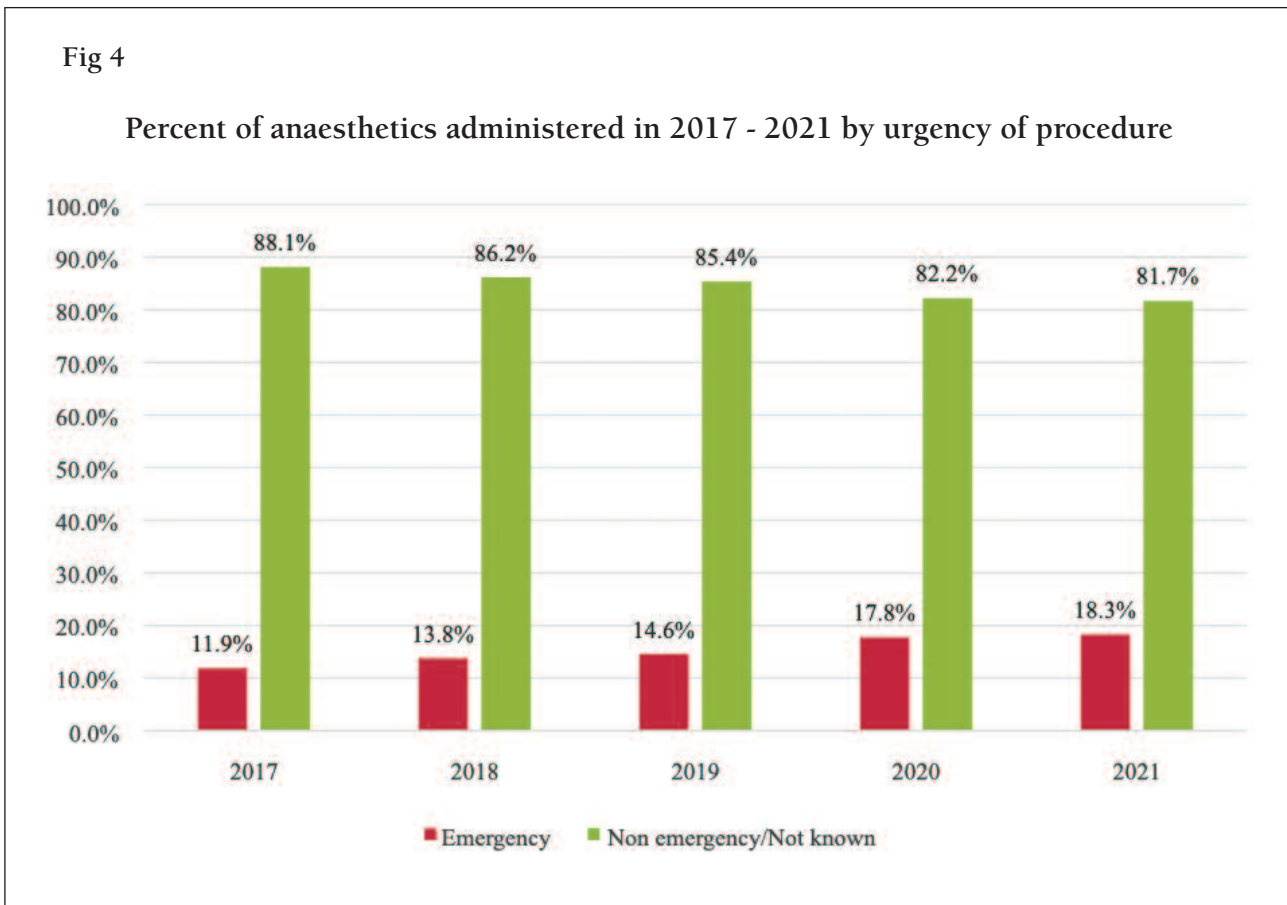


Table 5 & Figure 5 describe the number of patient discharges reporting an anaesthetic procedure(s) in 2017 – 2021 by age as reported to HIPE

