



Clinical Strategy and Programmes Division



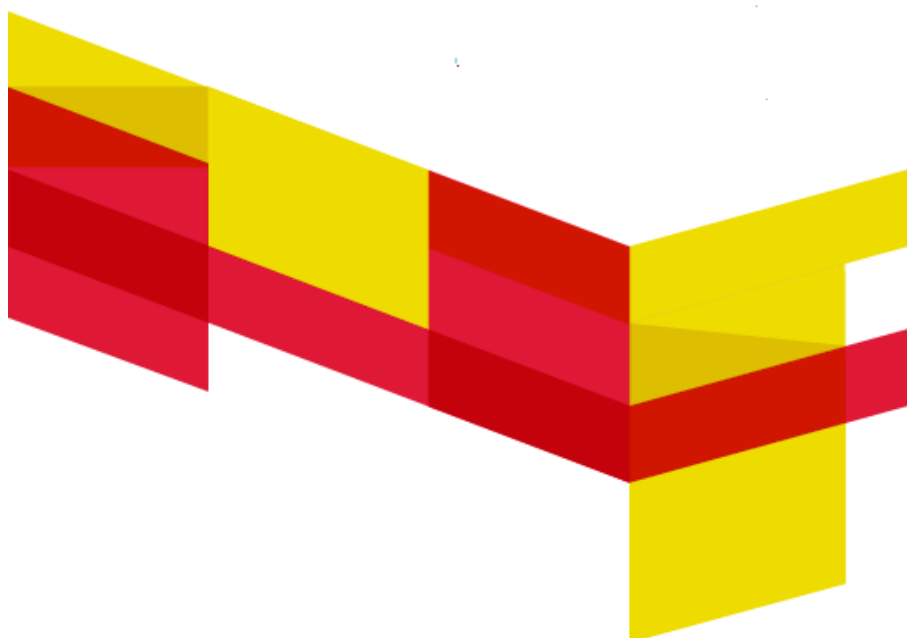
RCPI



RCSI



National Quality Assurance & Improvement System – Clinical



NQAIS Clinical User Guide



Date: 2023

Glossary

Note: Some of the definitions below were taken from the Healthcare Pricing Office Data Dictionary 2022

%DC	Percentage day case
AAU	Acute Assessment Unit
ABF	Activity Based Funding
ACHI	Australian Classification of Health Interventions
ACS	Australian Coding Standards
AHRQ	Agency for Healthcare Research Quality
AM	Australian Modification
AMAU	Acute Medical Assessment Unit
ASAU	Acute Surgical Assessment Unit
AvLOS	Average Length of Stay (in hospital)
BDU	Bed days used
Covid 19	Coronavirus – Covid 19
CCS	Clinical Classification System / Software
CCS-IM	Clinical Classification System (Irish Modification)
CDU	Clinical Decision Unit
DoSA	Day of Surgery Admission
DRG	Diagnostic Related Group
Dx 1	Principal diagnosis on admission
Dx 2-30	Additional diagnosis/es
ED	Emergency Department
EM	Emergency Medicine
E-MRN	Encrypted Medical Record Number
GMS	General Medical Services
GP	General Practitioner
HCUP	Healthcare Cost and Utilization Project
HIPE	Hospital In-Patient Enquiry
HIU	Health Intelligence Unit
HIV	Human Immunodeficiency Virus
HPO	Healthcare Pricing Office
HSE	Health Service Executive
ICD-10-AM	International Classification of Diseases Version 10 (Australian Modification)
ICPOP	Integrated Clinical Programme for Older Person
IP	Internet Protocol
LOS	Length of Stay (in hospital)
MRN	Medical Record Number
NAMP	National Acute Medicine Programme
NCPS	National Clinical Programme in Surgery
NCPTOS	National Clinical Programme for Trauma and Orthopaedic Surgery
NCPOG	National Clinical Programme for Obstetrics and Gynaecology
NQAIS	National Quality Assurance and Improvement System

Post trim	Patients with LOS greater than the trim point value for the diagnosis or procedure as appropriate (see trim point section)
Pre trim	Patients with LOS less than the trim point value for the diagnosis or procedure as appropriate (see trim point section)
Pre-op	Number of days prior to the principal surgical procedure
Proc 1	Principal Procedure
Proc 2-29	Additional Procedure(s)
RCPI	Royal College of Physicians of Ireland
RCSI	Royal College of Surgeons in Ireland
Trim point	A trim point is used to statistically identify records where the LOS is very prolonged and unlikely to reflect the acute phase of treatment
White, Yellow, Red bed days	Indicative metric of the proportion of beds used that are on target, near target and off target
	<i>On target</i> : top quartile of clinical teams in terms of AvLOS
	<i>Near target</i> : second quartile of clinical teams in terms of AvLOS
	<i>Off target</i> : clinical teams beyond the median in terms of AvLOS
Ukraine Temporary Protection Directive	HIPE collects data where patients are covered by the Ukraine Temporary Protection Directive (having been allocated a PPS number) and guidance on this flag is contained in the HIPE Instruction manual (hpo.ie)
Pal Care/T invol	Indicates if the Palliative Care Team were involved
Covid-19 indicator	The COVID-19 flag is set where the patient has a lab confirmed COVID-1. Diagnosis is blank otherwise. This diagnosis may not have occurred during the hospital visit so the flag is set if the patient has either U07.1 coded or the patient indicates they have previously been diagnosed with lab confirmed COVID-19.
Mode of Emerg adm	Indicates where the patient was treated prior to being admitted into the hospital as an emergency in-patient or when the patient was treated only in a registered Acute Medical Assessment Unit (AMAU) or in a registered Acute Surgical Assessment Unit (ASAU).
TF to pre D/C RU	Transfer to pre discharge rehab unit within the hospital
Med fit for d/c date	The medically fit for discharge date is the date where a patient had been identified as being fit for discharge (sometimes referred to as "clinically fit for discharge date").
Discharge Mode	Identifies the type of post-acute care to be received by the patient following their discharge from acute care (i.e. the end of their in-patient or day case stay) if applicable to a case e.g. long term care or rehab care

Document History

		Issue Date	Modified By	Section, Page(s)and Text Revised
V001		01/10/17	NQAIS Clinical Working Group	
V002		01/12/2020	NQAIS Clinical Group	All pages reviewed, text changes and updates
V003		01/03/2023	NQAIS Clinical Prog Mgr- Implementation & Deployment, National Clinical Programmes, Office of the National Clinical Advisor and Group Lead, Acute Office Operations Division.	All pages reviewed, text changes and updates

This document was developed building on previous material produced by the National Clinical Programme in Surgery, the National Acute Medicine Programme, the Health Intelligence Unit, Health and Wellbeing, HSE, and the Department of Surgical Affairs, RCSI.

Target audience

The target audience is the end users of the NQAIS Clinical system such as clinicians, managers, healthcare teams, Clinical Directors, Business Managers, Group CEOs, Corporate HSE personnel, National Clinical Leads/Advisors, Consultants and Non-Consultant Hospital Doctors, Nurses and Midwives, the Acute Hospital Operations Division, Department of Health personnel, researchers, data analysts, statisticians, quality and patient safety teams and those carrying out audits for registered medical practitioners.

About this user guide

This User Guide explains how to use the NQAIS Clinical system in language that is non-technical. It aims to provide users with an understanding of the core concepts of NQAIS Clinical and to demonstrate how users can make the best use of the system.

Gaining access to the NQAIS Clinical system

NQAIS Clinical is accessible to registered users who have been provided with authorisation and is available on the Health Atlas Ireland home page at www.healthatlasireland.ie

User Agreement must be signed by the applicant and the person authorising access to the system. The User Agreement outlines data confidentiality and system access requirements.

There are 3 levels of access (1) individual hospital access - authorisation is provided by the Hospital Manager or the Clinical Directors or designated person. (2) Hospital Group access – authorisation is provided by the Group CEO or the Group Clinical Director or designated person. (3) National access – authorisation is provided by the National Clinical Advisor and Group Lead, Acute Hospital Operations Division, or the National Director, Acute Hospital Division or the Deputy Director Acute Hospital Division or the Chief Clinical Officer or designated person. A nominated NQAIS Clinical Access Controller is responsible for issuing individual user IDs and passwords. Access to data and functionality is dependent on the level of access granted to the individual user. A short on-line training programme is required for users in advance of gaining access to the system with follow up support. A more advanced on-line training programme is provided periodically.

Acknowledgements

This document was produced through the collaborative efforts of the National Clinical Programme in Surgery, the National Acute Medicine Programme, the Health Intelligence Unit, the Department of Surgical Affairs, RCSI, Office of the National Clinical Advisor and Group Lead, Acute Hospital Operations Division, HSE.

Table of Contents

Glossary.....	2
Document History.....	4
Table of Contents.....	5
Executive Summary.....	8
1.0 Introduction.....	10
1.1 Aim	11
1.2 Objectives.....	11
1.3 Patient Flow.....	12
1.4 Data Flow	13
1.5 Quality and Validity of the data.....	14
1.6 Diagnostic classification.....	14
1.7 Procedure classification	15
1.8 Specialty classification	16
1.9 Changes in the HIPE coding to ICD 10 am / ACHI / ACS edition10.....	17
1.10 Covid 19 information.....	18
1.11 Co-morbidities and the Charlson Index	19
2.0 Background.....	21
2.1 Hosting	21
2.2 Data usage and interpretation.....	21
3.0 Step by step guide to the features of NQAIS Clinical.....	23
3.1 Useful screen hints.....	23
3.2 Secure access.....	24
3.3 System requirements	24
3.4 Logging on to Health Atlas Ireland and accessing NQAIS Clinical.....	24
3.5 NQAIS Clinical home page (versions)	26
3.6 NQAIS Clinical blue menu control buttons	26
4.0 Gold filter buttons.....	28
4.1 Programme selection	28
4.2 Hospital selection.....	29
4.3 Period selection	30
4.4 Diagnosis selection	30
4.5 Procedure selection	30
4.6 Specialty selection	32
4.7 Age selection	33

4.8	Display selection	34
	The Display dropdown has 6 selection zones:.....	34
4.9	Bookmark selection.....	34
4.10	Admission streams.....	34
5.0	Silver display buttons	36
5.1	Summary Report display	36
5.2	Assumptions underpinning the white, yellow and red bed days calculations	37
5.3	The Flow Report display	39
5.4	Grid report display.....	40
5.5	Plots Report display	41
5.6	Understanding the diamond plot	42
5.7	Plots Report display by diagnosis group.....	45
5.8	Plots display by procedure group	47
5.9	Plots display by specialty group.....	48
5.10	Plots expand options	49
5.11	Enlarge.....	49
5.12	Explorer View	50
5.13	Trend plots	52
6.0	NQAIS Clinical Export options	53
6.1	Records view.....	53
6.2	Medical Record Number (MRN) decryption	54
6.3	Crosstab	55
7.0	Bronze reporting buttons	56
7.1	Report	56
8.0	Data button.....	57
9.0	Computations.....	58
9.1	Principle of computing the diamond shape.....	58
9.2	Determination of the national trim points.	60
9.3	Trim terminology in NQAIS Clinical.....	61
9.4	Target setting approach	62
9.5	Procedure and diagnosis classifications.....	62
9.6	Classifying procedures	62
9.7	Classifying diagnoses.....	62
9.8	Target setting of procedures	62
9.9	Patients admitted under surgery who do not have a surgical procedure	63
9.10	Medical patients who have a surgical procedure.....	63
9.11	Target setting of CCS of diagnoses	63

9.12	Elective day cases	63
9.13	Age groupings	64
9.14	Computing AvLOS targets for diagnosis and procedures.....	64
9.15	'On target' and 'off target' determination	64
9.16	Computation of white, yellow and red bed days (on target, near target and off target) ..	65
9.17	Red Bed Day interpretation.....	68
9.18	Issues to take note of in the NQAIS Clinical system.....	69
9.19	Research.....	69

Appendix 1. Key metrics available in the NQAIS Flow Report.....	70
Appendix 2. NQAIS Clinical - useful screen hints	72
Appendix 3. Definition of admission streams	73
Appendix 4. Summary table samples	74
Appendix 5. Record selection and crosstabs parameter definitions	77
Appendix 6. Data informed decision making	80
Appendix 7. HIPE record components	81
Bibliography	82

Executive Summary

Background

NQAIS Clinical is an online interactive application that analyses hospitals' own Hospital In-patient Enquiry (HIPE) data to provide detailed feedback to clinicians and managers. The primary focus of NQAIS Clinical is to optimise length of stay (LOS) for safe patient care in all publicly funded acute Irish hospitals. Other targets have been set by the National Clinical Programme in Surgery and the National Acute Medicine Programme.

Development

NQAIS Clinical was designed jointly by the National Clinical Programme for Surgery, National Acute Medicine Programme, National Clinical Programme for Obstetrics and Gynaecology, the Trauma and Orthopaedic Clinical Programme, Integrated Care programme for Older Persons, Emergency Medicine Programme, the Children's Hospital Group, hospital group representatives, Health Intelligence (Health & Wellbeing HSE) and the Acute Hospital Operations Division. The system was co-funded by the Acute Hospital Division and the Health & Wellbeing Division with software development by OpenApp in Dublin and deployment/training by the NQAIS Clinical deployment team.

Aim

The overall aim of NQAIS Clinical is to provide clinical leadership with comparative performance metrics for the objective management of inpatient lengths of stay and same day / day case discharge rates in support of safe effective care at the most appropriate setting. In addition the metrics in the system can be used by clinical and management leads in support of quality and process improvement in the delivery of care based on interdisciplinary co-operation using their own data.

Functionality

The system enables the dynamic processing of data online to inform decision making. The drivers of analysis are the principal (admission) diagnosis and the principal procedure performed.

The user dynamically controls the content of the displays and reports using the filter buttons in the system. Results can be displayed by diagnosis, procedure or specialty. Patterns of interest can be explored easily and in detail.

It identifies which healthcare teams are in the top quartile in terms of achieving optimal inpatient lengths of stay, day case rates and day of surgery admission rates. Important variances from the top quartile (top 25%ile) patterns of AvLOS summarised in the metric referred to as 'red bed days' are displayed in a bar graph with is visually simple to understand. The 'red bed days' calculation is an indicative value only and must be treated with caution.

This information, together with local knowledge, allows the processes, approaches and resource deployment of top quartile teams to be identified and subsequently shared with other teams delivering similar care.

Implementation

Users can be assigned access to the data at national, hospital group or individual hospital level with authorisation.

The system is hosted within the Health Atlas Ireland technical and security infrastructure which is managed by the Health Intelligence Unit (HIU), Health and Wellbeing, HSE.

NQAIS Clinical is being implemented in all acute hospitals and hospital groups. The wealth of data provided in the system will enable healthcare staff to review and prioritise areas of hospital practice in an open, evidence-based and clinically appropriate manner so that available beds can be used in the best possible way for all patients.

The system is designed for use by clinicians, managers, healthcare teams, Clinical Directors, Business Managers, Group CEOs, Corporate HSE personnel, National Clinical Leads/Advisors, Consultants and Non-Consultant Hospital Doctors, Nurses and Midwives, the Acute Hospital Operations Division, Department of Health personnel, researchers, data analysts, statisticians, quality and patient safety teams and those carrying out audits for registered medical practitioners.

Summary of updates in 2022

Summary of updates to the NQAIS Clinical application in 2022.

Phase 1 – Updates agreed in June 2022

1. The Acute Medicine Programme list has been updated to include Mallow and St. Michaels.
2. A number of new variables have been added to both records view and the crosstabs screen. They are as follows; (a) Discharge mode, (b) Palliative care flag, (c) Mode of Emergency admission, (d) Medically fit for discharge, (e) Date of transfer to pre-discharge unit, (f) COVID-19 indicator and (g) Ukraine Temporary Protection Directive.
3. The option to rename the AMAU as ASAU or AAU has been removed from the display button.
4. The "Maxillo-Facial" specialty has been renamed as "Oral & Maxillo-Facial", while also retaining Oral surgery.
5. The User Management link within the blue navigation bar should always appear within the blue navigation bar. Smaller screens should no longer have issues viewing this button.

