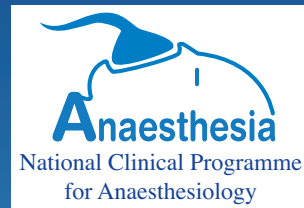


HEALTHCARE
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NCPA/HPO Annual Report 2018

**General Anaesthetics,
Neuraxial blocks and Regional blocks,
Administered in Public hospitals in Ireland
in 2018 as captured in HIPE**

November 2019

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Introduction

The Annual report for 2018 describes the number of general anaesthetics, neuraxial blocks and regional blocks administered in public hospitals in Ireland in 2018 as captured in HIPE. These data are set out alongside data from the previous four years to allow comparisons to be made.

As in previous Annual Reports, information on patient's age, gender, ASA status, urgency of the procedure and the Australian Classification of Health Interventions (ACHI) is also included.

Organ Donation and Transplant Ireland (ODTI) has kindly updated the information on beating heart organ donations from which the number of patients with an ASA 6 designation can be derived. ASA 6 indicates a declared brain stem dead patient whose organs are being removed for donor purposes. Donation or retrieval of organs following a diagnosis of brain stem death is not routinely coded by HIPE. Although one HIPE office does have a longstanding agreement to record these procedures, HIPE cannot provide information on patients with an ASA 6 status on a nationwide basis.

The ASA 99 Audit Pilot Project has been completed and individual reports have been sent to each of the six departments of anaesthesiology and HIPE offices that took part in the audit. A composite report based on data from all six participants has also been drawn up and a summary of this is given in Part 3 of this Annual Report.

Plans for a national audit of emergency readmission of day case patients following procedures involving an anaesthetic, are well advanced. The audit protocol has been drawn up and the Healthcare Pricing Office (HPO) is ready to assist individual HIPE offices in retrieving the MRN's of relevant patients. Before commencing the audit however, the NCPA must ensure that all relevant aspects of the General Data Protection Regulations (GDPR) are observed and as soon as this has been established, the audit will begin.

The format of the 2018 Annual Report is identical to previous Annual Reports with data for the last five years including 2018. For practical reasons, it is felt that five is the maximum number of years to be included in an Annual Report, so each new Annual Report will omit data from earlier years – data for 2013 is not included in this Annual Report but is of course available in previous Annual Reports.

As with previous Annual Reports, the authors acknowledge that this Annual Report describes only part of the work of anaesthesiologists.

Part 1:

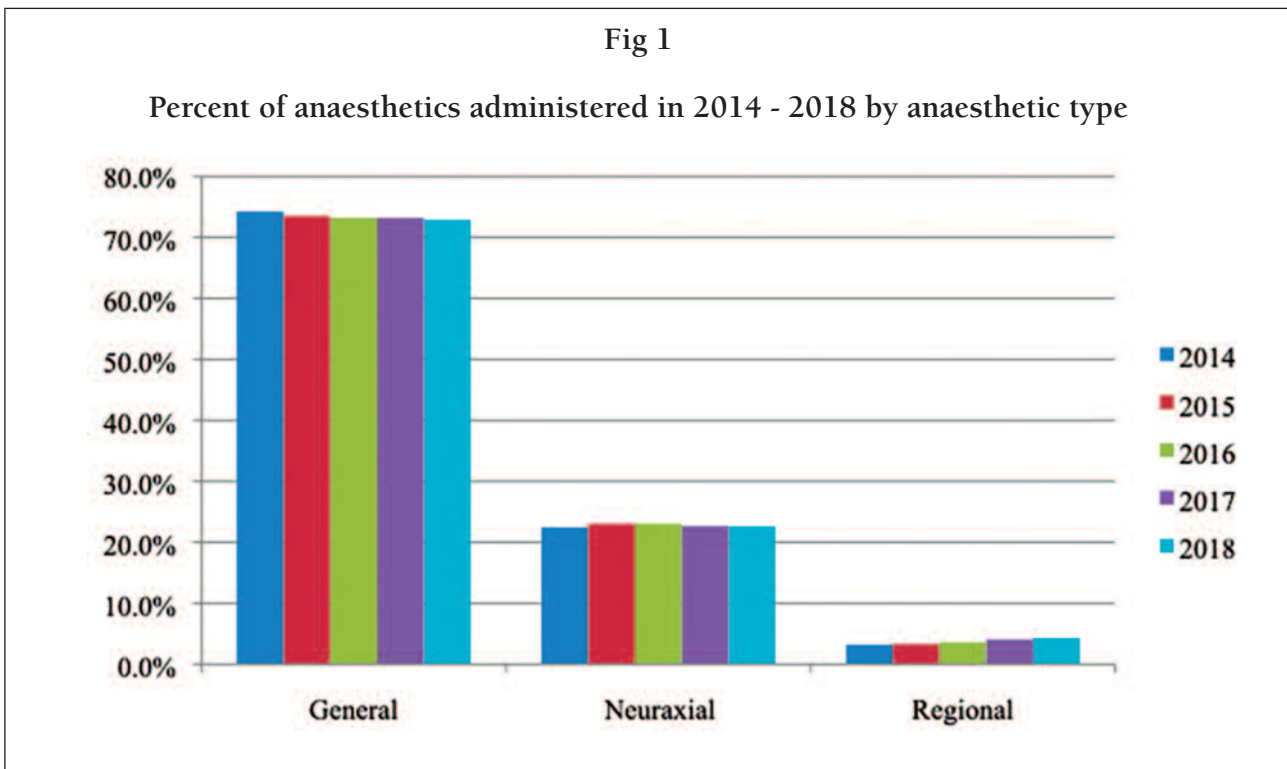
Principal Data

Table 1 & Figure 1 describe the number and type of anaesthetic administered in 2014 – 2018 as reported to HIPE

Table 1

Number of anaesthetics administered in 2014 - 2018 by anaesthetic type

Year	2014	2015	2016	2017	2018
Anaesthetic type	Anaesthetic Count				
General	174,976	170,879	168,304	169,640	170,012
Neuraxial Block	53,075	53,609	53,058	52,692	52,825
Regional	7,623	7,900	8,414	9,466	10,250
TOTAL *	235,674	232,388	229,776	231,798	233,087



*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 2014 – 2018 by gender as reported to HIPE

Table 2

Number of patient discharges reporting an anaesthetic procedure(s) in 2014 - 2018 by gender

Year	2014	2015	2016	2017	2018
Gender	Discharge Count				
Male	86,104	85,257	83,975	85,003	84,572
Female	138,370	136,129	134,303	134,336	135,360
TOTAL	224,474	221,386	218,278	219,339	219,932