Table 5

Number of patient discharges reporting an anaesthetic procedure(s)
in 2017 - 2021 by age

Year	2017	2018	2019	2020	2021
Age categories (yrs)	Discharge Count				
Less than 1	1,948	1,952	1,775	1,696	1,574
1 – 5	13,520	13,175	12,269	8,597	8,695
6 – 15	20,411	20,603	20,120	14,776	16,473
16 – 25	18,460	18,122	17,649	14,516	15,819
26 – 35	39,449	38,684	37,847	34,750	37,664
36 – 45	36,472	36,636	36,658	31,157	33,837
46 – 55	25,009	25,240	25,222	19,277	20,982
56 – 65	24,408	24,584	24,561	18,844	21,143
66 – 75	23,289	24,240	24,182	18,598	20,360
76 – 85	13,060	13,372	13,761	10,977	12,598
Over 85	3,313	3,324	3,413	2,930	3,383
TOTAL	219,339	219,932	217,457	176,118	192,528

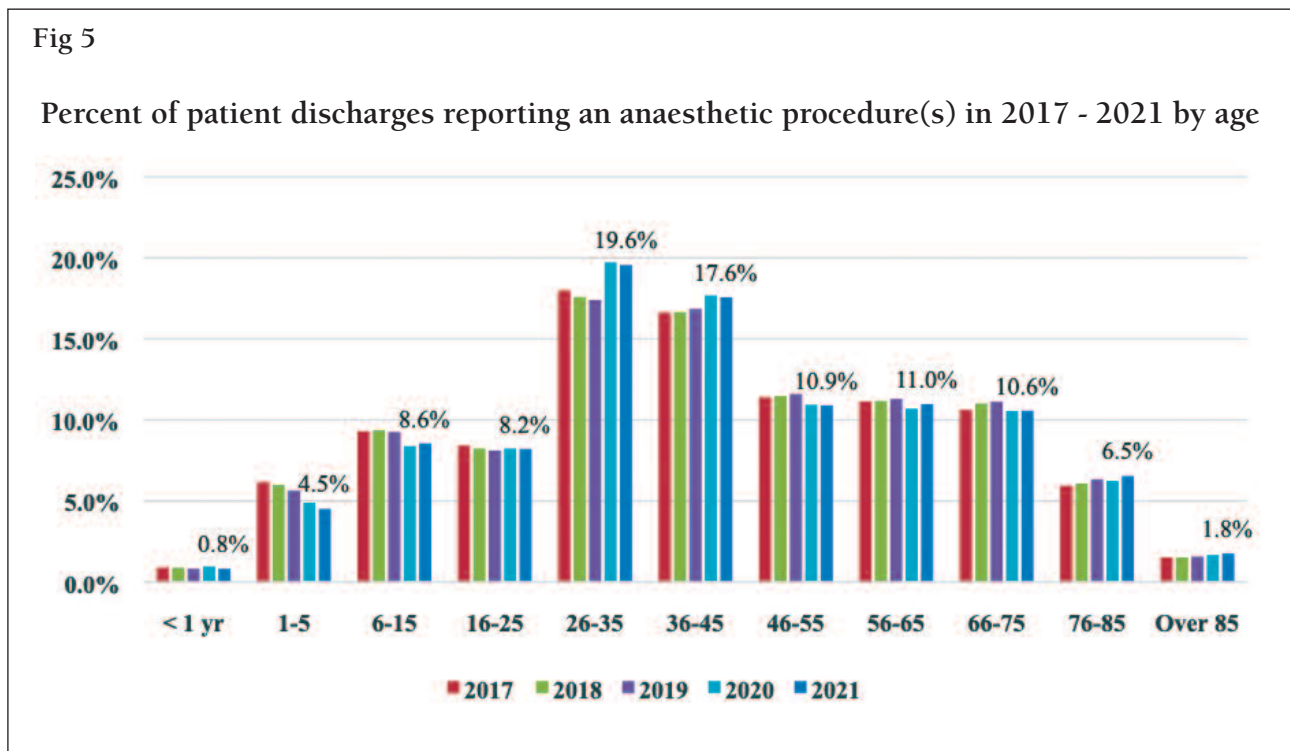


Table 6 describes the number of patient discharges reporting an anaesthetic procedure(s) in 2021 by age and hospital group as reported to HIPE