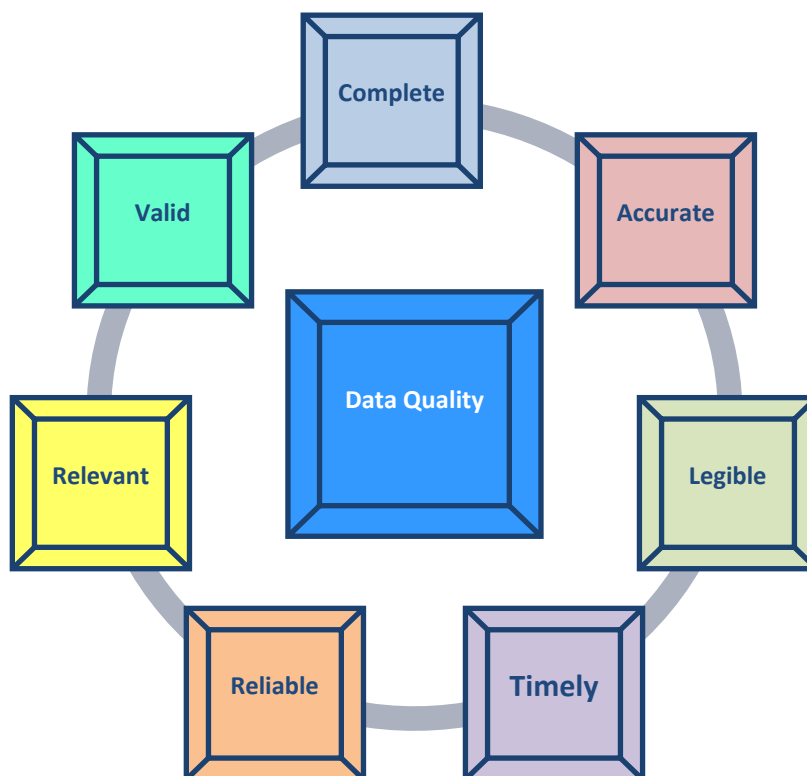
Phase 2 – Updates agreed in November 2022

1. A **"Select/deselect" button** has been added to the Records View, this appears at the top left hand corner of the variables table. It will select/deselect only the records view variables and will not affect the selection of the filters column.
2. Within the Records View users can **bookmark selected variables and filters**. It will retain the selected variables and filters on screen when the user saves a bookmark. The user can retrieve a records view bookmark only from the records view screen. A retrieved bookmark will restore the previously selected variable and filter choices.
3. The option to reframe the trend charts as a % of Emergency has been removed from all trend charts.
4. Consistent **sorting signals across the application** have been created. To signal in a consistent manner that columns are sortable, titles are in blue and arrows are hidden until the user clicks the title to sort the column.
To bring all tables to this standard the following changes were made:
(a) all titles on the grid page are blue,
(b) in the records view titles are blue, and arrows will be hidden until a user clicks on the title to sort it.

1.0 Introduction

NQAIS Clinical is a web enabled interactive online reporting system that analyses clinically relevant Hospital In-Patient Enquiry (HIPE) data. HIPE records are created following patient discharge from hospital and records diagnostic, procedural and administrative details relating to their care and are consolidated by the Healthcare Pricing Office (HPO).

The quality of the data is most important. This commences with the quality of the data in the patient chart/record and good quality timely coding. Data must be complete, accurate, legible, timely, reliable, relevant and valid.



Adapted from: *Five quality improvement tools for national data collections, HIQA 2017.*

Some of the benefits of using NQAIS Clinical are as follows:

- Data is displayed in an easily understood format
- Anonymity for patients and clinical teams is a priority
- It is a web enabled interactive system – the user controls the reports produced
- It supports clinical leadership in re-engineering and optimising delivery of safe patient care based on inter-disciplinary co-operation. The user can view hospital wide data not accessible previously – with the relevant authorisation
- It contributes to process improvement initiatives - Hospital or team performance can be compared to the top quartile teams for AvLOS, day case rates, day of surgery admission rates, re-admission rates, % of acute medical patients going through the Acute Medical Assessment Unit and many more objective metrics
- Principal diagnosis and principal procedures performed can be viewed. A drill down in the system identifies secondary diagnosis(es) and secondary procedure(s)
- The system is available free to authorised users, there is no annual service charge for use of the system.
- It was developed inside the governance of the HSE, DoH, RCSI and RCPI.
- Metric definitions and taxonomy are aligned to current usage in Ireland.

- CPD (RCSI & RCPI) and Continuing Education Credits (NMBI) are available.
- It serves as a rich platform for research
- It may be used for audit for registered medical practitioners.

NQAIS Clinical does not contain all fields recorded in HIPE and it excludes some hospitals that are not in Hospital Groups but do return HIPE data. The system is designed to provide an integrated picture of HIPE discharge records in aggregate format

The metrics displayed enable clinical teams and hospital management to identify opportunities for potential improvement in healthcare delivery. It is through the collaborative efforts of clinicians, nurses, hospital managers and health and social care professionals and data analysts that quality care can be delivered to a greater number of patients.

NQAIS Clinical is being introduced to all acute hospitals and users can be assigned access to the data at a national, hospital group or individual hospital level as appropriate.

Predictive metrics are provided to indicate how hospitals bed utilisation metrics would change if they were to achieve activity levels of the 'top quartile' teams in acute hospitals in Ireland. The predictive metrics provide an 'indicative value' only of the proportion of beds per day (described in the system as 'red bed days') that could be used for other patients - on waiting lists or awaiting admission to hospital from Emergency Departments (EDs) - if the relevant hospital teams were delivering closer to the 'top quartile' for AvLOS for in-patients and optimal day case rates.

1.1 Aim

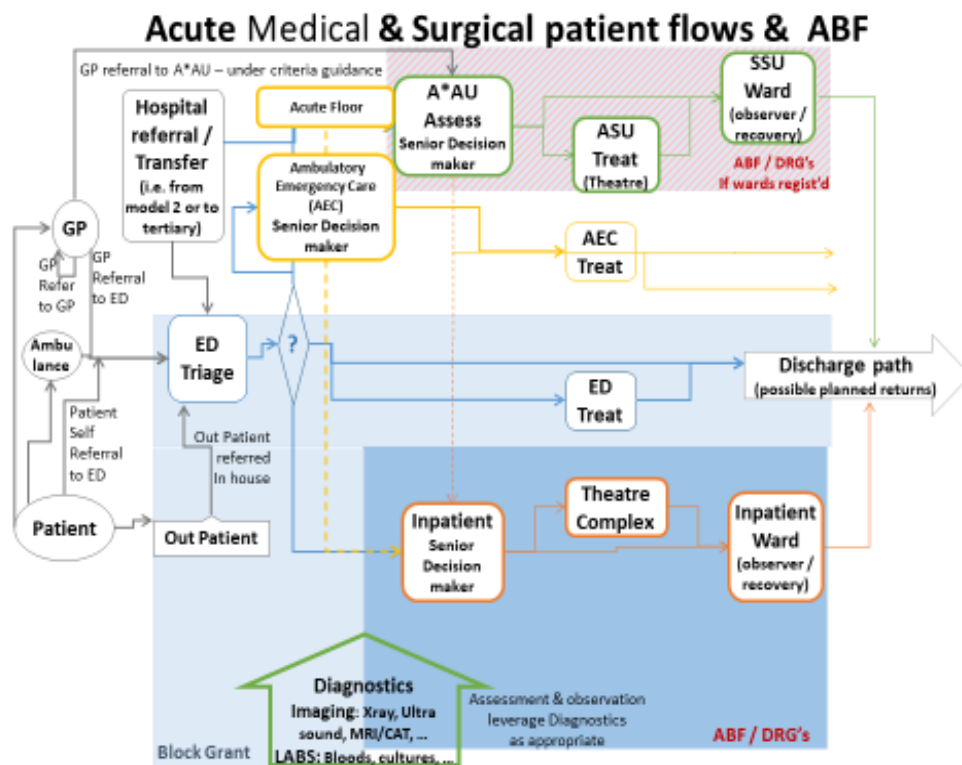
The overall aim of NQAIS Clinical is to provide clinical leadership with comparative performance metrics for the objective management of inpatient lengths of stay and same day / day case discharge rates in support of safe effective care at the most appropriate setting. In addition the metrics in the system can be used by clinical and management leads in support of quality and process improvement in the delivery of care based on interdisciplinary co-operation using their own data.

1.2 Objectives

- To display and compare activity patterns to nationally derived targets by diagnosis and procedure from all Health Service Executive (HSE) funded acute Irish hospitals.
- To support clinicians and managers to prioritise and evaluate strategies for providing optimal care to as many patients as possible within the available resources.
- To allow healthcare staff to monitor, review and improve inpatient average length of stay (AvLOS), percentage day case rates (%DC), day of surgery admission (DoSA) for patients having a surgical procedure. It allows monitoring, among others, of the % of acute medical patients traversing the Acute Medical Assessment Units and % of same day discharges from the Units.
- To provide an indicative measure of potential bed days (red bed days) that could be made available for other patients.
- The 'red bed days' calculation is an indicative value only and must be treated with caution

1.3 Patient Flow

Patient flows for acute medical and surgical patients in the acute hospital setting are shown below.



Patients usually present at the ED of an acute hospital having been referred by their general practitioner (GP), by ambulance or they self-refer. Some may be referred from outpatient departments or transferred from another hospital, or another institution such as a nursing home.

In some circumstances patients may also be referred directly to the Acute Medical Assessment Unit (AMAU) by their GP by agreement with senior clinicians in the Unit.

In EDs a number of patients may be directed to the resuscitation room if appropriate.

In EDs the majority of patients are triaged, where they are prioritised and managed as follows:

- Treated and discharged from ED.
- Directed to assessment units such as the Acute Medical Assessment Unit (AMAU) or Acute Surgical Assessment Unit (ASAU), from which they may be discharged on the same day, admitted to a short stay unit or admitted to a ward.
- Sent to a Clinical Decision Unit (CDU) if available.
- Admitted to a ward for further treatment and/or procedure(s) which may require going to the operating theatre.

1.4 Data Flow

NQAIS Clinical data is based on the HIPE data. HIPE was set up in 1971 to collect data on every patient admitted to hospital, including day cases following their discharge. In 2015, HIPE came under the governance of the Healthcare Pricing Office (HPO) and is now an integral part of Activity Based Funding (ABF). HIPE is the principal source of national data in Ireland on acute hospital discharges.

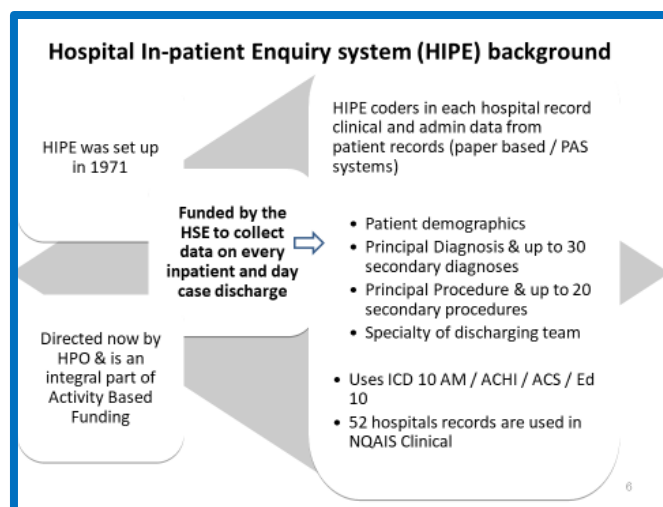
HIPE coders based in publicly funded hospitals record clinical and administrative data from patient records following discharge and assign the appropriate diagnostic related group (DRG) code to each record.

The DRG underpins the Activity Based Funding (ABF) process whereby payments are made to hospitals by the HPO.

Patient demographic data are recorded, together with the principal admission diagnosis (Dx1) and up to 29 secondary diagnoses (Dx2-30), the principal procedure (Proc 1 ACHI) and up to 19 secondary procedures (Proc 2-20) are coded.

The quality of the data available through HIPE is greatly dependent upon the quality and clarity of the documentation of care that is recorded in the patient's chart throughout the hospital journey from admission to discharge.

It is essential that all the relevant information is easily accessible for the HIPE coders.

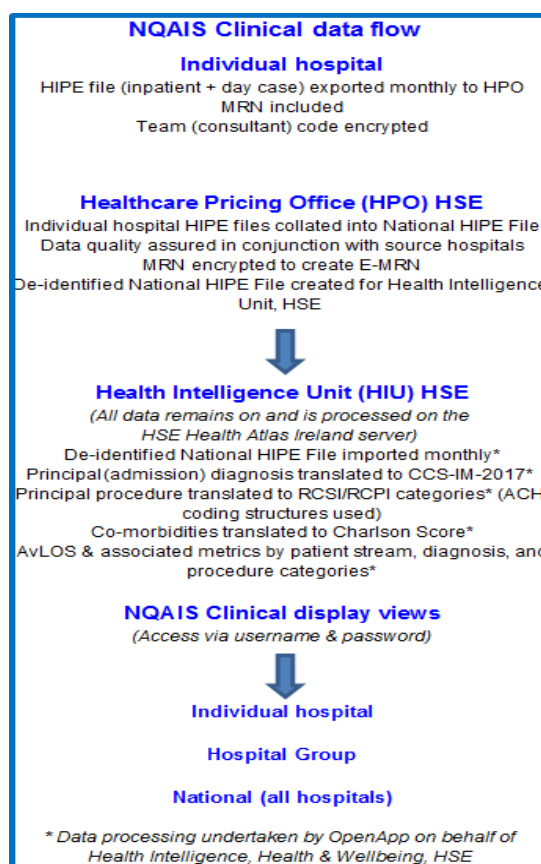


HIPE data flows on a monthly basis from all HSE funded participating hospitals to the HPO where it is collated into a national dataset and quality assured by the HPO in conjunction with the hospitals.

Each inpatient or day case discharge record represents one episode of care recording demographic, administrative, diagnoses, procedures and other related data.

ICD-10-AM is used for coding diagnoses and conditions and it is the International Classification of Diseases, 10th Revision produced by the World Health Organisation (WHO) with the Australian Modification developed by the Australian Consortium for Classification Development.

ACHI is used for coding procedures and interventions and is the Australian Classification of Health Interventions developed by the Australian Consortium for Classification Development. ACS are the Australian Coding Standards developed by the Australian Consortium for Classification Development for use with ICD-10-AM and ACHI. The Irish Coding Standards (ICS) complement these standards. This coding system was effective in Ireland from January 1st 2020.



The Irish Medical Council's unique number for each consultant is presented as a four character code attached to each diagnosis and/or procedure in the NQAIS Clinical system. The coding takes place in-house by each hospital prior to the release of data to the HPO. The code is associated with the admitting, principal and discharging consultant.

The patients' Medical Record Number (MRN) is encrypted to create an E-MRN, the General Medical Services (GMS) number is removed, the patients' name and address are removed – the address is converted to the county or city zone of residence, their date of birth is replaced by their age on admission. Procedures and diagnoses with less than 6 patients cannot be published outside the hospital.

The pseudonymised file is forwarded by the HPO to Health Intelligence, HSE. The data is processed by OpenApp on behalf of Health Intelligence, HSE and uploaded on the HSE server on a monthly basis to drive the NQAIS Clinical system.

In addition the NQAIS Clinical website is encrypted, users must have authorisation to access the system. HIPE includes approximately 1.7 million records per year for elective, emergency, maternity and new born discharges. The HIPE file can record up to 225 data items (approx.) for each admission. Approximately fifty-seven hospitals return HIPE data, of which 52 are included in NQAIS Clinical.

1.5 Quality and validity of the data

- NQAIS Clinical data is based on the HIPE data and transferred directly onto the system.
- Some additional analysis of the data is carried out in the NQAIS Clinical system e.g. setting trim points, identification the day of surgical admission, identification of AvLOS to include and exclude long stay patients, allocating a value of 0.5 to day cases.
- The data held at hospital level is coded by HIPE coders using ICD 10 Edition 10 for diagnosis, procedures are coded using the Australian Coding of Health Interventions (ACHI), the data is uploaded to the Healthcare Pricing Office (HPO) and then transferred to NQAIS Clinical.
- The accuracy of the data coded in HIPE is dependent upon the data provided by clinicians in the hospital chart/notes and the ability of the HIPE coders to accurately record the data.
- Pavillion Health 2016 carried out a national audit of HIPE data in Ireland (Report on HPO website).
- There is a multi-pronged approach to the validation of HIPE data.
 - HPO operate to Australian Coding Standards (ACS) and Irish Coding Standards (ICS).
 - HPO carry out regular audits, by their own auditors, on the quality of the data at acute hospital level and follow up carrying out corrective actions.
 - The HPO provide the national data entry and reporting system for HIPE (HIPE Portal), this system incorporates a range of data quality measures and data quality tools.
 - In order to help hospitals monitor and improve the quality of their HIPE data and ensure compliance to the Australian and Irish Coding standards, HPO use a QI Tool - Performance Indicators for coding quality (PICQ™) - Pavillion Health. This is basically a data quality assessment tool and compares co-morbidity coding for cohorts of patients with national and international norms.
 - HIPE training for coders is accredited to Fetac Level 7 at the Technological University, Dublin and the majority of HIPE coders have completed this programme.

The data in NQAIS Clinical is refreshed monthly (approximately 6 weeks in arrears) and by this time the nationally collated dataset is considered sufficiently complete for presentation. However the dataset for any one year is not complete until 3-4 months into the following year as charts may still be uploaded by HIPE coders until March 31st of the following year.

To underpin trend analysis, there are at least 3 years of retrospective data in addition to the current year's data included in NQAIS Clinical. A banner will appear on the website giving notice to users when a year's data is due to be deleted.

1.6 Diagnostic classification

The diagnosis used in NQAIS Clinical data is the patient's principal admission diagnosis (Dx1). In excess of 19,980 (approx.) diagnoses are coded using the International Classification of Disease Codes or ICD-10-AM

(Australian Modification). Edition 8 was in use from January 2015 to December 2019, edition 10 is in use from January 2020.