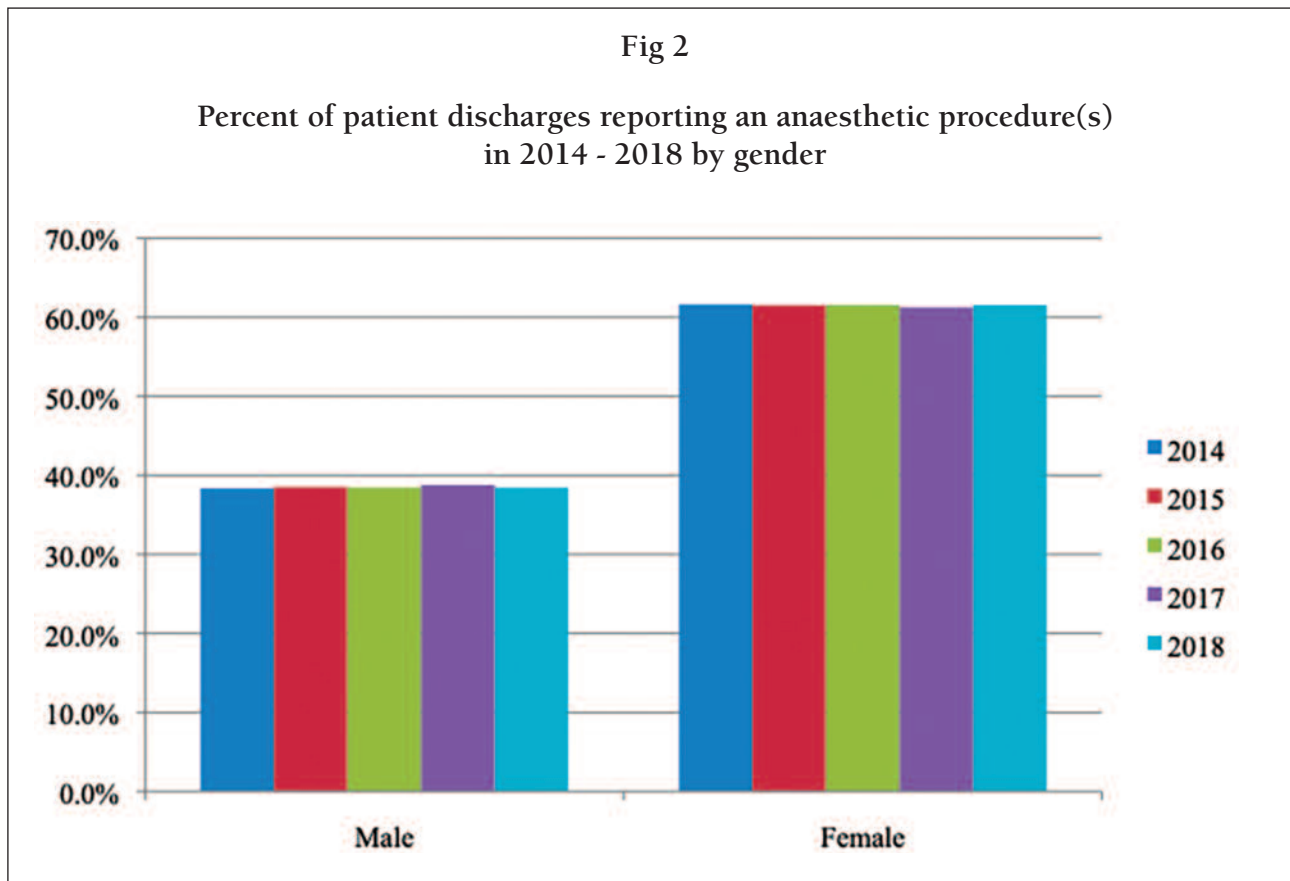
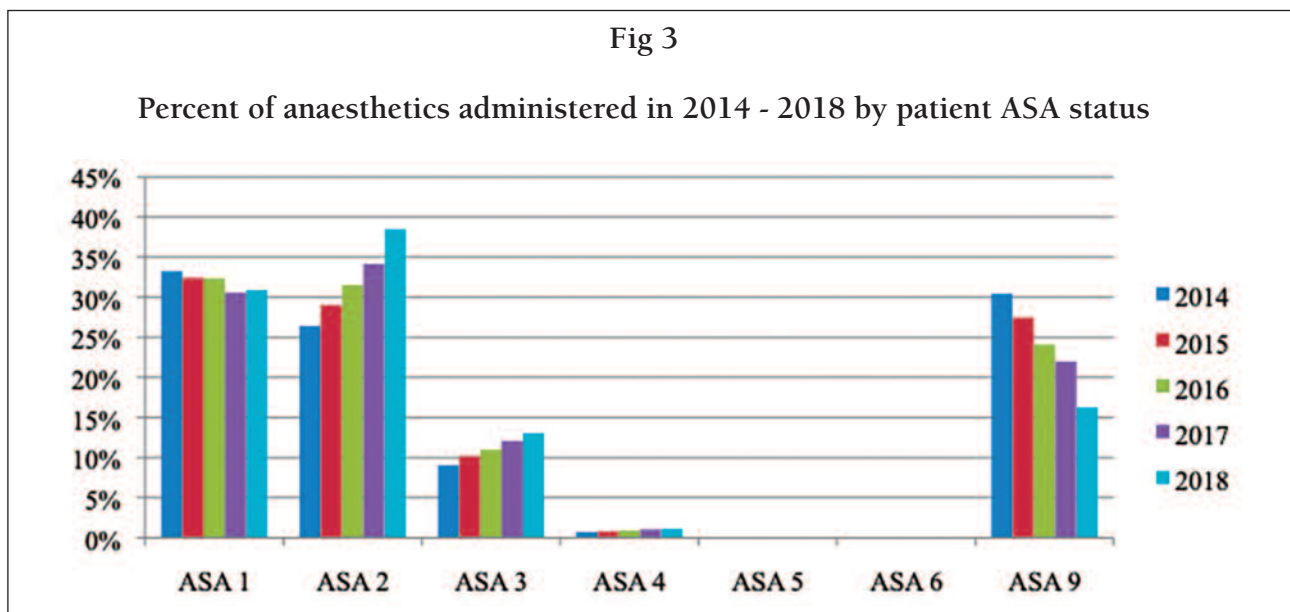


Table 3 & Figure 3 describe the number of anaesthetics administered in 2014 – 2018 by patient ASA status as reported to HIPE

Table 3
Number of anaesthetics administered in 2014 - 2018 by patient ASA status

Year		2014	2015	2016	2017	2018
*ASA Score	Patient status	Anaesthetic Count				
1	Normal healthy patient	78,387	75,351	74,370	70,879	72,055
2	Mild systemic disease	62,237	67,432	72,408	79,199	89,756
3	Severe systemic disease limiting activity	21,400	23,651	25,279	28,050	30,472
4	Severe systemic disease posing a constant threat to life	1,748	1,914	2,140	2,463	2,662
5	Moribund patient not expected to survive longer than 24 hrs without surgery	150	163	150	199	*
6	Brain stem death and organ donation for transplant	0	6	8	8	~
9	No documentation on ASA status	71,752	63,871	55,421	51,000	37,957
TOTAL		235,674	232,388	229,776	231,798	233,087



#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 [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 *.