Table 6							
Number of patient discharges reporting an anaesthetic procedure(s) in 2021 by age and hospital group							
Discharge count by age and hospital group							
	Ireland East	RCSI	Dublin Midlands	South S/West	UL Hospital Group	Saolta	Children's Group
Age (years)							
Less than 1	0	0	0	81	16	29	1,448
1 – 5	219	246	338	1,430	381	866	5,215
6 – 15	1,073	855	906	3,229	922	1,885	7,603
16 – 25	3,230	2,895	2,582	3,307	1,168	2,122	515
26 – 35	8,720	8,065	6,154	7,243	2,540	4,942	0
36 – 45	8,087	6,487	5,405	6,892	2,362	4,604	0
46 – 55	5,246	3,607	2,945	4,743	1,493	2,948	0
56 – 65	5,727	2,830	2,769	4,294	1,401	3,122	0
66 – 75	5,252	2,590	2,627	5,055	1,364	3,472	0
76 – 85	3,188	1,637	1,546	3,109	724	2,394	0
Over 85	793	477	425	810	203	675	0
Sub totals	41,535	29,689	25,697	41,193	12,574	27,059	14,781
Total							192,528

The full list of hospitals in each hospital group is given in Appendix 1

Cells with discharges between one and five inclusive are not reported. In the table above such cells have been replaced by ~. Where further suppression is necessary to ensure that such cells are not disclosed it is necessary to suppress the cell with the next lowest discharges with *.

For reporting purposes, discharges aged 17 years and older from Tallaght University Hospital are included in the Dublin Midlands Hospital Group, while discharges aged less than 17 years from Tallaght University Hospital are included in the Children's Hospital Group.

Table 7 describes the number of anaesthetics administered in 2017 – 2021 by the Australian Classification of Health Interventions (ACHI) as reported to HIPE

Intervention Chapter	Anaesthetic Count				
	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021
1. Procedures on the nervous system	5,428	5,484	5,321	4,967	5,173
2. Procedures on endocrine system	1,223	1,246	1,325	1,004	1,047
3. Procedures on eye and adnexa	7,985	8,916	9,819	7,113	8,736
4. Procedures on ear and mastoid process	4,391	4,417	4,073	2,447	2,149
5. Procedures on nose, mouth and pharynx	7,793	8,487	8,036	5,087	5,258
6. Dental services	5,013	4,977	4,752	2,714	3,574
7. Procedures on respiratory system	4,276	4,439	4,422	3,213	3,644
8. Procedures on cardiovascular system	8,199	7,831	7,755	6,137	6,025
9. Procedures on blood and blood forming organs	1,204	1,166	1,121	920	1,041
10. Procedures on digestive system	36,458	36,186	35,215	27,715	30,771
11. Procedures on urinary system	10,371	10,309	10,452	8,567	9,064
12. Procedures on male genital organs	7,523	7,049	6,709	4,996	5,540
13. Gynaecological procedures	23,512	24,667	25,054	18,916	19,874
14. Obstetric procedures	37,061	37,230	36,958	38,466	41,445
15. Procedures on musculoskeletal system	46,583	45,752	44,807	37,273	41,699
16. Dermatological and plastic procedures	12,442	12,142	11,738	8,670	9,642
17. Procedures on breast	5,241	5,821	5,651	3,727	4,777
18. Radiation oncology procedures	636	574	605	541	581
19. Non-invasive, cognitive and other interventions not elsewhere classified	3,414	3,292	3,240	2,725	2,809
20. Imaging services	1,841	1,870	1,843	1,399	1,632
No procedure on same date as anaesthetic procedure	1,204	1,232	1,250	1,136	1,204
TOTAL	231,798	233,087	230,146	187,733	205,685