Under the Health Atlas Ireland data processing infrastructure, the ICD codes are translated into approximately 297 clinically related diagnostic codes using the modified Clinical Classification Software (CCS). The CCS was originally developed by the Agency for Healthcare Research Quality

(AHRQ) under the governance of the Healthcare Cost and Utilisation Project (HCUP) in Washington DC, USA.

To optimise and update the clinical relevance of the classification in the Irish setting, Health Intelligence, HSE, in partnership with the RCPI and RCSI, produced an Irish version of the classification system, referred to as CCS-IM-2020 (Irish Modification, 2020).

CCS-IM-2020 currently includes 19 major diagnosis categories and approximately 297 clinically related groupings derived from the individual ICD codes.

NQAIS Clinical allows the analysis of data to be based upon the principal diagnosis.

ICD 10 AM Diagnoses file, Edition 6, 8 & 10 are consolidated and assigned to CCS of Diagnosis and Groups of CCS of Diagnoses.

ICD 10 AM Diagnoses file, Edition 6, 8 & 10 are consolidated and assigned to CCS of Diagnosis and Groups of CCS of Diagnoses (updates contd;)			
CCS Group#	CCS Group Name	Individual	
		CCS's	Diagnoses
1	Infection	15	874
2	Cancer	57	1,005
3	Endocrine	15	856
4	Haematological	8	148
5	Mental Health	22	536
6	Neurological	20	1,027
7	Cardiovascular	31	526
8	Respiratory	13	354
9	Gastrointestinal	22	700
10	Renal/Urogenital	20	508
11	Pregnancy related	23	625
12	Dermatological	5	482
13	Musculoskeletal	12	3,377
14	Congenital anomaly	5	1,390
15	Newborn	6	448
16	Injury & Poisoning	21	6,024
17	Other	24	1,060
18	Unclassified	0	0
19	Immunological	2	56
Total Count:		297	19,980

Summary of Diagnosis Count	
Continued in Edition 10	19,427
New in Edition 10	384
Retired in Edition 10	169
Total	19,980

644 diagnoses were assigned to more appropriate CCS of diagnosis

Note: Diabetes is separated for Type 1, Type 2 and Other where each has a CCS for 'with complications' and another for 'without complications'

1.7 Procedure classification

The procedure classification system used in NQAIS Clinical is derived from the principal procedure the patient had performed during their admission.

The RCSI and the RCPI, in partnership with Health Intelligence, HSE, translated the 6,636 HIPE procedure codes based upon the Australian Classification for Health Interventions (ACHI), into 19 Surgical Procedure Groups, 18 Clinical (non-surgical) Groups, a 'Low Volume' Group (<20 cases per annum nationally), and a 'No Procedure' Group.

NQAIS Clinical allows the analysis of data to be based upon the principal procedure.

ACHI Procedure file Edition 6, 8 & 10 are consolidated and mapped to Procedure Groups (updates contd;)

Type	Procedure Grouping Name	In Group
Surgical	Breast Surgery	17
Surgical	Cardiothoracic	42
Surgical	Colorectal	59
Surgical	General Surgery	99
Surgical	Gynaecology	83
Surgical	Maxillofacial & Dental	38
Surgical	Neurosurgery	38
Surgical	Obstetric	26
Surgical	Ophthalmology	81
Surgical	Otolaryngology	89
Surgical	Paediatric Surgery	20
Surgical	Plastic Surgery	96
Surgical	Trauma orthopaedic lower limb	111
Surgical	Trauma orthopaedic other surgery	27
Surgical	Trauma orthopaedic spinal	21
Surgical	Trauma orthopaedic upper limb	74
Surgical	Upper gastrointestinal & hepatobiliary	24
Surgical	Urology	86
Surgical	Vascular	40

Type	Procedure Grouping Name	In Group
Clinical	Allied Health Interventions	18
Clinical	Anaesthetic & pain relief	60
Clinical	Assessments, tests and studies	15
Clinical	Cardiology	51
Clinical	Dermatology	31
Clinical	Medical Interventions	44
Clinical	Gastrology	14
Clinical	Haematology	26
Clinical	Imaging & testing	64
Clinical	Non-surgery	164
Clinical	Nephrology	17
Clinical	Nonsurgery obs & gynae	41
Clinical	Oncology	19
Clinical	Paediatric Medicine	25
Clinical	Radiological therapy	40
Clinical	Respiratory Medicine	18
Clinical	Endoscopy	55
Clinical	Non-surgery T&D	18
	Low volume Proc < 20 per year	4,845
	No Principal Proc	0
	Mapped Procs # Sub Total	1,791
	Total Number of Procedures	6,636

ACHI Procedure file Edition 6, 8 & 10 are consolidated and mapped to Procedure Groups (updates contd;)

Summary of Procedure Count	Proc group mapped	Low Volume Procs not mapped
Continue in Edition 10	1,680	4,365
New in Edition 10	37	142
Retired in Edition 10	74	338
Total	1,791	4,845

A total of 345 procedures were reassigned to more appropriate procedure groups

Some retired procedures are still assigned to groups for historical reporting

1.8 Specialty classification

There are 104 clinical specialties identified in HIPE. NQAIS Clinical allows the analysis of data to be based upon the specialty.

Note: Equivalent Outpatient Department (OPD) and Emergency Department (ED) data are not collected in HIPE at present.

104 clinical Specialties in HIPE assigned to one of 11 Groups	

NQAIS Clinical uses HIPE data supplied by the HPO

1.9 Changes in the HIPE coding to ICD 10 AM / ACHI / ACS edition 10

These were effective from January 1st 2020 are as follows:

- Addition of 384 new diagnoses
- 644 assignments of diagnoses to more appropriate CCS of diagnoses level (*including 384 new diagnosis codes*)
- Addition of 179 new procedures & health interventions
- 345 assignment of procedure/health interventions to more appropriate procedure groups (*including 179 new procedure codes*)
- Re-naming of procedure group 'Rheumatology / MSK' to 'Non surgery T&O'
- Re-name specialty group Maternity to Obs/Gynae and now includes Gynaecology, Obs/Gynae and obstetrics clinical specialties
- Updates of hospital names and spellings
- Inclusion of CHI Connolly

In 2022 the Maxillo-Facial specialty was renamed 'Oral & Maxillo-Facial', while also retaining 'Oral Surgery'.

Other Changes / Updates to NQAIS Clinical

- Updates to NQAIS Clinical 'targets' and 'trim points' used internally in the system for 'on-target', 'near target', 'off target' and 'post-trim' metrics throughout the system's reports, are based on 2017 and 2018 data
- Updates to hospital names and spellings – *has an impact on the order of hospital display in Flow & Grid Reports and outputs from CrossTab and Record select*
- Previously created bookmarks need to be re-created because of changes in mapping of procedures to procedures groups and CCS of diagnoses to Groups of CCSs of diagnoses and specialties to specialty.

1.10 Covid-19 information

The Independent Hospital Pricing Authority (IHPA) provide a detailed guideline for classifying COVID-19 scenarios. Infection with the virus is always identified as an additional (secondary) diagnosis. The chart below provides more detail.

Supplementary guidelines for classifying COVID-19 scenarios in admitted patient care* (V1.2) May 2020			
Presentation scenarios	Laboratory confirmed cases ¹ Tested positive	Clinically diagnosed or probable cases ² Testing is inconclusive, unavailable or not specified	Ruled out cases ³ Tested negative
Patient exhibiting symptoms (Symptoms) = Yes Exposure to confirmed case (Exposure ⁴) = Yes	Principal diagnosis: Symptom(s) or condition(s) Additional diagnoses: B97.2 Coronavirus as the cause of diseases classified to other chapters U07.1 Emergency use of U07.1 [COVID-19, virus identified]	Principal diagnosis: Symptom(s) or condition(s) Additional diagnoses: B97.2 Coronavirus as the cause of diseases classified to other chapters U07.2 Emergency use of U07.2 [COVID-19, virus not identified]	Principal diagnosis: Symptom(s) or condition(s) Additional diagnoses: Z20.8 Contact with and exposure to other communicable diseases Z03.8 Observation for other suspected diseases and conditions - Or Z03.71 Observation of newborn for suspected infectious condition for neonates U06.0 Emergency use of U06.0 [COVID-19, ruled out]
Symptoms = Yes Exposure ⁴ = No	Principal diagnosis: Symptom(s) or condition(s) Additional diagnoses: B97.2 Coronavirus as the cause of diseases classified to other chapters U07.1 Emergency use of U07.1 [COVID-19, virus identified]	Principal diagnosis: Symptom(s) or condition(s) Additional diagnoses: B97.2 Coronavirus as the cause of diseases classified to other chapters U07.2 Emergency use of U07.2 [COVID-19, virus not identified]	Principal diagnosis: Symptom(s) or condition(s) Additional diagnoses: Z20.8 Observation for other suspected diseases and conditions U06.0 Emergency use of U06.0 [COVID-19, ruled out]
Symptoms = No Exposure ⁴ = Yes	Principal diagnosis: B34.2 Coronavirus infection, unspecified site Additional diagnoses: U07.1 Emergency use of U07.1 [COVID-19, virus identified]	Principal diagnosis: B34.2 Coronavirus infection, unspecified site Additional diagnoses: U07.2 Emergency use of U07.2 [COVID-19, virus not identified]	Principal diagnosis: Z20.8 Contact with and exposure to other communicable diseases Additional diagnoses: U06.0 Emergency use of U06.0 [COVID-19, ruled out]
Pregnancy complicated by COVID-19 /other condition (as per ACS 1521 Conditions and injuries in pregnancy)	Code first: O98.5 Other viral diseases complicating pregnancy, childbirth and the puerperium Additional diagnoses: As per advice above	Code first: O98.5 Other viral diseases complicating pregnancy, childbirth and the puerperium Additional diagnoses: As per advice above	For pregnant patients with COVID 19 ruled out please follow the advice above depending on the
¹ Laboratory confirmed COVID-19 An individual with a laboratory confirmation of infection with COVID-19, irrespective of clinical signs and symptoms. Use U07.1 Emergency use of U07.1 [COVID-19, virus identified] when COVID-19 has been confirmed by laboratory testing irrespective of severity of clinical signs or symptoms. ² Clinically diagnosed or probable COVID-19 An individual who is suspected of having COVID-19 but laboratory testing for COVID-19 is inconclusive or not available but in whom a clinical determination of COVID-19 has been made. Use U07.2 Emergency use of U07.2 [COVID-19, virus not identified] when COVID-19 is diagnosed clinically but laboratory testing is inconclusive, not available, or unspecified. ³ Ruled out COVID-19 An individual suspected of having COVID-19 but COVID-19 has subsequently been excluded on laboratory testing and in whom a clinical diagnosis of COVID-19 has not been made. In this circumstance assign U06.0 Emergency use of U06.0 [COVID-19, ruled out]. ⁴ This refers to exposure as determined and documented by a clinician, as opposed to patient-reported exposure to COVID-19 alone. ⁵ From 1 January 2020, an exception has been made to ACS 0012 Suspected conditions for coding of symptomatic presentations with suspected COVID-19, ruled out. For newborn cases (infants less than 28 days old) assign Z03.71 Observation of newborn for suspected infectious condition. ⁶ Updated advice from IHPA 9th April 2020 regarding ruled out COVID 19 in pregnancy Note 1: Where isolation (as opposed to quarantined) is documented, assign Z29.0 Isolation as an additional diagnosis.			
* Source: Independent Hospital Pricing Authority, March 2020, updated by IHPA 9 April 2020 – adapted for implementation in Ireland https://www.ihsa.gov.au/what-we-do/how-classify-covid-19			

Note: HPO carry out regular updates throughout the year for coders and users of the HIPE system, these can be viewed on the HPO website - www.hpo.ie

Please see below for the HPO's 4th Update on the implications for HIPE of COVID-19 and includes information on the following areas: (1) COVID-19 flag for Laboratory confirmed COVID-19 (tested positive) past or present; and (2) Utilisation of HIPE COVID-19 data.

1. COVID-19 Flag: Laboratory Confirmed COVID-19 (tested positive) past or present:

This flag has been introduced to HIPE at the request of the Department of Health and ratified by the HIPE Governance Group. The flag is collected as an administrative variable to identify where the patient had laboratory confirmed (tested positive) COVID-19 at any time in the past or during the present episode of care. The flag will only be recorded where there is documentation to support that the patient had laboratory confirmed COVID 19 or tested positive at any time in the past, in any location, in any country. The flag is for all instances where laboratory confirmed (tested positive) COVID-19 is documented whether it applies to this

admission or not. **Some key information is provided below, however you are advised to review the relevant detailed guidance.**

The flag can be collected for all cases coded after 1st October 2020 regardless of the discharge date of the case. Where appropriate Coders can add the flag to cases already coded but there is no requirement to do this.

This flag is collected separately to the clinical codes for the case and coding standards ACS 0001 *Principal Diagnosis* and ACS 0002 *Additional Diagnosis* do not apply to the flag.

The HIPE Instruction Manual is updated periodically and is available at www.hpo.ie.

The Irish Coding Standards have also been updated – and identified in the Irish Coding Standards V1.4, Section 2: HIPE Guidelines for Administrative data (page 18). The complete Irish Coding Standards V1.4 document is available at www.hpo.ie

Coding Notes are frequently updated on the HPO website and provides additional information on the collection of this variable.

HIPE IT are updating the HIPE Portal to collect this information and please ensure that you are updated to version 1.27.1 of the HIPE Portal. HIPE IT have added the flag retrospectively to cases recording U07.1 *Emergency Use U07.1 (COVID-19 Virus identified)*.

For queries on collecting the flag please contact HIPE.coding@HPO.ie for IT queries please contact HIPE IT (HipeIT@hpo.ie).

2. Utilisation of HIPE COVID-19 data

The COVID-19 data collected by HIPE is now utilised within many sections of the HSE and also by the Department of Health. The efforts of all those involved in the coding of the data is widely acknowledged. The introduction of the laboratory confirmed COVID-19 flag to the HIPE system is testament to the importance of this dataset now and in the future. It is also important for the prioritised coding of COVID-19 discharges to continue with the full support of the hospital and clinical colleagues. It is important for HIPE staff to be alerted when a COVID-19 discharge has occurred so arrangements can be made to code the case as soon as possible. The data is being used and reviewed in real time and queries from the data users and analysts will arise from time to time. The HPO will therefore contact hospitals as required where queries arise that cannot be answered centrally.

The requirement to code within 24 hours of discharge applies only to cases with a diagnosis of COVID 19 (U07. 1 *Emergency Use U07.1 (COVID -19 Virus identified)*) or clinically diagnosed COVID 19 (U07. 2 *Emergency Use U07.2 (COVID -19 Virus not identified)*).

(Extracted from a HPO update email Oct 2020)

1.11 Co-morbidities and the Charlson Index

Up to 29 possible co-morbidities (Dx 2-30) are recorded in HIPE, 17 are used to determine 'clinical complexity' within NQAIS Clinical using the Charlson Index.

Co-morbidity is a term that describes both the presence of one or more additional conditions which co-exist alongside the principal (admission) diagnosis; a co-morbidity index such as the Charlson Index can be used to describe the presence and the clinical effect of this additional disease burden (Valderas, 2009).

Within NQAIS Clinical, the principal (admission) diagnosis, as recorded in HIPE is designated Dx1; additional (co-morbid) conditions are designated Dx 2-30, depending on the number of additional conditions. The co-

morbid conditions may be related to the principal (admission) diagnosis, or they may occur independently of each other.

The Charlson Index is used to quantify the impact that certain co-morbidities have on a patient's survival (Charlson, 1987). Using a range of key chronic conditions, a score is assigned to each depending on the risk of dying associated with each one (see below). The scores are then added to provide a total result which can then be used to predict mortality within a 12 month (or longer) period.

Validation studies have shown a close correlation between assigned Charlson scores and subsequent outcome, both in the original weightings, and more recent adjustments to the original scores (Sundarajan, 2004; Bottle and Aylin, 2004).

NQAIS Clinical employs the new Health and Social Care Information Centre (HSCIC), (NHS) weighting factors as outlined below as they are reflective of the improved clinical outcomes resulting from advances in clinical care. These new weightings are used for display purposes in the Explorer function in NQAIS Clinical.