Table 4 & Figure 4 describe the number of anaesthetics administered in 2014 – 2018 by urgency of procedure as reported to HIPE

Table 4

Number of anaesthetics administered in 2014 – 2018 by urgency of procedure

Year	2014	2015	2016	2017	2018
Anaesthetic Count					
Emergency	22,864	23,604	26,048	27,550	32,187
Non emergency or not known	212,810	208,784	203,728	204,248	200,900
TOTAL	235,674	232,388	229,776	231,798	233,087

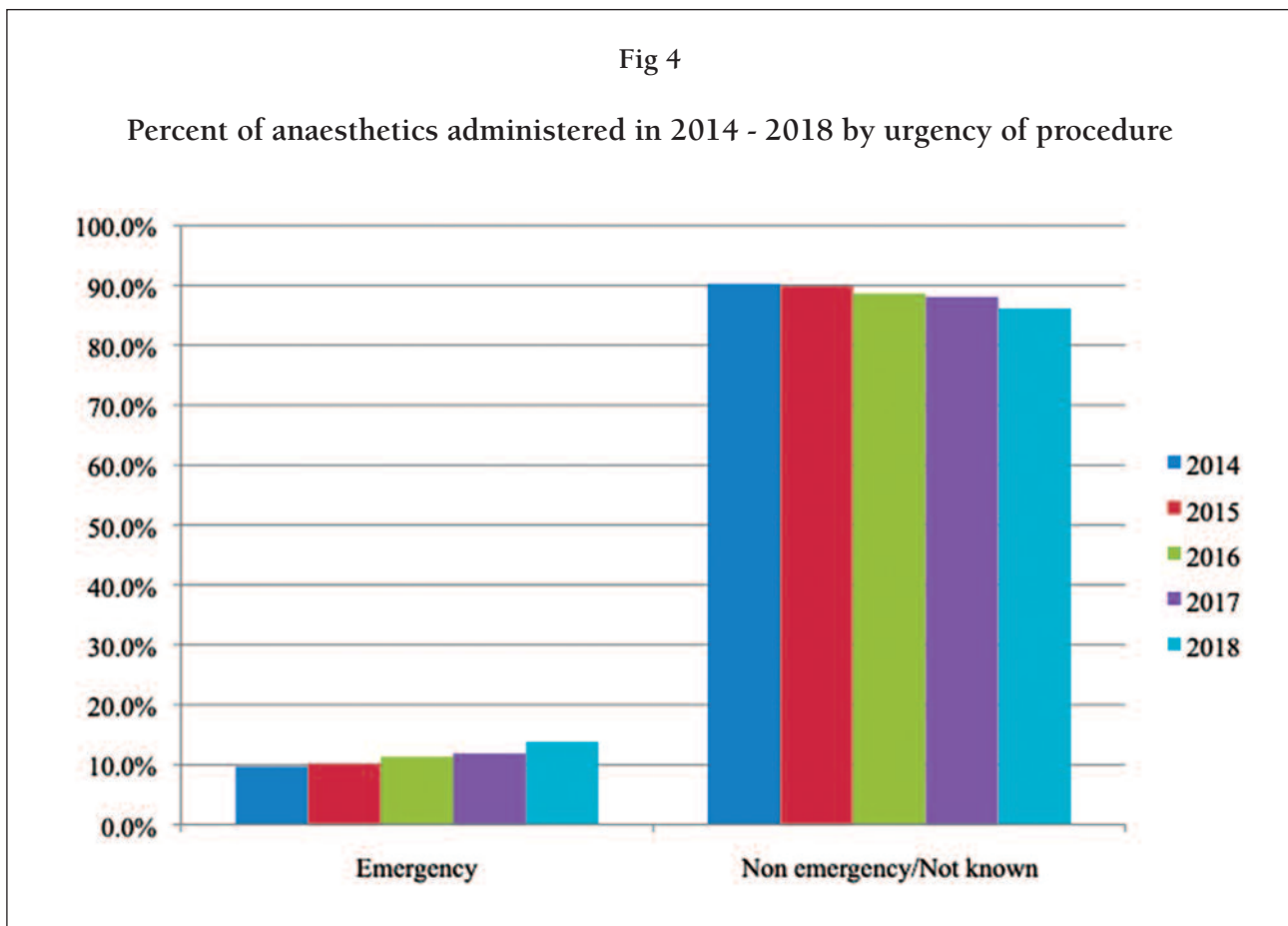


Table 5 & Figure 5 describe the number of patient discharges reporting an anaesthetic procedure(s) in 2014 – 2018 by age as reported to HIPE