Table 8 describes the number of patient discharges reporting an anaesthetic procedure(s) in 2021 by admission type and hospital group as reported to HIPE

Table 8

Number of patient discharges reporting an anaesthetic procedure(s) in 2021 by admission type and hospital group

Discharge count by admission type and hospital group

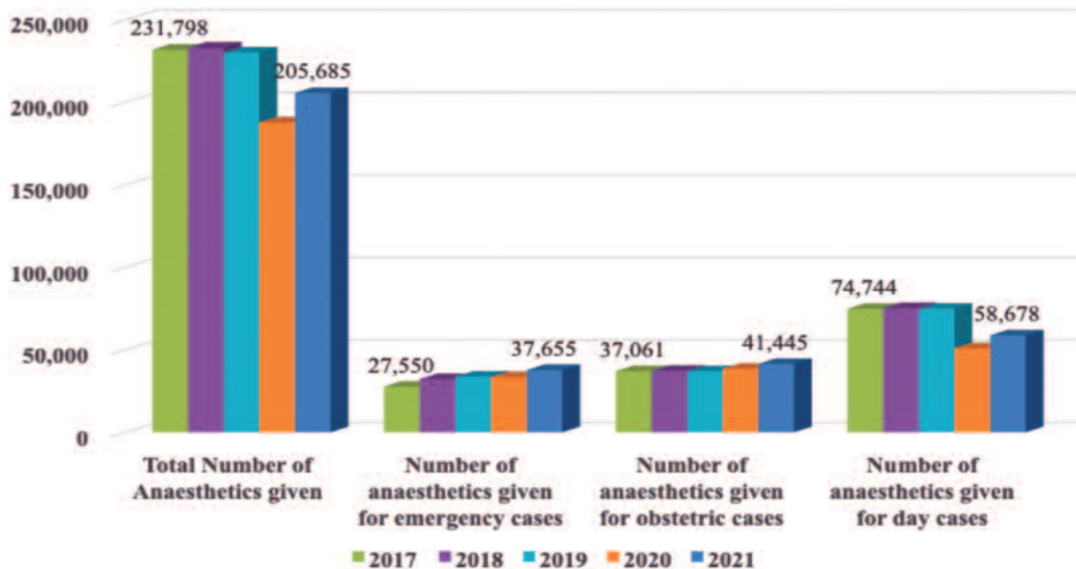
	Ireland East	RCSI	Dublin Midlands	South S/West	UL Hospital Group	Saolta	Children's Group	TOTAL
Day cases	12,234 (29.5%)	6,458 (21.8%)	6,303 (24.5%)	13,938 (33.8%)	4,120 (32.8%)	7,466 (27.6%)	8,159 (55.2%)	58,678 (30.5%)
In Patients								
Elective	11,498 (27.7%)	5,287 (17.8%)	4,821 (18.8%)	9,415 (22.9%)	2,637 (21.0%)	5,858 (21.6%)	2,964 (20.1%)	42,480 (22.1%)
Emergency	7,585 (18.3%)	7,690 (25.9%)	7,328 (8.7%)	9,616 (23.3%)	2,429 (19.3%)	7,345 (27.1%)	3,658 (24.7%)	45,705 (23.7%)
Maternity	10,218 (24.6%)	10,254 (34.5%)	7,191 (28.0%)	8,224 (20.0%)	3,388 (26.9%)	6,390 (23.6%)	0 (0%)	45,665 (23.7%)
Totals	41,535	29,689	25,697	41,193	12,574	27,059	14,781	192,528 (100%)

Note: The Admission Type is the category of admission relating to the episode of care and is downloaded directly from the patient administration system.