New and original weightings applied to Charlson co-morbidity categories (*HSCIC)

New and old weightings applied to Charlson co-morbidity categories (*HSCIC)				
	Diagnosis	ICD-10 codes	New weight	Old weight
1	Acute myocardial infarction	I21, I22, I23, I252, I258	5	1
2	Cancer	C00-C76, C81-C97	8	2
3	Cancer metastatic	C77, C78, C79, C80	14	3
4	Cerebral vascular accident	G450, G451, G452, G454, G458, G459, G46, I60-I69	11	1
5	Congestive heart failure	I50	13	1
6	Connective tissue disorder	M05, M060, M063, M069, M32, M332, M34, M353	4	1
7	Dementia	F00, F01, F02, F03, F051	14	1
8	Diabetes	E101, E105, E106, E108, E109, E111, E115, E116, E118, E119, E131, E136, E138, E139, E141, E145, E146, E148, E149	3	1
9	Diabetes complications	E102, E103, E104, E107, E112, E113, E114, E117, E132, E133, E134, E137, E142, E143, E144, E147	-1	2
10	HIV	B20, B21, B22, B23, B24, O987	2	6
11	Liver disease	K702, K703, K717, K73, K74	8	1
12	Liver disease - severe	K721, K729, K766, K767	18	3
13	Paraplegia	G041, G81, G820, G821, G822	1	2
14	Peptic ulcer	K25, K26, K27, K28	9	1
15	Peripheral vascular disease	I71, I739, I790, R02, Z958, Z959	6	1
16	Pulmonary disease	J40-J47, J60-J67	4	1
17	Renal disease	I12, I13, N01, N03, N052-N056, N072-N074, N18, N19, N25	10	2

* HSCIC – NHS Health and Social Care Information Centre

2.0 Background

NQAIS Clinical was designed jointly by the National Clinical Programme for Surgery, National Acute Medicine Programme, National Clinical Programme for Obstetrics and Gynaecology, the Trauma and Orthopaedic Clinical Programme, Integrated Care programme for Older Persons, Emergency Medicine Programme, the Children's Hospital Group, hospital group representatives, Health Intelligence (Health & Wellbeing HSE) and the Acute Hospital Operations Division. The system was co-funded by the Acute Hospital Division and the Health & Wellbeing Division with software development by OpenApp in Dublin and deployment/training by the NQAIS Clinical deployment team.

The intellectual property (IP) rights of the system reside with the HSE.

At the outset the NQAIS Clinical system was overseen by a NQAIS Clinical Steering Group on behalf of the Acute Hospitals Operations Division, HSE. The office of the National Clinical Advisor and Group Lead for the HSE's Acute Hospital Division is the operational owner of the NQAIS Clinical application. The Programme Manager, Implementation and Deployment with support from the Business Intelligence Manager for the National Clinical & Integrated Care Programmes oversee the operation and training on the application, involve relevant stakeholders when issues arise and create working groups particularly for major pieces of work.

The data displayed within NQAIS Clinical belongs to the hospitals and hospital groups and robust governance structures should be implemented for the appropriate use of NQAIS Clinical.

The National Clinical Programmes developed models of care and actively encourage healthcare staff to use these in delivering high quality, safe, consistent, efficient and resource effective care to patients in Irish hospitals.

NQAIS Clinical was developed as a standardised metric aid for the identification and management of quality improvement initiatives, self-initiated within hospitals for the implementation of the above models of care.

While the AvLOS and associated metrics primarily focus on the process of care, indicators can act as a 'proxy' for quality such as re-admission rates.

2.1 Hosting

NQAIS Clinical is hosted within the Health Atlas Ireland system technical and security infrastructure which is managed by the Health Intelligence Unit, Health and Wellbeing, HSE.

2.2 Data usage and interpretation

It is important that the information in NQAIS Clinical is used responsibly. NQAIS Clinical generated reports and associated data are confidential and must be used in compliance with the conditions of supply and usage of HIPE data. The information input and output from NQAIS Clinical should always be treated and stored in a secure manner.

HIPE data must not be used to identify, contact or make reference to individual patients for any purpose excepting clinical care of patients. Publication of NQAIS Clinical reports or HIPE data using cells with less than six cases where such data alone or combined with other data could compromise individual confidentiality are not shown outside a hospital. Also data which could directly or indirectly identify an individual doctor, patient or named hospital(s) is strictly forbidden unless prior written permission has been provided by the relevant individual(s). Full details of conditions of supply and use of HIPE data are available at www.hpo.ie.

Patient outcomes vary from hospital to hospital. Variation in AvLOS between hospitals does not necessarily suggest differing standards or quality of care. Such variation may be influenced by factors including differences in the demography of the local population (e.g. age and socioeconomic profile) and availability of hospital

resources including diagnostics or data inaccuracy. There also may be system issues such as variation in access to operating theatres or step-down bed facilities. Variations in AvLOS are not tested for statistical significance.

The driver of analysis of the data in NQAIS Clinical is the principal (admission) diagnosis or the principal procedure performed as part of the patient's admission.

Patterns should be interpreted in the context of the accuracy, completeness and timeliness of the coded data returned by the hospital, which is in turn dependent on the quality of the documentation in the clinical chart.

A list of key metrics identified in the Flow Report in NQAIS Clinical are available in Appendix 1.

For optimal use of Acute Medical Assessment Units (AMAU), it is recommended:

- 40% of all emergency medical patients should go through these units
- 25% of these should be discharged within hours
- The National Acute Medicine Programme uses AvLOS in hours for the AAU/AMAU.

The National Clinical Programme in Surgery day case targets are identified as
% of activity

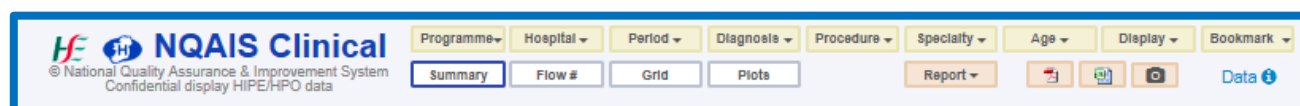
3.0 Step by step guide to the features of NQAIS Clinical

The NQAIS Clinical home page displays the hospitals/groups and Clinical Programmes available to the user. The Clinical Programmes include Medicine, Surgery, Maternity, Child Medicine, ICP for Older People and an option of 'All discharges'. In the example shown below, the user has access to one hospital (which is automatically pre-selected) and all the Clinical Programmes.

To launch NQAIS Clinical, the user should select the Clinical Programme of interest or All discharges – and can subsequently switch to any other Clinical Programme when in the system.



When NQAIS Clinical is accessed, the main menu bar at the top of the screen contains two rows of buttons, with the summary page displayed for the selected Programme.



The first row of 'gold' filter buttons determine what records are used in the creation of the charts and tables displayed on the screen. When one or more of the filters are changed, the content of all the displays are updated and redisplayed.

The Programme button sets a number of pre-determined filters as relevant to the Clinical Programme of interest. The other filter buttons are Hospital, Period, Diagnosis, Procedure, Specialty, Age and Display buttons. The Bookmark button allows reports to be saved with 'user defined' filters.

The second row of buttons contains the 'silver' display buttons: Summary, Flow metric, Grid and Plots.

The 'bronze' Report button provides easy access to a comprehensive report by two Clinical Programmes (Medicine or Surgery) for the selected hospital. In addition, there are a number of export options including: Report, PDF, Excel, and JPEG image (camera icon).

The Data button (in blue) provides information on the HIPE data range available in NQAIS Clinical and the date of its latest refresh.

3.1 Useful screen hints

When the message 'Processing ...' appears, the background dims and selections are temporarily inactivated to allow the numbers to be crunched and graphics to be created. Network, Atlas server and local browser

issues can affect the response time.

Refresh the system daily by holding down Ctrl and hitting R. Always refresh the system after system updates or if screen abnormalities are experienced. Should screen abnormalities persist, try switching to another browser.

Click F11 to go to full screen. Click F11 again to exit full screen.

Click Ctrl (or Fn) and + together to magnify the display. Some display elements may rearrange.

Click Ctrl (or Fn) and – together to shrink the display. Some display elements may rearrange.

The message 'No data available for the current selection' indicates that the selected filters found no matching data. Widening the search criteria may then show the required results.

Where data do not meet the selection criteria, the cell in the table shows a dash.

Small numbers can result in trends and plot displays appearing rather 'erratic' – and should be interpreted in this context.

For useful screen hints see Appendix 2.

3.2 Secure access

NQAIS Clinical is hosted on the pre-existing open-source Health Atlas Ireland (HAI) technical and security infrastructure which enables role-based web access to the system.

For secure access, authorisation must be provided by the relevant personnel, further details are available on Page 4 of this manual.

Access to NQAIS Clinical is locked down to the health campus internet protocol (IP) address. A security certificate is required for off-site usage.

3.3 System requirements

NQAIS Clinical is a web-based system and access is provided through an internet browser. To run NQAIS Clinical your computer should match or better the minimum hardware and operating system requirements. The minimum screen resolution required to use the NQAIS Clinical is 1000 pixels. Most 10 inch screens and some smaller screens meet this screen resolution requirement.

The following browsers are supported, but functionality may vary by browser and version: (1) Chrome – latest version, (b) Firefox – latest version, (c) Internet Explorer 9 or higher (earlier Internet Explorer versions may distort or not display some of the more complex visuals).


If your browser is unsuitable to view NQAIS Clinical, you will be prompted to use alternatives or to download and use the Health Atlas browser available from Health Atlas Ireland.

3.4 Logging on to Health Atlas Ireland and accessing NQAIS Clinical


The Health Atlas Ireland home page address is: <https://www.healthatlasireland.ie>

To access NQAIS Clinical, log onto the above site, and select 'Clinical' from within the NQAIS Hospital options.

Atlas Home
Notes


Health Atlas Ireland
Supports the quest for better health by exploiting the quality assurance/improvement, health/service mapping and research potential of available data.




Finder
Available to all Atlas users


Atlas Finder








- Find an address, service or Eircode
- Map sites, boundaries, populations. Profile demography by areas

Username and password required to access the applications below. For contact names [click here](#).



Health Service Data

-  Hospital Emergency Care
-  Hospital KPIs (CompStat)
-  Community Healthcare 2020



NQAIS Hospital
National Quality Assurance & Improvement System

-  Acute Coronary Synd
-  Endoscopy
-  Radiology
-  Clinical
-  Histopathology
-  IRIS
-  Hospital Mortality





Emergency

-  Aero-Medical
-  E Zone

Analyser


-  Atlas Analyser
-  Service Planner

Directories

-  Geo Reference
-  Service Directory
-  Service Lists
-  Estate Directory

Enter your user name and password, and once accepted, the NQAIS Clinical home page will appear.

When users are allocated a username and password to gain access to the system they should change their password by clicking on their name on the blue bar at the top of the screen where they will be able to view their details.


Health Atlas Ireland
NQAIS Clinical Login

Username

Password

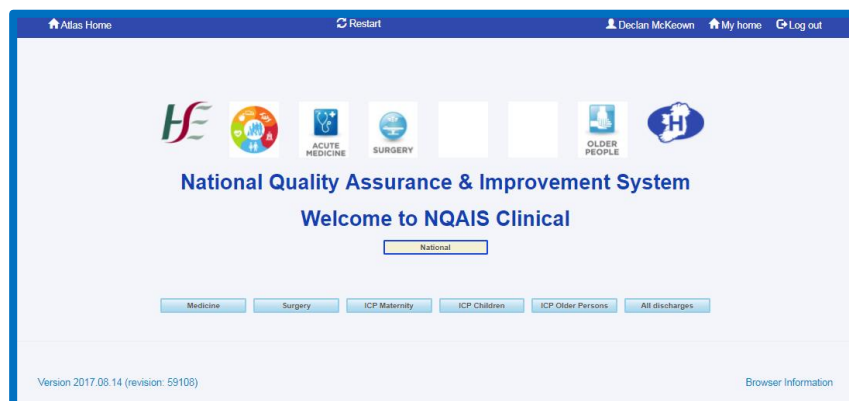
Sign in

[Forgot your password?](#)

3.5 NQAIS Clinical home page (versions)

The NQAIS Clinical system is accessible at 3 levels – (1) national, (2) hospital group and (3) individual hospital.

National level



Hospital group level



Single Hospital level



3.6 NQAIS Clinical blue menu control buttons

Administrative control buttons are displayed in the blue banner at the top of the NQAIS Clinical page and include: Atlas Home, Restart, User name, My home and Log out.



- **Atlas Home:** brings the user to their Health Atlas Ireland homepage, allowing users of other Health Atlas portals to navigate to those from the NQAIS Clinical part of the system.
- **Restart button:** resets all reports selections to default values and regenerates the default summary display.
- **User management:** This option is only available to NQAIS Clinical access controllers at national, hospital group or local hospital levels. It enables them to identify users within their span of control and to add, change details or remove access from users to the system.
- **User name:** The individual user's name gives the user access to their personal profile for use of NQAIS Clinical including the user name, email address, job title, and the ability to change the user's password. Personal details, with the exception of the email, can be updated.

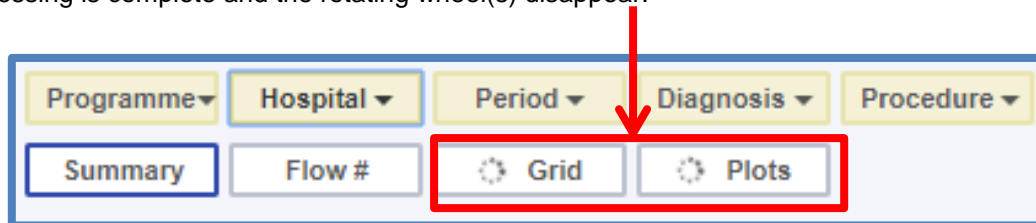
Note: In the event of passwords being forgotten, user's passwords can be changed using the 'forgot my password' function when an incorrect password is input. Messages will go to the user's email, i.e. the email they provided when they were set up on NQAIS Clinical initially.

- **My home:** brings the user to their Health Atlas Ireland homepage, allowing users of other Health Atlas portals to navigate to those from the NQAIS Clinical part of the system.
- **Log out:** allows users to log out from the Health Atlas Ireland portal.

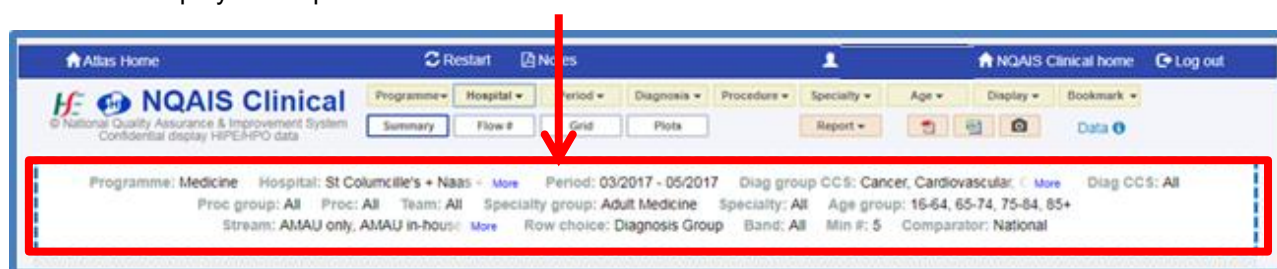
In addition notices may be flagged as red banners on this page e.g. when the latest data was uploaded or when data from a year is being removed from the system

4.0 Gold filter buttons

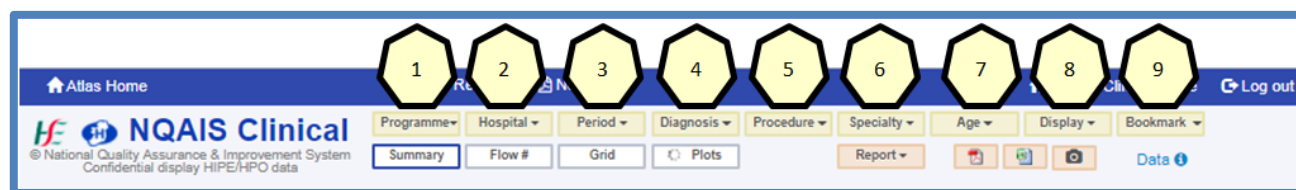
As NQAIS Clinical selections are made using the gold filter buttons. Tiny rotating wheels appear on the silver display buttons indicating that data is currently being processed under that heading. In the illustration below, data is being processed for the Grid and Plots function. No other selections may be performed until all the data processing is complete and the rotating wheel(s) disappear.



The NQAIS Clinical Selection box is a summary text of the selections the user has made for inclusion in the 'on screen' display or a report.



The eight gold filter buttons plus the bookmark button, for saving filters selected, are shown below:



4.1 Programme selection



The programme button allows selection of a Clinical Programme: Medicine, Surgery, ICP Maternity, ICP Children, ICP OP and All discharges can also be selected. By selecting one of the options here it automatically selects the default settings for other options including: Hospital, Diagnosis, Procedure, Specialty and Age.

Once the user modifies a default selection programme, it is signalled with the '**Custom**' indicator in the selection box.



4.2 Hospital selection

The **Hospital** button is dependent of the user's level of access - national, hospital group or individual hospital user. For national users it includes 52 HIPE reporting hospitals, for hospital group users, it includes the hospitals in the group, while users with access to individual hospitals will see their hospital only.

For national users this filter button supports quick selection/de-selection of hospital type. All hospitals, Surgery associated hospitals, Acute Medicine associated hospitals, hospitals with adult EDs, children's EDs, maternity hospitals, and Trauma and Orthopaedic unit EDs.

The **Hospital** button supports quick selection/de-selection of hospital groups within the context of the hospital type selection and selection/de-selection of a choice of 52 individual hospitals (allows selection of one or more).

The hospital selection button (depending on user authorisation) allows the user to view a given set of hospital data.