Table 5
Number of patient discharges reporting an anaesthetic procedure(s) in 2014 - 2018 by age

Year	2014	2015	2016	2017	2018
Age categories (yrs)	Discharge Count				
Less than 1 yr	2,430	2,272	2,119	1,948	1,952
1 – 05 yrs	15,858	14,833	13,859	13,520	13,175
06 – 15 yrs	20,579	20,147	20,028	20,411	20,603
16 – 25 yrs	20,428	19,535	18,494	18,460	18,122
26 – 35 yrs	44,968	43,222	41,109	39,449	38,684
36 – 45 yrs	35,766	36,024	36,243	36,472	36,636
46 - 55 yrs	24,135	24,234	24,324	25,009	25,240
56 – 65 yrs	23,478	23,606	23,945	24,408	24,584
66 – 75 yrs	21,279	21,884	22,415	23,289	24,240
76 – 85 yrs	12,497	12,556	12,579	13,060	13,372
Over 85 yrs	3,056	3,073	3,163	3,313	3,324
TOTAL	224,474	221,386	218,278	219,339	219,932

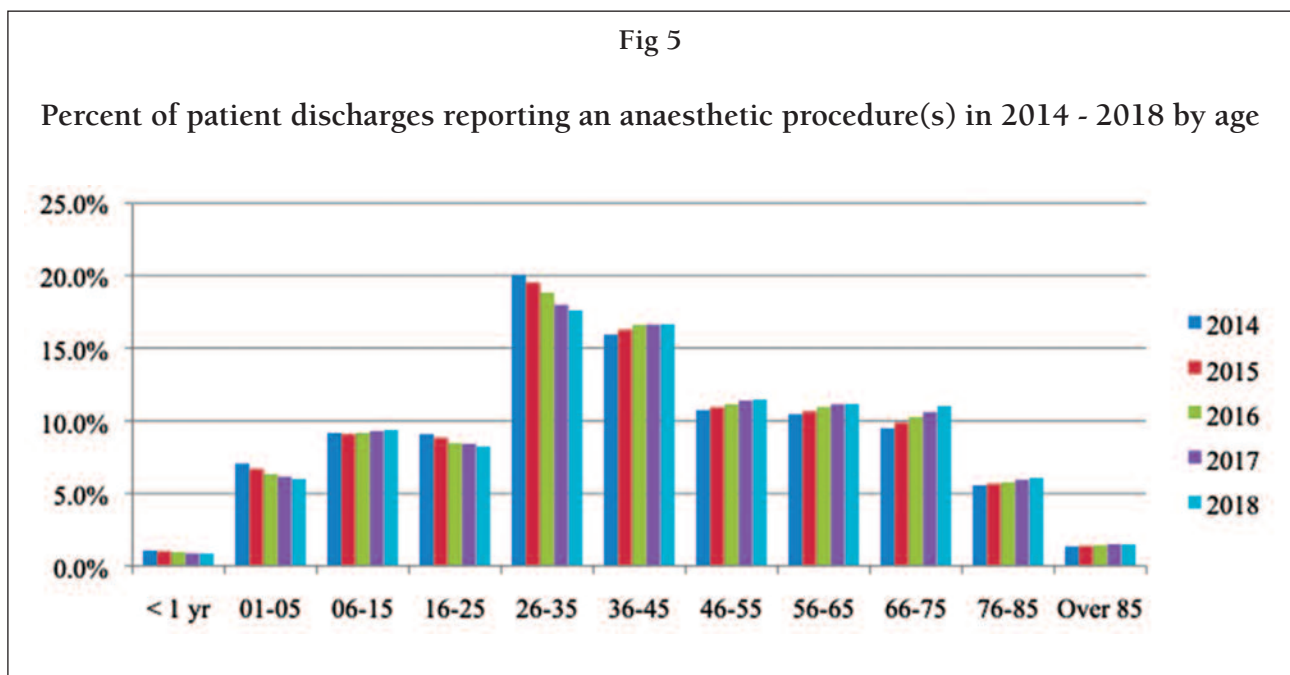


Table 6 describes the number of patient discharges reporting an anaesthetic procedure(s) in 2018 by age and hospital group as reported to HIPE