Figure 6 describes the total number of anaesthetics administered in the years 2017 – 2021 along with the number of anaesthetics administered for emergency, obstetric and day cases as reported to HIPE

Fig 6

Total number of anaesthetics administered in 2017 – 2021 and the number of anaesthetics administered for emergency, obstetric and day cases procedures.



Part 2:

Supplementary data

ASA 6 Patient status

ASA 6 denotes a patient with a diagnosis of brain stem death who is donating organs for transplant.

Data from ODTI* indicate that 57 patients in 2021 donated organs following a diagnosis of brain stem death.

Deceased Organ Donors					
Year	2017	2018	2019	2020	2021
Beating heart	91	77	78	56	57
Non beating heart	8	4	7	7	8
TOTAL	99	81	85	63	65

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Organ Donation and Transplant Ireland has been delegated the regulatory functions assigned to the Health Service Executive (HSE) in Statutory Instrument (SI) 325 (2012), European Union (Quality and Safety of Human Organs Intended for Transplantation) Regulations 2012. This annual ODTI report has been produced in compliance with part 5, SI 325 (2012)

ODTI* Organ Donation and Transplant Ireland
 2nd Floor, Temple Theatre, Hardwicke Place, Temple Street, Dublin 1.
 Email: odti@hse.ie

Occasional data

Figure 7 describes the number of patient discharges reporting a positive Covid-19 test in 2021 by month as reported to HIPE