- Click '**All**' to select / deselect all hospitals nationally.
- The **Hospital** button allows for selection of hospitals associated with specific Clinical Programmes (hospitals relevant to that programme will be automatically selected) - Acute Medicine, ED - Adult, ED - Child, ED -T&O (Trauma and Orthopaedic EDs), Maternity, Surgery.
- By clicking on Models 4, 3, and/or 2, the selected hospitals in one or all of the Hospital models will be selected depending on your selection.
- By clicking on one or a combination of Hospital Group(s) – individual hospitals in the hospital group(s) will be selected.
- Users can select / deselect individual hospitals.

At the bottom of each filter button selection there are 4 buttons – Reset, Cancel, Close and Select:

- '**Reset**' button activates the original settings.
- '**Cancel**' button undoes changes in the latest selection.
- '**Close**' Closes the window and holds the current selection until 'Select' is activated from another button. Close does not retain selection if you use other filter buttons.
- '**Select**' Activates the current selection including those previously made and regenerates the screen views based on new selections. It is important to press select in the 'Display' filter button as it is the final filter button.

4.3 Period selection

3

The **Period** filter button allows selection of a choice of four time periods of: 3, 6, 9, 12 months or a custom period with a 'starting' and 'ending' month (both inclusive for reports). A year range can also be selected.

The default period is the latest available three months.

4.4 Diagnosis selection

4

The **Diagnosis** filter button allows the selection or de-selection of CCS groups and/or CCS diagnoses. Nineteen CCS diagnostic groups and approx. 297 CCS diagnoses can be selected or deselected in any combination.

The Programme selection (gold filter button) automatically selects the CCS diagnostic groups and diagnoses relevant to that Clinical Programme.

Expand '+' to select/deselect individual CCS diagnoses as required.

4.5 Procedure selection

5

The **Procedure** filter button allows for the selection of records based upon the principal procedure (Proc 1) as classified by the RCSI/RCPI.

There are 39 groups of procedures: 19 that are surgical in nature; 18 groups of procedures that are clinical (non-surgical) in nature; one group for low volume principal procedures (<20 per year nationally); and one group where no principal procedure was documented.

The procedure classification system will be reviewed and updated over time as new technologies and methodologies are introduced into medical practice.

Records can be selected by procedure group or individual procedure as outlined below.

Surgical (principal) procedure

There are 3 expand or contract levels (using the + or – buttons) e.g. surgical principal procedure, surgical (principal) procedure group and individual surgical procedure.

Individual procedures may be viewed and selected or deselected by clicking on the + button.

The example shows the general surgery procedure group expanded by individual procedure.

Clinical (non-surgical) principal procedures can be selected or deselected.

Procedure (principal/Proc 1) - RCSI/RCPI Classification

☒ Select/deselect all

☒ Surgical procedure (20+/yr) *

☒ Clinical (non-surgical) procedure (20+/yr) *

☒ Low volume procedure (<20/yr)

☒ No procedure

Reset Cancel Close Select

Low volume procedure (<20/yr)

The low volume principal procedure refers to <20 cases per year nationally, however 2 years - 2017 and 2018 - were used as the latest reference years for calculations in the system, therefore low volume is <20 cases for the 2 reference years. This button can be selected or de-selected as required, it is ticked (selected) as the default setting.

No procedure

The 'no procedure' group can be selected or deselected as required. This group is ticked (selected) as a default selection.



4.6 Specialty selection

Specialty

Team code/s eg ABCD, EFGH

☒ Admitting ☒ Discharge ☒ Principal

Specialty *Analysis by specialty may take some time*

☒ Select/deselect all

☒ Acute medicine *

☒ Anaesthetics & pain mnmgt *

☒ Emergency medicine *

☒ Not classified on DOH list *

☒ Obstetrics & Gynaecology *

☒ Other medicine *

☒ Paediatric medicine *

☒ Pathology *

☒ Psychiatry *

☒ Radiology *

☒ Surgery *

The Specialty button enables two related selections to be made:

- The selection of records by one or more team/s (consultant/s).
- The selection of records by HIPE defined specialty.

In the blank box entering the 4 digit code of one or more teams (consultants) selects the records of patients only associated with those teams (consultants), whether admitting, discharge or principal as specified.

Specialty

- ☐ Pathology
- ☐ Psychiatry
- ☐ Radiology
- ☒ Surgery *
- ☒ Breast surgery
- ☒ Cardio thoracic surgery
- ☒ Dental surgery
- ☒ Gastro intestinal surgery
- ☒ General surgery
- ☒ Hepato biliary surgery
- ☒ Maxillo-facial
- ☒ Neuro ophthalmic surgery
- ☒ Neurosurgery
- ☒ Ophthalmology
- ☒ Oral surgery
- ☒ Orthodontics
- ☒ Orthopaedics
- ☒ Otolaryngology (ENT)

The specialty selection functionality also supports the analysis of:

- Individual specialty or groupings of specialties;
- Patients admitted under medicine who have surgery;
- Patients admitted under surgery who do not have surgery;
- Cross discipline conditions like patients admitted with non-specific abdominal pain.

The term 'Specialty' refers to the *HIPE Clinician classification*.



4.7 Age selection

The **Age** button allows for the selection/de-selection of patients within 6 age groups: 0-4, 5-15, 16-64, 65-74, 75-84 and 85 or over.

The screenshot shows the NQAIS Clinical interface with the 'Age' button selected in the top navigation bar. A dialog box titled 'Age' is open, displaying a list of age groups with checkboxes. The 'SELECT' button is highlighted in blue.

The clinical programme selection automatically sets the appropriate age groups by default for example, all age groups are selected for the Surgery Programme, only adult age groups for the Acute Medicine Programme and 65 years and over is selected for the Older Persons Programme. The Maternity Programme includes all age ranges (includes newborns), Child Medicine selects the 0 to 15 year age group. The 'All discharge' option selects all age groups.



4.8 Display selection

The **Display** dropdown has 6 selection zones:

Admission stream, Total row, Row choice, Band, No. of cases per row (ribbon), Comparator.



4.9 Bookmark selection

The bookmark function allows the user to save a set of gold button filter selections relevant for their specific reports for future reference and can be refreshed as new data become available.

Any user defined selection of hospital, diagnosis, procedure, specialty and age can be saved and recalled easily at a later date. The time period will only be saved when the custom button is used, otherwise the time period will not be saved as future data updates will overwrite the current HIPE dataset.

Once the selection is saved as a bookmark, the user can rename and date the bookmark as appropriate to the area of interest (e.g. Respiratory team). The user can return to this selection in a single click in subsequent sessions of NQAIS Clinical. A list of all previously saved bookmarks by the individual user will be displayed on screen.

4.10 Admission streams

A maximum of five admission streams (display columns) can be shown on screen or included in a data export at the one time. There are 17 admission streams to choose from, which are limited to logical combinations. The Clinical Programme selection determines the default selection as outlined below.

The ASAU has been removed from this display screen to avoid confusion with the AMAU.

Specialty	Admission stream
Medicine	AMP All, AAU only, AAU in-house, AAU all, emergency non-AAU, elective stay, streams total
Surgery	Emergency day, emergency stay, elective stay, elective day, streams total
Maternity	Maternity day, maternity stay, new born, streams total
Child Medicine	Emergency day, emergency stay, elective stay, elective day, streams total
Older persons	Emergency same day, emergency stay, elective same day, elective day, streams total

Note: Avoid double counting when selecting admission streams – a quick guide below provides clarification.

The user is responsible for selecting 1 to 5 admission streams

Overlapping streams will display errors in the Summary, Explorer and Plots reports

AMP all = AAU only+AAU in-house+Emerg non-AAU+Elective stay

= Emergency all+Elective stay

= Emerg same day+Emerg stay+Elective stay

= AAU all+Emerg non-AAU+Elective stay

Emerg All = AAU only+AAU in-house+Emerg non-AAU

= Emerg same day+Emerg stay

= AAU all+Emerg non-AAU

AAU All = AAU only+AAU in-house

- 'AAU only' is included in the 'Emergency same day',
- 'AAU in-house' is included in 'Emergency Stay'.
- Streams Total is a total of the streams selected
- 'All discharges' in the programme filter button identifies all the patients discharged relevant to the filter buttons – it will include elective day cases in Medicine, which are not included as a default, and also Maternity cases (with an admission type of Maternity).

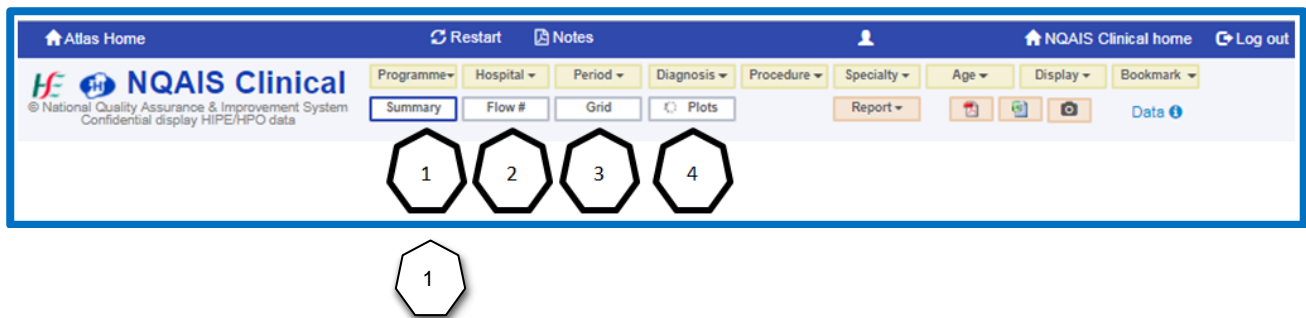
Note: Short Stay wards are not part of the AAU and should be coded as a separate in-patient ward to the AAU.

Selection	Description
Total row	This selection applies to the plots view that gives an option of including a summary row at the top of the display that sums the data from all other
Row choice	Determines which 'cut' of the data is to be displayed as the rows in the displays i.e. Diagnosis Group, Procedure Group or Specialty Group.
Band	Provides the option for focusing the results that only include rows containing one or more of the following bands – 'on target', 'near target' or 'off target'.
No. of cases	Provides an option to select the maximum and/or minimum number of discharges per row. The default setting is a minimum of 5 discharges per row. This functionality is useful when reviewing patterns for low or high volume activity. Reduce min. to zero to capture all data especially for procedures when they may not be performed as a principal procedure.
Comparator	For comparative purposes, data and visuals displays generated from one of the following can be selected - National, Model 2, Model 3 or Model 4 hospitals. The comparative group is always displayed as a grey diamond or line in the background, and the hospital/s of interest are always indicated by a diamond outlined in blue or a blue line.

Admission streams are defined in Appendix 3.

5.0 Silver display buttons

The second row of buttons in the NQAIS Clinical main menu bar has four (silver) report buttons;



5.1 Summary Report display

The summary report display is the default view when NQAIS Clinical is launched and provides an oversight of what is in the filter buttons. Patterns of interest are clearly highlighted as a guide to areas that should be prioritised for further review.

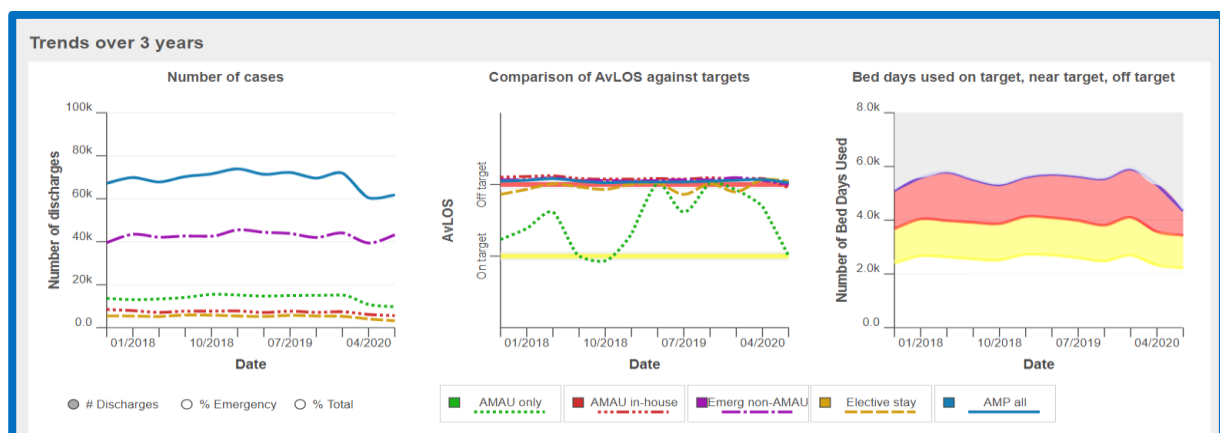
The options chosen within the (gold) filter buttons dynamically determine the default or customised selection of records that is analysed and displayed, including the clinical programme, hospital/s, period of interest, diagnoses, procedures, specialty/team and admission streams.

The summary report display has 4 sections.

1. The top table shows **key metrics** summarising the numbers of discharges in the period selected (default 3 months), bed days used, beds used per day, beds per day 'on target', 'near target' and 'off target' and beds per day post trim i.e. those used by patients who stay longer in hospital and beyond the trim point calculation.,

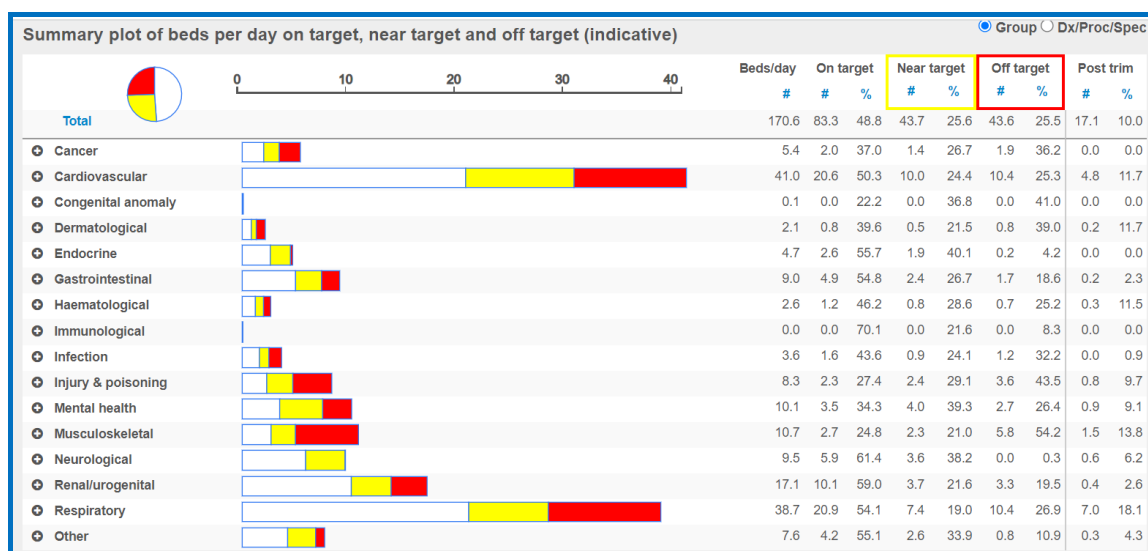
Key metrics							
	Discharges	Bed days used	Beds/day	Beds/day on target	Beds/day near target	Beds/day off target	Beds/day post trim
Number this period	64589	469897.5	5221.1	2703.8	1349.8	1167.5	656.6

2. The three **trend graphs** show an example of the patterns per quarter over the preceding 3 years by: the volume of cases by admission stream; comparison of AvLOS targets by admission stream; and a 'river plot' showing the indicative proportion of beds per day that are 'on target', 'near target' and 'off target' over time. The individual streams in the first two plots can be shown or hidden by toggling the respective buttons.



3. By hovering the cursor over a plot or line in the summary view, the relevant values for the previous months will be displayed.

4. A **summary plot of beds used per day**, shown in the example below, displays the indicative proportions of beds per day: 'on target' (top quartile) as the white segment; 'near target' (2nd quartile) as the yellow segment; and 'off target' 3rd and 4th quartile) as the red segment.



The rows can be presented by diagnosis, procedure or specialty depending on the display option selected in the display button filter.

The associated values are shown in the table above. All columns in the display can be sorted by clicking the blue column value title (heading). The pie chart at the top displays a summary of the total number of beds per day that fall within the target categories.

5.2 Assumptions underpinning the white, yellow and red bed days calculations

The primary focus of NQAIS Clinical is to optimise length of stay (LOS) for safe patient care in all publicly funded Irish hospitals.

It is important that the 'red bed days' metric is interpreted as an optimistic (indicative) estimate of the potential for improvement in bed day usage.

The intended purpose of the metric is to help prioritise areas in hospital(s) for potential quality improvement initiatives to optimise length of stay.

The metric should be interpreted in light of the following considerations:

- It is a summary metric derived from clinical team peer averages and not from LOS for individual patients.
- It is retrospective - based on HIPE (discharge) data. HIPE data in NQAIS Clinical is refreshed monthly and is approximately 6 weeks in arrears as by this time the nationally collated dataset is considered sufficiently complete.
- It can be influenced by sudden and marked variations in discharge processes in the period of interest such as ward closures or discharge initiatives e.g. the availability of step down beds.