Table 6							
Number of patient discharges reporting an anaesthetic procedure(s) in 2018 by age and hospital group							
Discharge count by age and hospital group							
Age	Ireland East	RCSI	Dublin Midlands	South S/West	UH Limerick	Saolta	Children's Group
Less than 1 yr	~	0	0	121	42	40	1,747
01 – 05yrs	*	473	643	1,987	925	1,779	7,011
06 – 15yrs	1,221	1,354	1,057	3,732	1,614	3,016	8,609
16 – 25yrs	3,648	2,971	3,053	3,812	1,389	2,778	*
26 – 35yrs	8,806	7,601	6,645	7,386	2,680	5,565	~
36 – 45yrs	8,321	6,488	6,162	7,563	2,696	5,406	0
46 – 55yrs	6,237	3,754	3,726	5,773	2,070	3,680	0
56 – 65yrs	6,332	2,981	3,643	5,882	1,760	3,986	0
66 – 75yrs	5,909	2,655	3,386	6,175	1,741	4,374	0
76 – 85yrs	3,065	1,602	1,757	3,318	898	2,732	0
Over 85yrs	724	397	441	828	217	717	0
Sub totals	44,622	30,276	30,513	46,577	16,032	34,073	17,839
Total							219,932

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 2014 – 2018 by the Australian Classification of Health Interventions (ACHI) as reported to HIPE

Intervention Chapter		Anaesthetic Count				
		Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
1.	Procedures on the nervous system	5,469	5,244	5,374	5,428	5,484
2.	Procedures on endocrine system	1,393	1,267	1,135	1,223	1,246
3.	Procedures on eye and adnexa	7,610	7,472	7,749	7,985	8,916
4.	Procedures on ear and mastoid process	4,500	4,472	4,263	4,391	4,417
5.	Procedures on nose, mouth and pharynx	8,737	8,413	7,946	7,793	8,487
6.	Dental services	6,154	5,646	5,328	5,013	4,977
7.	Procedures on respiratory system	4,114	4,172	4,269	4,276	4,439
8.	Procedures on cardiovascular system	8,294	8,422	8,357	8,199	7,831
9.	Procedures on blood and blood forming organs	1,226	1,196	1,220	1,204	1,166
10.	Procedures on digestive system	36,399	35,958	35,872	36,458	36,186
11.	Procedures on urinary system	9,543	9,539	9,819	10,371	10,309
12.	Procedures on male genital organs	7,335	7,003	6,773	7,523	7,049
13.	Gynaecological procedures	24,584	23,911	23,511	23,512	24,667
14.	Obstetric procedures	40,023	39,445	38,103	37,061	37,230
15.	Procedures on musculoskeletal system	46,157	46,519	46,608	46,583	45,752
16.	Dermatological and plastic procedures	12,820	12,305	12,088	12,442	12,142
17.	Procedures on breast	4,816	4,855	4,892	5,241	5,821
18.	Radiation oncology procedures	629	464	418	636	574
19.	Non-invasive, cognitive and other interventions not elsewhere classified	3,123	3,291	3,270	3,414	3,292
20.	Imaging services	1,870	1,798	1,754	1,841	1,870
	No procedure on same date as anaesthetic procedure	938	996	1,027	1,204	1,232
TOTAL		235,674	232,388	229,776	231,798	233,087

Table 8 describes the number of patient discharges reporting an anaesthetic procedure(s) in 2018 by admission type and hospital group as reported to HIPE

Table 8								
Number of patient discharges reporting an anaesthetic procedure(s) in 2018 by admission type and hospital group								
Discharge count by admission type and hospital group								
	Ireland East	RCSI	Dublin Midlands	South S/West	U H Limerick	Saolta	Children's Group	TOTAL
Day cases	14,639 (32.8%)	7,326 (24.2%)	8,148 (26.7%)	17,103 (36.7%)	6,458 (40.3%)	11,241 (33.0%)	10,301 (57.7%)	75,216 (34.2%)
In Patients								
<i>Elective</i>	12,680 (28.4%)	6,339 (20.9%)	7,318 (24.0%)	12,069 (25.9%)	3,390 (21.1%)	8,746 (25.7%)	3,905 (21.9%)	54,447 (24.8%)
<i>Emergency</i>	8,405 (18.8%)	7,751 (25.6%)	7,979 (26.1%)	9,682 (20.8%)	3,116 (19.4%)	7,918 (23.2%)	3,633 (20.4%)	48,484 (22.0%)
Maternity	8,898 (19.9%)	8,860 (29.3%)	7,068 (23.2%)	7,723 (16.6%)	3,068 (19.1%)	6,168 (18.1%)	0 (0%)	41,785 (19.0%)
Totals	44,622	30,276	30,513	46,577	16,032	34,073	17,839	219,932 (100.0%)

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

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 77 patients donated organs following a diagnosis of brain stem death in 2018.