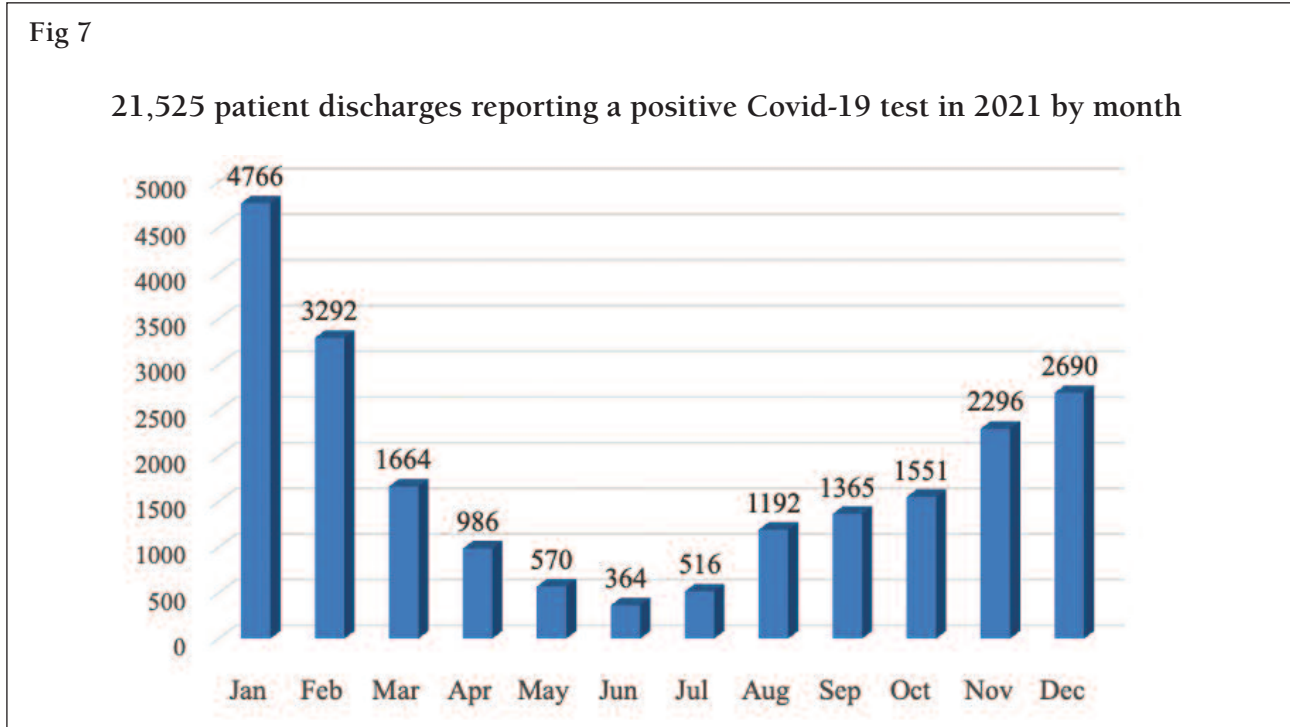
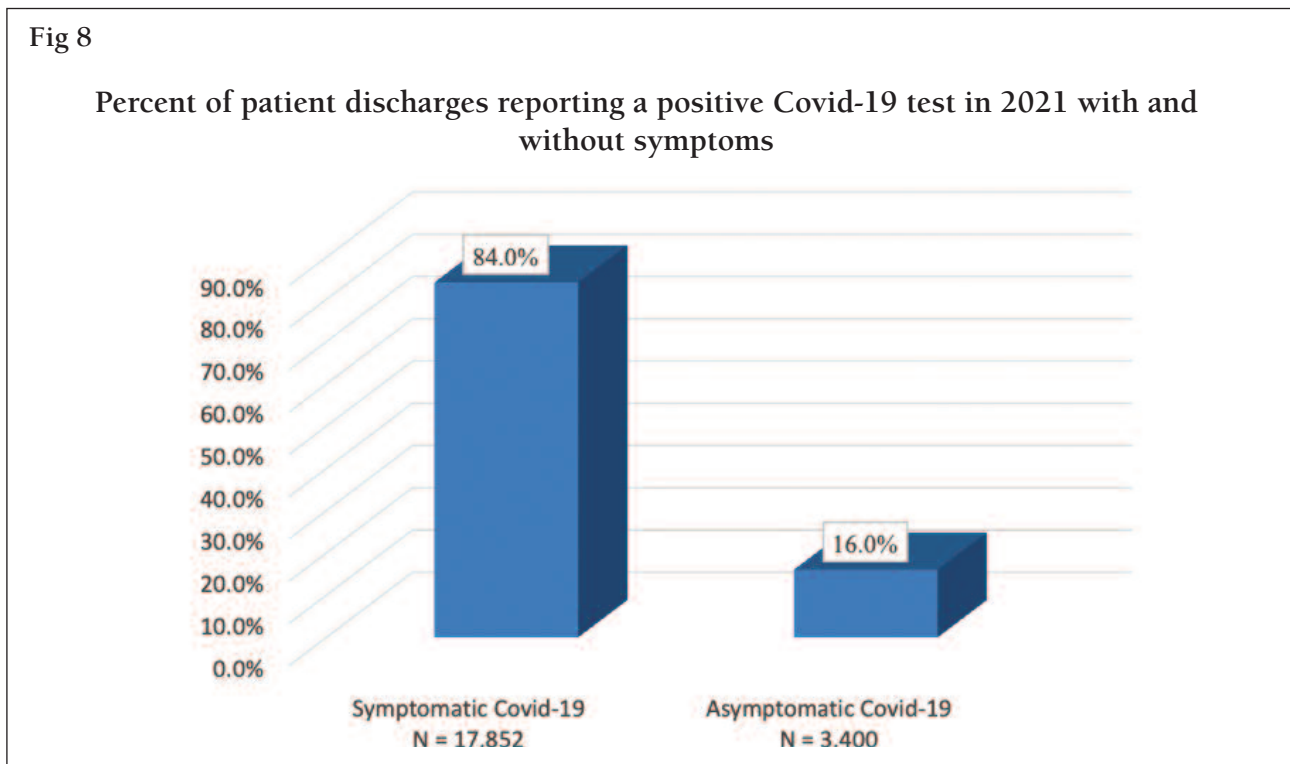


Figure 8 describes the percentage of patient discharges reporting a positive Covid-19 test with and without symptoms in 2021 as reported to HIPE



Discussion & Conclusion

This Annual Report for 2021 shows a significant increase in almost all areas of anaesthetic activity when compared with data for 2020.