- It assumes that beds used in the admission streams are available seven days a week, this is not always the case and may give rise to fluctuations.
- Where patients have been discharged having stayed for a long period of time in hospital their total LOS is attributed to BDU in that month. Ward closures will reduce the number of bed days used. Discharge initiatives such as the availability of step down beds may allow the transfer of a higher than normal number of longer stay patients in a given month.
- The type of bed used during the hospital stay (e.g. rehabilitation, acute ward, etc.) is not available for inclusion in the analysis at this time.
- It assumes that bed occupancy is constant and does not take into account fluctuations in bed occupancy in the period of interest.
- It is inappropriate to assume that the metric is an indicator of the number of beds that are required or not required in the system.
- It should be interpreted in the context that not all teams in all hospitals can be in the top quartile (i.e. 100% cannot be in the top 25%).
- The red bed days metric should be interpreted as an indicator for where quality improvement initiatives, in the delivery of safe patient care, may provide process improvement.

The **summary tables by admission stream** provides visibility in tabular format of a range of key metrics of beds per day by admission stream: total; 'on target'; 'near target'; 'off target'; 'post trim', and the number of cases (discharges).

Summary tables by patient streams

☐ Key flow metrics

Beds per day:
☐ Total
☐ On target
☐ Near target
☐ Off target
☐ Post trim
☐ Cases

Sample reports are available in Appendix 4.

5.3 The Flow Report display

The **flow metric report** provides access to a generic programme metric table relevant only for the Acute Medicine Programme admission streams, AAU only, AAU in-house, Emerg non-AAU and Elective in-patients.

The table includes the national metric, the hospital group metric, and the key metrics for the hospital/s selected (see example of some of the metrics below).

	National	Hospital Group	Individual Hospital	Last yr	Last yr to date	This yr to date	Snapshot period
Total cases #	113910	25565	6994	26904	6661	6994	6994
LOS =0 (same day) discharges #	79784	18586	5097	19476	4985	5097	5097
LOS =0 (same day) discharges %	70.0	72.7	72.9	72.4	74.8	72.9	72.9
LOS 1-2 days discharges #	15780	3276	796	3022	643	796	796
LOS 1-2 days discharges %	13.9	12.8	11.4	11.2	9.7	11.4	11.4
LOS 1-2 days BDU #	21517	4427	1065	4113	873	1065	1065
LOS 1-2 days BDU %	4.0	3.8	3.1	3.3	2.7	3.1	3.1
LOS 3-14 days discharges #	15610	3187	855	3523	799	855	855
LOS 3-14 days discharges %	13.7	12.5	12.2	13.1	12.0	12.2	12.2
LOS 3-14 days BDU #	92408	17964	5398	22429	5045	5398	5398
LOS 3-14 days BDU %	17.3	15.4	15.8	17.9	15.6	15.8	15.8
LOS >2 days discharges #	18346	3703	1101	4406	1033	1101	1101
LOS >2 days discharges %	16.1	14.5	15.7	16.4	15.5	15.7	15.7
LOS >2 days BDU #	180274	36299	14235	54578	14537	14235	14235
LOS >2 days BDU %	33.7	31.1	41.7	43.5	45.1	41.7	41.7

The NCPS metrics specific to surgery/procedures overall located in NQAIS Clinical:

DoSA #, (day of surgery admission number)
 DoSA % (day of surgery %)
 Pre-Op Bed Days Used (BDU)
 Pre-Op AvLOS
 Day case target
 Off target and %
 Add (additional) work - number of procedures performed as secondary procedures

5.4 Grid report display

The **grid report display** supports a comparative review of AvLOS related metrics in a colour-coded format. Data is provided for the national picture, hospital group and individual hospital(s).

The options chosen within the gold filter buttons dynamically determine the default or customised selection of records that are analysed and displayed, including the clinical programme, hospital/s, period of interest, diagnoses, procedures, specialty/team and admission streams.

The rows are shown in alphabetical order, and can refer to the diagnosis, procedure or specialty depending on the display selection. Each of these groupings can be expanded to display the components by clicking the + button.

The data for the selected hospital(s) are displayed in columns.

Each square in the grid is colour coded – white indicating ‘on target’, yellow indicating ‘near target’ and red indicating ‘off target’ for AvLOS.

To provide context, the table is divided by a grey line:

- To the left of this line are columns containing national and hospital group data;
- To the right of this line are columns containing the selected hospital(s) data;
- When a number of hospitals are selected (available at the hospital group or national levels), the first column to the right of the line is the result for these hospitals combined.

The admission stream of interest can be selected for display from the grey box on the top left corner of the grid e.g. for this selection Emerg same day, Emerg stay, Elective day case, Elective stay and Streams total.

☐ Emerg same day
☐ Emerg stay
☐ Elective day case
☐ Elective stay
☒ Streams total

Total	740	1.9	1.6	2.3	0.3	1598.5	72	81.9	94.2	97.7	99.5	11	1.5	23	3.1	17.4	13.1	75.3	4.3	24.7	0	0	0.5	2.9	501
Breast surgery	-																								
Cardiothoracic	-																								
Colorectal	8	20.8	10.2	15.6	10.6	166.5	12.5	12.5	37.5	50	75	0	0	0	0	1.8	0.9	49.1	0.5	25.9	0.5	24.9	0	0	4
General surgery	121	1.5	1.5	1.9	0	238	70.2	87.6	95.9	98.3	99.2	5	4.1	5	4.1	2.6	2	77.9	0.6	22.1	0	0	0.3	10.1	13
Gynaecology	8	1.6	1.9	2.4	-0.3	13	62.5	75	100	100	100	0	0	0	0	0.1	0.1	100	0	0	0	0	0	0	12
Maxillofacial & dental	-																								
Neurosurgery	-																								
Ophthalmology	6	0.5	0.5	0.5	0	3	100	100	100	100	100	0	0	0	0	0	0	100	0	0	0	0	0	0	1
Otolaryngology	-																								

Cases #

▲

AvLOS (days)	AvLOS tgt	AvLOS off target	Difference from target	Bed days used #	1 day %	2 day %	7 day %	14 day %	28 day %	Readmissions 7 days #	Readmissions 7 days %	Readmissions 30 days #	Readmissions 30 days %	Beds/day	Beds/day on target	Beds/day on target %	Beds/day near target	Beds/day near target %	Beds/day off target	Beds/day off target %	Beds/day post trim	Beds/day post trim %	
9716	2.4	1.8	2.4	0.6	25961	67.4	75.3	91.9	96.7	99.1	141	1.5	316	3.3	282.2	189.8	67.3	64.3	22.8	28.1	10	15.4	5.4
1683	1.7	1.8	1.9	-0.1	3102	59.1	73	98.1	99.4	99.9	1	0.1	1	0.1	33.7	33	97.7	0.8	2.3	0	0	1.6	4.7
1525	1.4	0.9	1.1	0.5	2131	93.6	94.2	96.6	97.8	99	15	1	35	2.3	23.2	14.5	62.7	4.3	18.4	4.4	18.9	0.1	0.5
1134	2.2	1.7	2.3	0.5	2744.5	68.7	76.6	92.4	97.2	99.4	22	1.9	54	4.8	29.8	21.2	71.1	6.8	22.7	1.9	6.2	0.9	3.1
963	3.7	3	4	0.7	3962.5	44.9	56.6	85	94.9	98.7	14	1.5	38	3.9	43.1	31.6	73.3	10.2	23.7	1.3	3	1.1	2.5
931	1.5	1.4	0.5	2019	81.4	87.1	95.8	97.7	99.6		18	1.9	29	3.1	21.9	10.5	47.8	4.1	18.5	7.4	33.7	5.5	25.1
784	3.4	2.2	3.2	1.2	2815	56.8	63.1	85.3	96.2	99	21	2.7	48	6.1	30.6	18.8	61.6	8.5	27.6	3.3	10.8	0.4	1.2
722	2.1	1.6	2.1	0.5	1673	72.6	78.8	92.4	96.7	99.2	25	3.5	36	5	18.2	12.9	70.9	3.7	20.3	1.6	8.8	0.6	3.5
651	4.1	2.7	4	1.5	2969	52.8	63.7	82	91.6	97.8	6	0.9	21	3.2	32.3	18.6	57.7	9.2	28.6	4.4	13.7	1.8	5.5

Columns in the Grid View report are sortable, titles are in blue and arrows are hidden until the user clicks the title to sort the column.

The key metric for display, options identified in the example below, can be selected through the **Value** drop-down menu in the top left corner of the grid

The screenshot shows a dropdown menu with the following options:

- ☐ Emerg same day
- ☐ Emerg stay
- ☐ Elective day case
- ☐ Elective stay
- ☒ Streams total

Below these is a 'Value' dropdown menu currently set to 'No value'. The expanded menu shows the following options:

- ☒ No value
- ☐ Cases #
- ☐ AvLOS (days)
- ☐ AvLOS tgt
- ☐ AvLOS off target
- ☐ Difference from target
- ☐ Bed days used #
- ☐ 1 day %
- ☐ 2 day %
- ☐ 7 day %

In the background, a grid is visible with columns labeled 'National' and 'IEHG' and rows of colored cells (yellow and red).

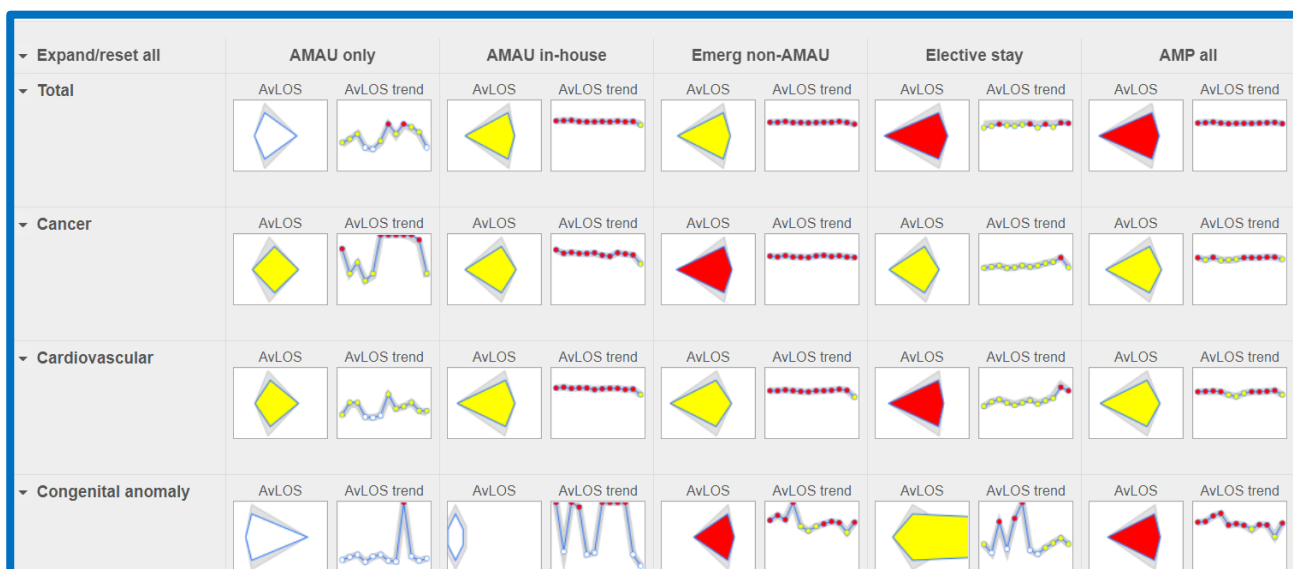


5.5 Plots Report display

The **Plots Report** view is an interactive analytical web enabled screen for reviewing clinical workload using graphics supported with key values if required.

The options chosen within the gold filter buttons dynamically determine the default or customised selection of records that are analysed and displayed, including the clinical programme, hospital/s, period of interest, diagnoses, procedures, specialty/team, and admission streams.

The format of this view is a set of paired pictograms (AvLOS and AvLOS trend); the diagnostic, procedure or specialty groupings are displayed in alphabetical order on the left and the selected admission streams are displayed as the columns (see below).



The selected hospitals/s are illustrated as the blue edged diamonds and lines, the grey diamonds and lines in the background represent the selected comparator (national or hospital model).

- A white diamond indicates that the AvLOS of the selection is 'on target'.
- A yellow diamond indicates that the AvLOS of the selection is 'near target'.
- A red diamond indicates that the AvLOS of the selection is 'off target'.

The expand option enable each row to be opened to display other pictograms, key values and further breakdown by diagnosis, procedure, specialty or team under a consultant as appropriate.

5.6 Understanding the diamond plot

The NQAIS Clinical diamond plot is an enhancement of the standard box-and-whisker plot and allows comparative data to be viewed in a unique and meaningful way. In this system, the whiskers (or longer-stay patients) of the standard box-and-plot plot are discarded, the box is drawn to a point at each end (the 25th and 75th centiles) and the 'height' of the resulting diamond shape represents the AvLOS. The AvLOS is defined as the arithmetic mean of all the observations, once the longer stay patients have been excluded (described as post trim cases).

The diamond plot is a way of representing how one hospital (or combination of hospitals) compares to the national or hospital model selected. The reference (comparator) is represented by a grey diamond, while the local hospital is outlined in blue. To allow users to view them more easily, both have been rotated horizontally.

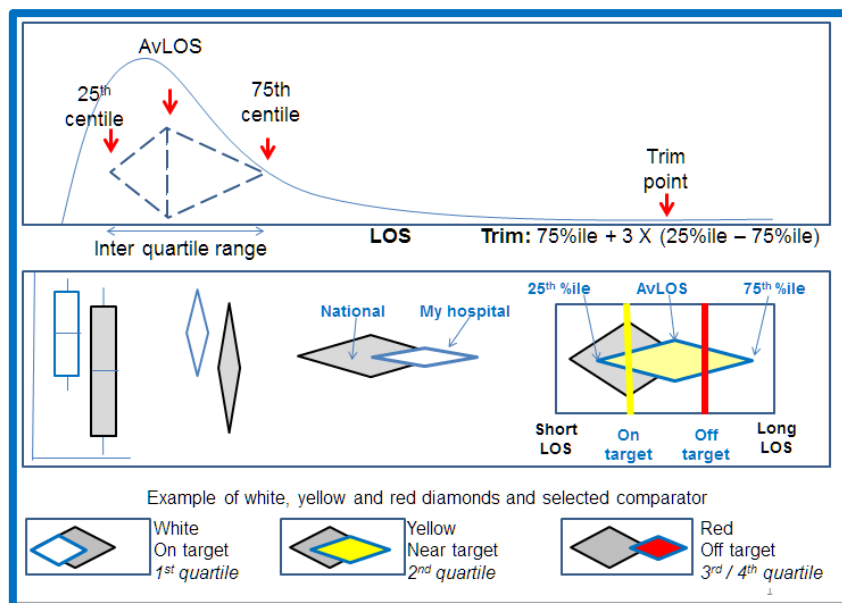
The pictogram in which the diamond plot is displayed is divided into three equal segments, with a yellow line indicating 'on target' AvLOS and a red line indicating an 'off target' AvLOS. The AvLOS (diamond height) will fall into one or other segment, indicating whether it is 'on target' (top quartile), 'near target' (second quartile) or 'off target' (3rd or 4th quartile).

The scales on the graph are dynamically driven, meaning that the data determines the numbers that are displayed on the x and y axes. The x axis of the pictogram segments do not share the same scale because the right hand 'extent' of the pictogram window is data driven (AvLOS multiplied by 2.365). This ensures that the complete diamond shape is almost always fully in view and that the overall shape of the data is captured. The diamond shape should be interpreted with this consideration in mind.

The pictogram is miniaturised in the NQAIS Clinical plot view. In the 'Enlarge' option (or by clicking directly on the diamond) the axes are labelled and the key values are shown. Small numbers can occasionally result in a 'flattened' shape rather than the diamond where the 25th centile is greater than the pre-trim AvLOS (long-stayers' values having been removed). The following diagram illustrates the different components of a NQAIS Clinical diamond plot.

The NQAIS Clinical diamond summarises two concepts in one graphic:

- The left and right hand tips (25th and 75th centiles) are computed from all the records selected (including longer-stay cases)
The 'height' of the diamond is computed from the arithmetic mean of the records excluding longer-stay cases (i.e. exceeding the trim point) as determined from the national CCS or procedure dataset.