Deceased Organ Donors					
Year	2014	2015	2016	2017	2018
Beating heart	59	77	74	91	77
Non beating heart	4	4	3	8	4
TOTAL	63	81	77	99	81

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ODTI Annual Report for 2018 is available at www.odti.ie

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)

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Part 3:

Audit Projects

1. ASA 99 Pilot Audit Project

The ASA 99 pilot audit project study has been completed in six departments of anaesthesiology and local HIPE offices. The audit retrospectively examined a three month period in each hospital and attempted to identify the reasons why a significant number of anaesthetic records, 22% in the NCPA/HPO Annual Report for 2017, do not record the patient ASA score or the emergency nature of a procedure and are therefore coded ASA 99 in HIPE.

Individual reports for the six departments and HIPE offices have been prepared as well as a composite report based on results from all six hospitals. While the six individual reports are for the exclusive use of the relevant hospitals, the composite report contains a number of findings which have wider application and could help to improve the standards of anaesthetic record keeping generally.

A total of 10,621 anaesthetics were given in the six hospitals over the three month audit period and recorded in HIPE. 3,283 of these (30.9%) were coded ASA 99 by HIPE and from this sub group, 479 cases (14.6%) were reviewed by the audit assessors (consultant and/or anaesthesiology registrar) and the reports are based on these reviews.

Fifty five percent (264) of patient discharges were female and 33% of procedures (159) were emergencies. ASA 1 accounted for 51% of all scores, ASA 2 for 34%, ASA 3 for 14%, and ASA 4 for 0.6%. There were no ASA 5 scores.

Sixty three percent (303) of all anaesthetic records examined were correctly coded ASA 99 by HIPE but in 37% (176) of cases an ASA code was partially recorded (ASA score recorded or “e” modifier was used, but not both) or fully recorded (both ASA score recorded and “e” modifier used) on the anaesthetic record. This means that a large majority of HIPE ASA 99 codes were correct and the anaesthesiologist had failed to record two important pieces of information on the anaesthetic record. While simple human error is undoubtedly a factor for anaesthesiologists and HIPE coders alike, feedback from the audit assessors identifies the use of multiple non-uniform anaesthetic record sheets, including electronic records, in the same hospital, as by far the commonest cause of these errors. Separate and different anaesthetic record sheets are frequently found in the labour ward, the general wards, the dental clinic, the day ward and pre-assessment clinics and they may be stored in different sections of the patient case notes. The authors have previously referred to the use of electronic anaesthetic records nationally with an agreed minimum data set as a possible solution to this problem.

Seventy seven percent (368) of anaesthetic records did not record the urgency of the procedure but “out of hours” working does not appear to play a part in this as over 90% (337) of these procedures were carried out between the hours of 08:00hrs and 18:00hrs.

ASA 99 Pilot Audit Project Study

Total number of anaesthetics given in the audit period	10,621
Total number of anaesthetic records coded ASA 99 in the audit period	3,283
Total number of anaesthetic records coded ASA 99 reviewed and included in the audit	479
Percentage of total anaesthetics given in the audit period coded ASA 99	31%
Percentage of anaesthetic records coded ASA 99 reviewed and included in the audit	15%
Number of Male patients	215 (45%)
Number of female patients	264 (55%)
Number of emergency cases	159 (33%)

Twenty percent (96) of anaesthetic records did not have an anaesthesiologist's signature (consultant or trainee). While this is not related to the ASA code, it is an important finding indicating a significant failure in proper record keeping. Some pre-assessment documents did contain anaesthesiologist's signatures but the signature of the anaesthesiologist who administered the anaesthetic must appear on the anaesthetic record. While these results highlight certain areas for improvement in aspects of anaesthetic record keeping in the six hospitals that took part in the study, caution must be exercised if applying these findings in a wider context since these data come from a pilot study which examined a sample (14.6%) of anaesthetic records coded ASA 99 in a three month period. Nevertheless it is anticipated that the results will have a wider application and have the potential to improve standards of record keeping generally.

The NCPA and the HPO do not plan to carry out another study of this nature but it is anticipated that the inclusion of the HIPE ASA 99 edit alert will continue improving standards of data recording on anaesthetic records. This edit alert is now part of every HIPE database and brings ASA 99 codes to the attention of the HIPE coder in real time so that the anaesthetic coding can be checked and corrected immediately.

2. Emergency readmission of day cases within 48 hours of discharge.

The start of this audit project has been delayed somewhat while departments of anaesthesiology try to confirm that when conducting the audit they comply with the General Data Protection Regulations (GDPR) introduced in 2018. The National Office of Clinical Audit (NOCA) has issued guidance for clinical audit in the light of GDPR [2], and a personal communication from NOCA confirms that our protocol for the audit complies with GDPR and that written consent from patients is not required. However, hospitals must have some mechanism of informing patients that clinical audit is standard practice and that patients' case notes may be reviewed from time to time for the purposes of improving standards of patient care. This information may be in the form of a leaflet included in the admission pack or set out on the hospital web site. The task of confirming that hospitals taking part in the audit do indeed inform patients of their clinical audit activities is proceeding.