The total number of anaesthetics given in 2021 was 205,685, which is an increase of 9.6% on the 2020 figure while the total number of patient discharges reporting an anaesthetic in 2021 was 192,528, an increase of 9.3% on 2020. These increases are undoubtedly due to the diminishing effect of Covid-19 on clinical practice and are seen throughout the various categories of anaesthetic activity presented in the Report. Nevertheless the 2021 figures for the number of anaesthetics given and the number of patients receiving an anaesthetic are still 11.9% and 12.9% lower respectively, than those for 2019, the year preceding the onset of the pandemic.

Since 2017, minor year to year fluctuations are seen for the number of general anaesthetics (GA) and neuraxial blocks given but there has been a steady rise in the number of regional blocks (Table 1 & Figure 1). Examination of the data for the years 2013 to 2021 however shows a decrease of 4.5% in the number of GAs given, an increase of 6.0% in the number of neuraxial blocks and an increase of 76.5% in the number of regional blocks.

There was an increase of just over 9% in the number of male and female patients receiving an anaesthetic in 2021 compared with 2020 (Table 2 & figure 2). The male to female ratio remains at 2:3

Table 3 & figure 3 show that the steady reduction in the number of patients with an ASA 99 designation noted in previous Reports continues. The ASA 99 designation is used by HIPE coders when they are unable to find any details of the patient ASA status or of the urgency of the procedure on the anaesthetic record. The figure of 29,677 for the year 2021 is the lowest recorded since 2013 with the exception pandemic effected 2020 and represents just 14% of all anaesthetics given in 2021.

The number of emergency cases continues to rise (Table 4 & Figure 4) and the pandemic had minimal effect in 2020 with a fall of just 0.8% on the 2019 figure. There were 37,655 emergency cases in 2021, a rise of 11.9% on the 2019, pre-pandemic figure, and the highest yet recorded representing 18.1% of all anaesthetics given. As noted in previous Annual Reports however, the steady rise in emergency cases since 2013 may be partly due to the improved recording of the patient ASA score on the anaesthetic record so that cases previously recorded by HIPE coders as “non-emergency or not known” are now being correctly recorded as emergencies. Covid-19 may also have contributed as many patients scheduled for elective surgery were cancelled due to the pandemic. Having missed the opportunity of a planned intervention the condition of some of these patients deteriorated and they then required emergency admission and treatment. The figures relating to anaesthesia for emergency cases are also given in Figure 6 along with those for obstetric and day case procedures.

The number of patient discharges reporting an anaesthetic according to specific age groups is given in Table 5 & Figure 5. Prior to the pandemic the number of patients in the age groups 35 years and younger was declining slowly while the reverse was occurring in the age groups over 35 years. However for the years 2020 and 2021 this pattern has been reversed or stalled in some age groups and maintained in others. What the long term effects of the pandemic on the age patterns will be remains to be seen.

The procedures for which an anaesthetic was given in 2021 according to the Australian Classification of Health Interventions (ACHI) are shown in Table 7. With two exceptions, namely procedures on the Ear and Mastoid and procedures on the Cardiovascular system, figures for all procedures in 2021 exceed those for 2020.

The top four interventions remain Obstetrical Procedures, Gynaecological Procedures, and Procedures on the Musculoskeletal system and Digestive system. For the first time the number of Procedures on the Musculoskeletal system exceed Obstetrical Procedures.