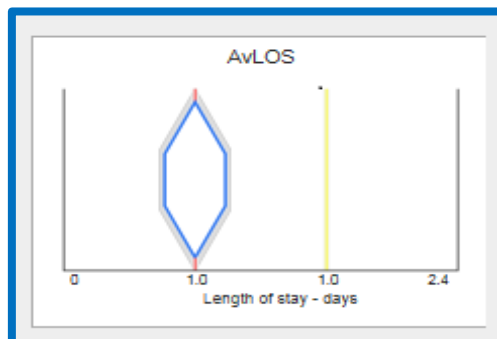
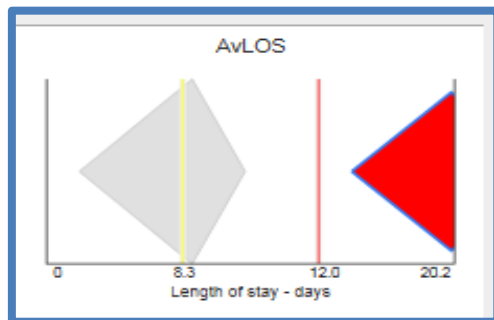
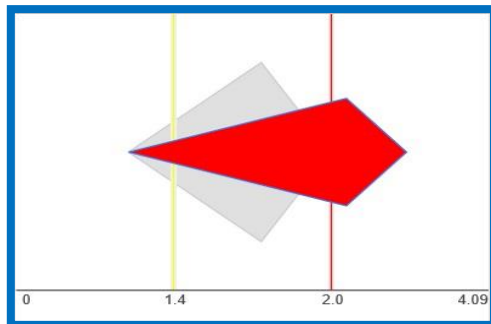
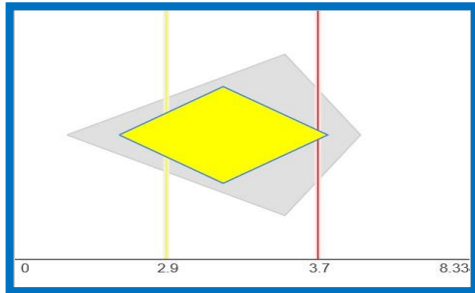
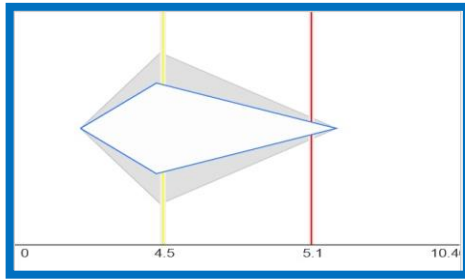
Each diamond plot in each ribbon in NQAIS Clinical is uniquely created to convey the shape of the LOS of patients in line with the specific selection criteria. The spread of data is summarised by the 25th and 75th centiles – the left and right hand tips of the diamond. Longer lengths of stay result in the diamond shape being ‘stretched’ to the right.

The ‘height’ of the diamond represents the AvLOS - the arithmetic mean after removal of the very long ‘post-trim’ LOS values.

A trim point is used to statistically identify records where the LOS is very prolonged and unlikely to reflect the acute phase of the patients’ treatment. This also avoids the effect of a small number of very long LOS values ‘pulling’ the AvLOS to the right (artificially enlarging the value).

The AvLOS is the average length of stay for all pre-trim cases. The long stay cases are excluded from the calculation of the AvLOS if their LOS is greater than a derived value, referred to as the ‘trim point’. The trim point is 75thile plus 3 times the interquartile range

The biasing effect on the arithmetic mean (AvLOS) of the relatively small number of patients with extremely long LOS values can be reduced by ‘trimming’ (excluding) any records with a LOS above the 75th centile plus three times the inter-quartile range. The trim point is calculated using HIPE discharge records from the most recent 2 years of data for all hospitals for each procedure, CCS diagnosis and admission stream and, where volumes allow, by age group.



AvLOS diamond

The selected hospital(s) diamond is positioned to the front and outlined in blue.

The national or hospital model comparator (depending on the user's selection) is coloured in grey behind the selected hospital(s) diamond.

- White diamond: AvLOS 'on target'
- Yellow diamond: AvLOS 'near target'
- Red diamond: AvLOS 'off target'

Each pictogram is unique and is divided into three equal size panels:

1/3 for 'on target'
1/3 for 'near target'
1/3 for 'off target'

The 'on target' is represented by the yellow line and its value on the axis, and the 'off target' is represented by the red line and its value on the axis. The extent of the third panel is determined by the spread of the data - greater than 2.365 times the national AvLOS for that diagnosis or procedure (or groupings).

Half diamond

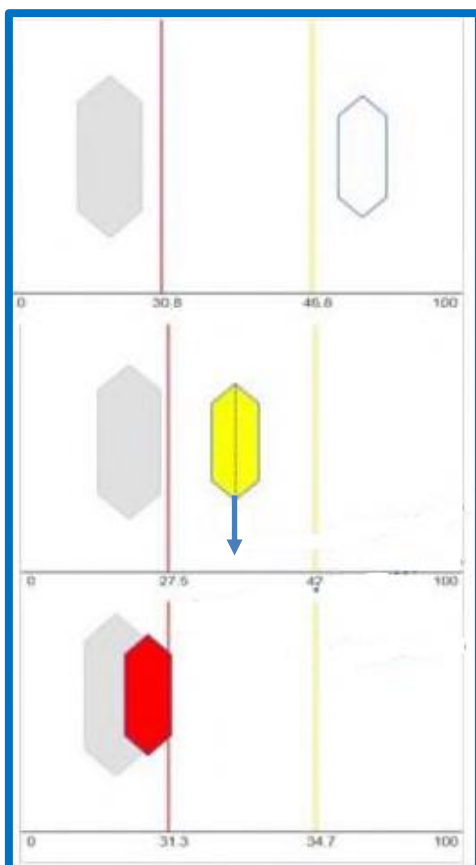
Where a half AvLOS diamond shape is at the edge of the pictogram, this display means that the AvLOS is greater than 2.365 times the national AvLOS.

No data

If no data exists to create the diamond shape, the diamond is absent from that pictogram.

Crystal shape

A crystal shape is displayed in the plots view where very small numbers are involved (<5), there is no natural 'stretch' to the diamond as the 25th and 75th centiles are very close. This generates a diamond too narrow to be visible. This shape is displayed for day cases also.



Day case rate crystal

- White crystal: day case rate is 'on target' or greater than target.
- Yellow crystal: day case rate is 'near target'
- Red crystal: day case rate is 'off target'.

A vertical line drawn from the top to bottom tips of the crystal points to the day case rate on the x-axis.

The 'off target' red line is the median day case rate for teams (nationally) ranked by volume for a given procedure.

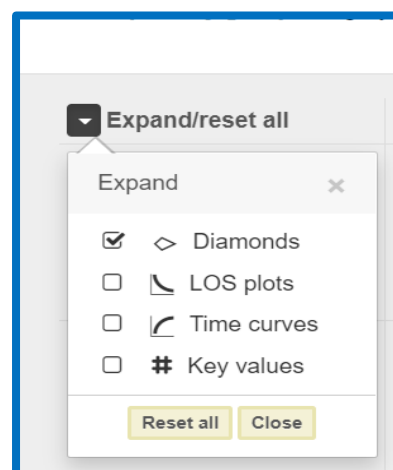
The 'on target' yellow line is the top quartile day case rate for teams (nationally) ranked by volume for a given procedure.

5.7 Plots Report display by diagnosis group

Expand/reset all	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
Total	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend
Cancer	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend
Cardiovascular	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend
Congenital anomaly	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend

Use the expand options

By clicking on the Expand/reset all button on the top left corner you can choose to switch on or off the diamonds on display, see the length of stay graph, see the time curve graph or display the key values (see below) associated with the diagnosis(es) that you have selected in the filter buttons.



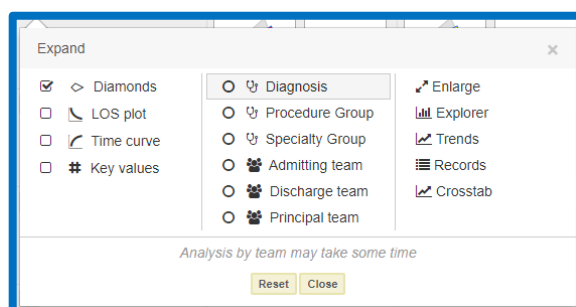
The diagnosis group view that is displayed first can be expanded by 3 levels as outlined below, this will allow the user to drill down into the data for more detailed information.

Expand/reset all	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
▼ Total	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend
	Cases #	815	Cases #	363	Cases #	3512	Cases #	616	Cases #	5306
	AvLOS (hours)	8.2	AvLOS (days)	7.9	AvLOS (days)	6.3	AvLOS (days)	4.6	AvLOS (days)	5.4
	AvLOS tgt	4.5	AvLOS tgt	3.9	AvLOS tgt	4.0	AvLOS tgt	3.1	AvLOS tgt	3.3
	Bed days used	508.5	Bed days used	3416.0	Bed days used	29777.0	Bed days used	3254.0	Bed days used	36955.5
	Beds/day on target	1.3	Beds/day on target	11.8	Beds/day on target	115.5	Beds/day on target	15.4	Beds/day on target	144.0
	Beds/day near target	0.4	Beds/day near target	7.1	Beds/day near target	58.0	Beds/day near target	10.3	Beds/day near target	75.7
	Beds/day off target	2.5	Beds/day off target	9.3	Beds/day off target	72.6	Beds/day off target	1.2	Beds/day off target	85.7
	12 hour %	95.5	7 day %	85.3	7 day %	70.8	7 day %	81.7	7 day %	76.1
	Readm % 30d	14.1	Readm % 30d	10.2	Readm % 30d	10.0	Readm % 30d	5.4	Readm % 30d	10.1
▼ Cancer	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend
	Cases #	12	Cases #	22	Cases #	94	Cases #	167	Cases #	295
	AvLOS (hours)	19.1	AvLOS (days)	14.9	AvLOS (days)	13.5	AvLOS (days)	4.8	AvLOS (days)	8.1
	AvLOS tgt	4.0	AvLOS tgt	5.2	AvLOS tgt	6.8	AvLOS tgt	3.7	AvLOS tgt	4.6
	Bed days used	11.0	Bed days used	327.0	Bed days used	1403.0	Bed days used	853.0	Bed days used	2594.0
	Beds/day on target	0.0	Beds/day on target	0.9	Beds/day on target	5.2	Beds/day on target	5.1	Beds/day on target	11.3
	Beds/day near target	0.0	Beds/day near target	0.9	Beds/day near target	3.2	Beds/day near target	1.9	Beds/day near target	8.0
	Beds/day off target	0.1	Beds/day off target	0.9	Beds/day off target	3.2	Beds/day off target	0.0	Beds/day off target	2.1
	12 hour %	83.3	7 day %	31.8	7 day %	41.5	7 day %	85.0	7 day %	67.8
	Readm % 30d	16.7	Readm % 30d	18.2	Readm % 30d	13.8	Readm % 30d	8.4	Readm % 30d	11.2
▼ Cardiovascular	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend	AvLOS	AvLOS trend
	Cases #	110	Cases #	46	Cases #	1202	Cases #	141	Cases #	1499
	AvLOS (hours)	6.7	AvLOS (days)	6.2	AvLOS (days)	4.5	AvLOS (days)	3.3	AvLOS (days)	4.2
	AvLOS tgt	4.4	AvLOS tgt	4.4	AvLOS tgt	3.6	AvLOS tgt	1.9	AvLOS tgt	3.2
	Bed days used	63.0	Bed days used	286.0	Bed days used	7777.0	Bed days used	595.0	Bed days used	8721.0
	Beds/day on target	0.2	Beds/day on target	1.7	Beds/day on target	35.9	Beds/day on target	2.2	Beds/day on target	40.0
	Beds/day near target	0.0	Beds/day near target	0.7	Beds/day near target	16.7	Beds/day near target	1.0	Beds/day near target	18.6
	Beds/day off target	0.3	Beds/day off target	0.0	Beds/day off target	11.7	Beds/day off target	1.7	Beds/day off target	13.5
	12 hour %	97.3	7 day %	73.9	7 day %	81.8	7 day %	87.9	7 day %	83.4
	Readm % 30d	17.3	Readm % 30d	4.3	Readm % 30d	6.6	Readm % 30d	5.0	Readm % 30d	7.1

The **1st level (default) display** is the **diagnosis group** (as selected in the Display button) i.e. *cancer, cardiovascular* etc.

To view the **2nd level display**, click the 'Expand' option on the row/s of interest and a number of options are displayed in the middle column of the drop down menu e.g. *individual diagnosis, procedure group, specialty group, Admitting Team, Discharge Team and Principal team*.

To view the **3rd level display**, again click the 'Expand' option on the 2nd level row and further options are presented:



If **2nd level=diagnosis**, the expand options are: *procedure group; specialty; admitting; discharge or principal team*.

If **2nd level=procedure**, the expand options are: *diagnosis; specialty; admitting; discharging team*.

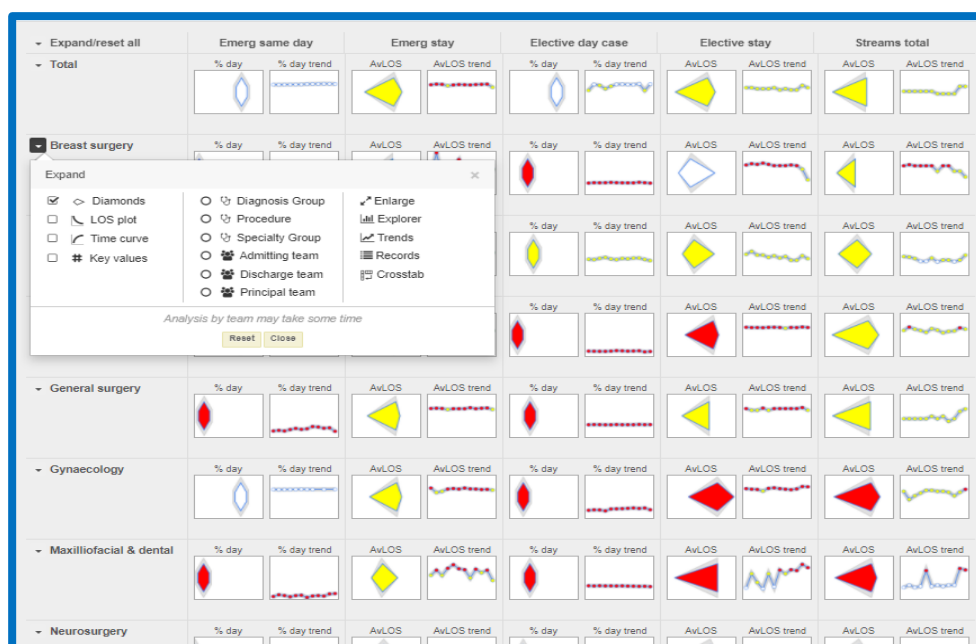
If **2nd level=specialty**, the expand options are: *diagnosis; procedure group; admitting/discharge/principal team*.

If **2nd level=admitting team**, the expand options are: *diagnosis; procedure group or specialty*.

If **2nd level=discharging team**, the expand options are: *diagnosis; procedure group or specialty*.

Other expand options include *further pictograms, key values, enlarge, explorer, trends, records and cross tabs*.

5.8 Plots display by procedure group



The procedure group view can be expanded by 3 levels as outlined below.

The **1st level (default) display** is the **procedure group** (as selected in the Display button) i.e. *breast surgery, cardiothoracic, colorectal, general surgery* etc.

2nd level expand options are: *diagnosis; procedure; specialty; admit/discharge team*.

To view the **3rd level display**, again click the 'Expand' option on the 2nd level row and further options are presented:

If **2nd=diagnosis**, the expand options are: *procedure; specialty; admitting/discharge team*.

If **2nd=procedures**, the expand options are: *diagnosis; specialty; admitting/discharge team*.

If **2nd=specialty**, the expand options are: *diagnosis; procedure; admitting/discharge team*.