Discussion & Conclusion

This is the sixth NCPA/HPO Annual Report and it is gratifying to see a continued consistency in the pattern of the data. The total number of anaesthetics (general, neuraxial and regional blocks) given in 2018 was 233,087 (Table 1) which is within plus or minus two percent of the figures for the five previous years.

The male to female ratio is unchanged at 2:3 (Table 2) reflecting the large commitment of anaesthesiology to obstetrics and gynaecology which together accounted for 27% of all anaesthetics given in 2018 (Table 7).

The number of patients by age category (Table 5) is unchanged. However, within the age categories there is a continuing steady fall in the number of patients aged 36 years and under and a steady rise in the number of patients over 36 years.

A total of 1,952 infants aged less than one year had an anaesthetic in 2018 (Table 5). 89% of these were given in the Children's Hospitals Group comprising the three specialist paediatric hospitals. The Children's Hospital Group also has the highest percent of day case admissions at 57.7%. The next highest was the University Hospital Limerick Group with 40.3% (Table 8)

The percentage of ASA 99 codes recorded by HIPE (that is, neither the ASA patient score or the "e" modifier used on anaesthetic record) continues to fall. The first NCPA/HPO Annual Report, for 2013 [3], showed that 35% of anaesthetic records failed to give a patient ASA score. The figure in this Annual Report for 2018 is 16%.

A summary of the ASA 99 Pilot Audit Study is given in the audit section of this Annual Report and identifies multiple non uniform anaesthetic record sheets in the same hospital as the commonest cause of the high percentage of ASA 99 codes recorded by HIPE.

Since 2013 the NCPA has been drawing attention to this omission in anaesthetic record keeping so it is most encouraging to see that the figure in this Report for 2018 has fallen to 16% from 30% in 2014. Of equal note is the significant increase in ASA 2, ASA 3 and to a lesser extent, ASA 4, which has accompanied the fall in ASA 9's since 2013. The number of ASA 1 scores has fallen slightly (Table 3) over this period.

The current Annual Report indicates that the “e” modifier was used on just 14% of anaesthetic records in 2018. Considering the physical proximity of the location for recording the ASA score and the use of the “e” modifier on the anaesthetic record, it is difficult to explain how the recording of one has improved so significantly while the other not at all.

Recording of procedures as emergencies by using the “e” modifier on the anaesthetic record remains poor. The NAPS 5 study [4] examined data from 4,949 anaesthetics given in one week in 2012 .60% of these cases were for elective procedures while the combined total of “urgent”, “expedited” and immediate” procedures was 37%.

It is possible however that we have been overestimating the number of emergency cases annually. 22% of patients who had an anaesthetic in 2018 had been admitted as an emergency (Table 8) and almost certainly their procedures were carried out as emergencies. While some patients who were admitted electively, either as day cases or as in patients, may have subsequently required an emergency procedure including an anaesthetic, the number of such patients is unlikely to have been large enough to bring the total up to 37%. However, even taking the lowest figure of 22% as a more accurate reflection of the emergency case load, this means that we are failing to record the emergency nature of 34% of these procedures accurately on the anaesthetic record.

While the NCPA does not plan to conduct another ASA 99 audit study, we strongly encourage departments of anaesthesiology to work closely with their colleagues in HIPE and make use of the ASA 99 edit alert which is now part of every HIPE database and brings ASA 99 codes to the attention of the HIPE coder in real time so that the anaesthetic coding can be checked and corrected immediately.

The proposed national audit of emergency readmission of day cases within 48 hours of discharge is ready to commence but the NCPA is currently attempting to verify that all hospitals comply with the GDPR. Although NOCA has issued clear and helpful guidance [2], interpretation of GDPR varies from hospital to hospital so delays are inevitable. Nevertheless NCPA is confident that once the audit starts it will proceed rapidly and we believe that the results will have a very positive effect on clinical practice.

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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NCPA Working Group Members	Ms Una Quill, NCPA Programme Manager Ms Aileen O'Brien, NCPA Nurse Lead Dr Jeremy Smith, NCPA National Clinical Lead Dr Margaret Bourke Dr Larry Crowley Dr James Shannon Dr John Cahill

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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 Colmcilles 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,
 Midlands Regional Hospital Tullamore,
 Naas General Hospital,
 Midland Regional Hospital Portlaoise,
 Coombe Women & Infant 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,
 Kilcreen Orthopaedic Hospital.

University Hospital, Limerick

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.