57 patients with a diagnosis of brain stem death donated organs for transplant in 2021 compared with 56 in 2020 and 78 in 2019. In his Director's Statement at the beginning of the ODTA Annual Report for 2021 Professor Jim Egan states "2021 witnessed the devastating impact Covid-19 had on organ donation and transplantation services" ... "Covid-19, which is an extreme example of unscheduled care pressures on acute hospital services, demonstrated the fragile environment in which transplant services exist in Ireland. The current model in Ireland whereby transplant services operate in acute general hospitals and compete for beds, theatre capacity and intensive care beds, underpins the reason why transplantation suffered so adversely during the pandemic."²

21,525 patients tested positive for Covid-19 while in hospital in 2021 (Figure 7). The highest number of positive tests occurred in the first and last two months of the year. 16% of patients were asymptomatic (Figure 8) but were positive on routine Covid-19 testing. It is important to note that these data refer to all patient discharges in 2021 and do not identify which patients had an anaesthetic during their hospital admission. Nevertheless the impact on all aspects of hospital activity including anaesthesia services will have been significant.

All acute public hospitals participate in HIPE. Please note that the 2020 and 2021 data provided does not include any public activity performed in private hospitals under the 2020 private hospital agreements.

Acknowledgements

The NCPA acknowledges the support and expertise of the following people and the institutions they represent in preparing this report.

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Organ Donation and Transplant Ireland	Professor Jim Egan, Director, ODTI Ms Brenda Poole, Donor Co-ordinator, ODTI
NCPA Working Group Members	Ms Una Quill, NCPA Programme Manager Ms Aileen O'Brien, NCPA Nurse Lead Dr Michael Dockery, NCPA National Clinical Lead Dr John Cahill

References

1. [hse.ie/anaesthesia](https://www.hse.ie/anaesthesia) – Programme Documents and Resources
2. Available at <https://www.hse.ie/eng/about/who/acute-hospitals-division/organ-donation-transplant-ireland/publications/organ-donation-and-transplant-ireland-annual-report-2020.pdf>
(last accessed April 2022)

APPENDIX 1

Hospital Groups

Ireland East

Mater Misericordiae University Hospital,
 St Vincent's University Hospital,
 Midland Regional Hospital Mullingar,
 St Luke's Hospital Kilkenny,
 Wexford General Hospital,
 Our Lady's Hospital Navan,
 St Colmcille's Hospital,
 St Michael's Hospital Dun Laoghaire,
 National Maternity Hospital,
 Cappagh National Orthopaedic Hospital,
 The Royal Victoria Eye and Ear Hospital, Dublin.

RCSI

Beaumont Hospital,
 Our Lady of Lourdes Hospital Drogheda,
 Connolly Hospital,
 St Joseph's Hospital, Raheny,
 Cavan General Hospital,
 Rotunda Hospital,
 Louth County Hospital,
 Monaghan Hospital.

Dublin Midlands

St James's Hospital,
 AMNCH-Tallaght University Hospital**,
 St Luke's Hospital, Rathgar,
 Midland Regional Hospital Tullamore,
 Naas General Hospital,
 Midland Regional Hospital Portlaoise,
 The Coombe Women & Infants University Hospital.

South/South West

Bantry General Hospital,
 Cork University Hospital,
 University Hospital Kerry,
 Mallow General Hospital,
 Mercy University Hospital,
 South Infirmity Victoria University Hospital,
 South Tipperary General Hospital,
 Clonmel, University Hospital Waterford,
 Kilcreene Orthopaedic Hospital.

University of Limerick Hospital Group (U L Hospital Group)

University Hospital Limerick,
 University Maternity Hospital, Limerick,
 Croom Orthopaedic Hospital Limerick,
 Ennis General Hospital,
 Nenagh General Hospital,
 St John's Hospital Limerick.

Saolta

University Hospitals Galway including Merlin Park Hospital,
 Sligo University Hospital,
 Letterkenny University Hospital,
 Mayo University Hospital,
 Portiuncula University Hospital,
 Roscommon University Hospital.

Children

Our Lady's Children's Hospital Crumlin,
 The Children's University Hospital Temple Street,
 AMNCH-Tallaght University Hospital Paediatrics.

** For reporting purposes, discharges aged 17 years and older from Tallaght University Hospital are included in the Dublin Midlands Hospital Group, while discharges aged less than 17 years from Tallaght University Hospital are included in the Children's Hospital Group.