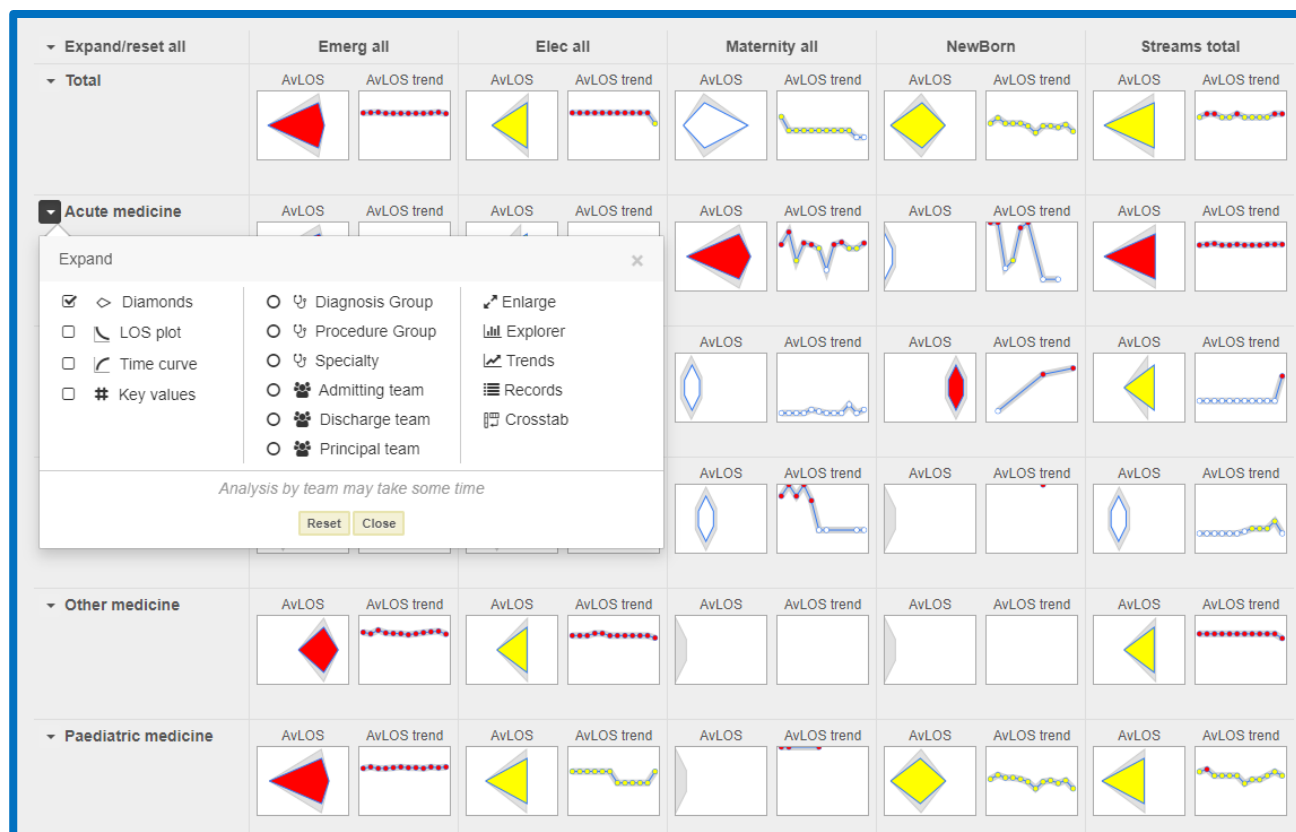
If **2nd=admitting team**, the expand options are: *diagnosis; procedure or specialty*.

If **2nd=discharge consultant**, the expand options are: *diagnosis; procedure or specialty*.

Note: clinical procedure (*non-surgery*) low volume or no principal procedure can be viewed as separate **Level 1** rows (ribbons) when selected.

5.9 Plots display by specialty group

The specialty group view can be expanded by 3 levels as outlined below.



The **1st level (default) display** is the **Specialty** group (as selected in the Display button) i.e. *acute medicine, anaesthetics and pain management* etc.

2nd level expand options are: *diagnosis, procedure, specialty, admit/discharging/principal team*.

To view the **3rd level display**, again click the 'Expand' option on the 2nd level row and further options are presented:

If **2nd=diagnosis**, the expand options are: *procedure; specialty; admit/discharge team*.

If **2nd=procedures**, the expand options are: *diagnosis; specialty; admit/discharge team*.

If **2nd=specialty**, the expand options are: *diagnosis; procedure; admit/discharge team*.

If **2nd=admit team**, the expand options are: *diagnosis; procedure; or specialty*.

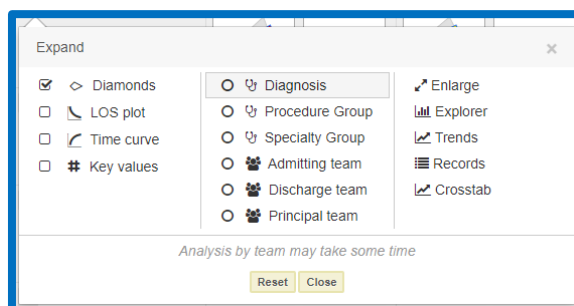
If **2nd=discharge team**, the expand options are: *diagnosis; procedure; or specialty*.

5.10 Plots expand options

The plots display can be expanded to show:

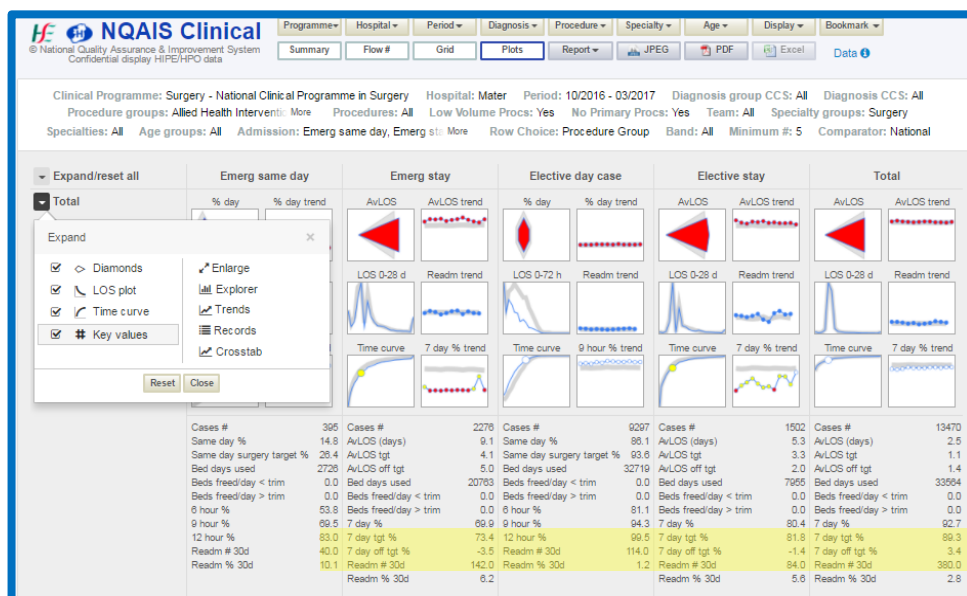
LOS plot – opens up a simple LOS histogram readmission trend plot.

Time curve – opens up a cumulative discharge time curve and associated trend. The graphic shows percentage of patients discharged cumulatively over time with percentage of patients discharged within seven days highlighted and trended over time.



Key values – opens up a range of key metrics relevant to that row selection and admission stream.

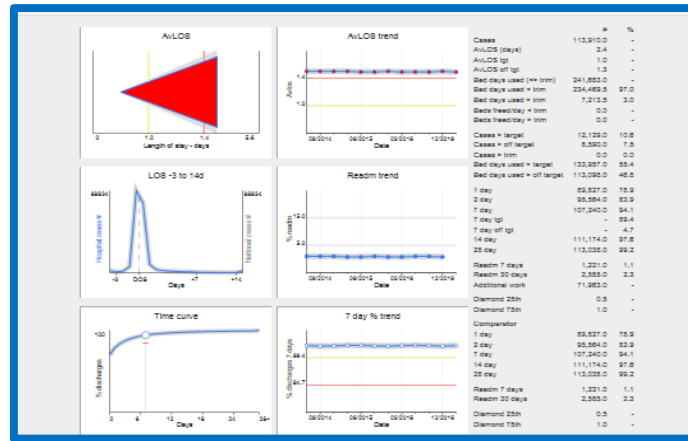
Other expand options include enlarge, explorer, trends, records and crosstab.



5.11 Enlarge

The **Enlarge** function displays: a zoomed-in version of the diamond plot; the AvLOS trend over three years plot; the LOS histogram; the readmission trend over three years; the cumulative discharge time curve and its three-year trend.

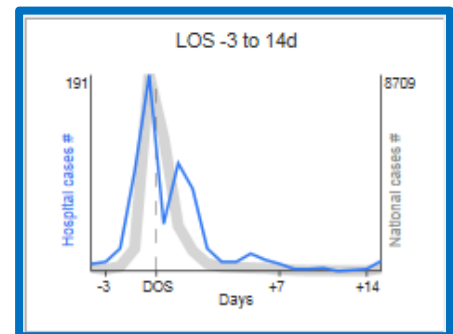
This option is activated by clicking 'Enlarge' in the expand dropdown, or by clicking directly on a pictogram in the plots view.



In the procedure view, the LOS pictogram runs from three days prior to Day of Surgery (DoS) to 14 days afterwards. The left part of chart shows the number of patients who waited 3, 2, 1 or 0 days in hospital before their principal procedure/operation.

The right part of chart shows the number of patients who stayed 1, 2, 3..., 14 days following their principal procedure.

The blue line indicates number of patients for selected hospital(s) by number of days. Thick grey line indicates number of patients nationally by number of days.



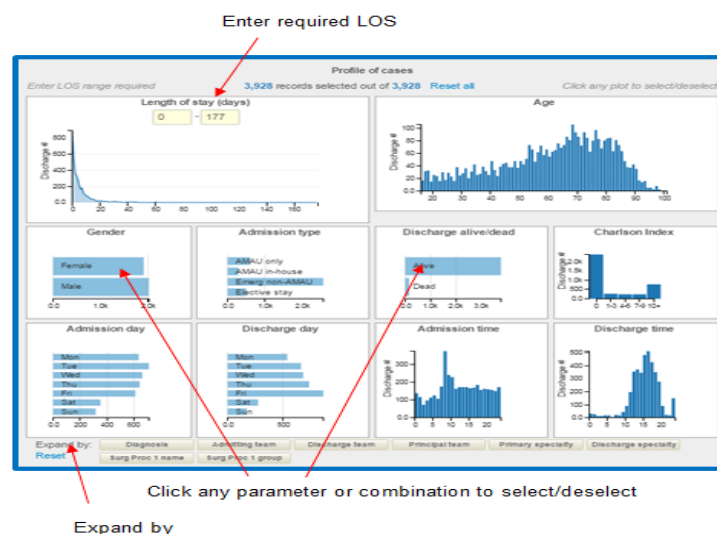
5.12 Explorer View

This is a graphical tool enabling the dynamic review on screen of patient profiles by ten parameters:

- Length of stay
- Age
- Gender
- Admission type
- Discharged alive or dead
- Charlson Index
- Admission day
- Admission time
- Discharge day
- Discharge time

Any of the parameters identified in blue can be clicked on to select or deselect that parameter or part thereof.

For the age/admission/discharge time choices, click on the pictogram and then slide the 'window' handles left or right to select the range required.



Note: When a combination of admission streams are selected where there may be 2 or more admission streams selected which result in double counting of cases e.g. AAU all and Emergency all, then an incorrect display occurs in Explorer view, seen below as a full bar graph for admission streams.



5.13 Trend plots

The trends tool allows a visual summary of activity over time.

The **cases** trend summarises the volume of cases over three years by the selected admission streams:

- Number of discharges by admission stream.
- Percentage of discharges by admission stream.

The key values (to the right of the plot) refer to the number of cases by admission type for the snapshot period.

Individual admission streams can be shown or hidden by clicking the respective stream buttons.

The **AvLOS trend** plot summarises comparison of AvLOS against its specific targets over three years by the selected admission streams.

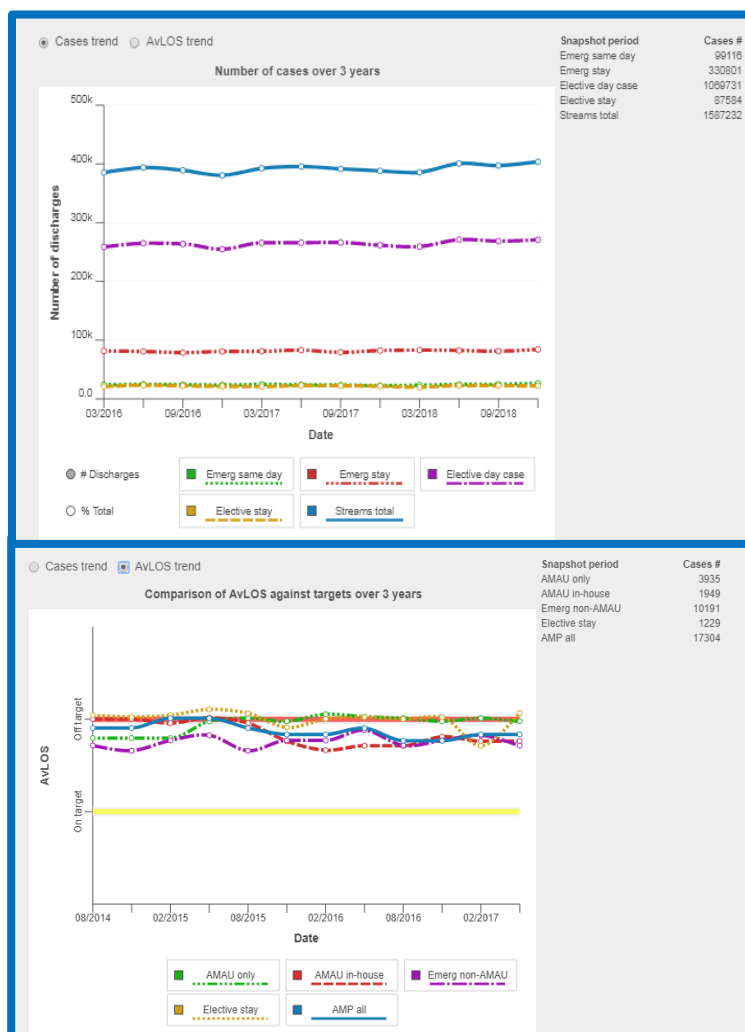
The AvLOS trend plot combines the admission streams into a single chart.

The y-axis has no scale, but is used to show the AvLOS of each admission type relative to its 'on target' and 'off target' values.

Each admission stream trend line is drawn independently and then super-imposed onto the graph. It is displayed this way so you can see the trend for each admission stream in the different colour bands over time.

The 'on target' quadrant is in the lower third of the graph below the yellow line. The 'near target' quadrant is in the middle third of the graph between the yellow and red lines. The 'off target' is in the upper third of the quadrant and is above the red line.

Update: The trend charts for Acute Medicine have the % emergency removed at this was not relevant to all the admission streams included in the chart.



6.0 NQAIS Clinical Export options

6.1 Records view

As an expansion of the Plots View, the records view option allows the detailed review of selected records. The parameters are presented in five groupings: admission/discharge details, specialty/team details, clinical data and filters. Record lists enable further analysis of patterns and supports clinical investigation at the hospital level. The records listed will be limited to the selection criteria as summarised at the top of the screen in the 'selection box'.

Additional features included in the 2022 updates in the Records View are as follows:

The Select/De-select all button had been added. This button will select/deselect only the records view variables and does not affect the selection of the Filters column. A bookmarking functionality has been created within the records view. This retains the selected variables and filters on screen when the user saves a bookmark. The user can retrieve a Records View bookmark only from the Records View screen. A retrieved bookmark will restore the previously selected variable and filter choices.

Additional parameters include:

Discharge Mode, Palliative care flag, Mode of Emergency admission, Medically fit for discharge, Date of transfer to pre-discharge unit, COVID-19 indicator and Ukraine Temporary Protection Directive.

AAU all | Emerg same day | Emerg stay | Streams total | Explorer | Trends | **Records** | Crosstab | JPEG

Programme: Custom Hospital: Galway UH Period: 08/2022 - 10/2022 Diag group CCS: All Diag CCS: All Proc group: Total Proc: All
Team: All Specialty group: Surgery Specialty: All Age group: All Stream: AMAU all, Emerg same day More Row choice: Procedure Group
Band: All Comparator: National

Bookmarks

Create bookmark Existing bookmarks
NQAIS Clinical 10/01/2023 - 11:39 Records save No selections saved

Close

☐ Select/deselect all Dx1 = Principal (admission) diagnosis. Proc 1 = Principal procedure.

Admission/discharge	Specialty/team	Clinical data	Filters (include if)
<input type="checkbox"/> E-MRN	<input type="checkbox"/> Proc 1 surg (Y/N)	<input checked="" type="checkbox"/> Age by 1 year	<input checked="" type="checkbox"/> Proc 1 surg (Y)
<input type="checkbox"/> Hospital name	<input type="checkbox"/> Specialty (pr) group	<input type="checkbox"/> Age by 5 year	<input checked="" type="checkbox"/> Proc 1 surg (N)
<input type="checkbox"/> Admission source	<input type="checkbox"/> Specialty (dis) group	<input checked="" type="checkbox"/> Gender	<input checked="" type="checkbox"/> LOS on target
<input checked="" type="checkbox"/> Admission type	<input type="checkbox"/> Specialty principal	<input type="checkbox"/> Dx1 group (CCS-IM)	<input checked="" type="checkbox"/> LOS near target
<input type="checkbox"/> Discharge destination	<input type="checkbox"/> Specialty discharge	<input type="checkbox"/> Dx 1 name (CCS-IM)	<input checked="" type="checkbox"/> LOS off target
<input type="checkbox"/> Discharge mode	<input type="checkbox"/> Team code admission	<input checked="" type="checkbox"/> Dx 1 ICD name	<input checked="" type="checkbox"/> LOS <= trim
<input type="checkbox"/> Public/private	<input type="checkbox"/> Team code discharge	<input type="checkbox"/> Dx 2-30 ICD name	<input checked="" type="checkbox"/> LOS > trim
<input type="checkbox"/> Residence all	<input type="checkbox"/> Team code principal	<input checked="" type="checkbox"/> Proc 1 ACHI name	<input checked="" type="checkbox"/> Discharged alive
<input type="checkbox"/> Residence county	<input type="checkbox"/> Team code Dx1	<input type="checkbox"/> Proc 2-20 ACHI name	<input checked="" type="checkbox"/> Discharged dead
<input type="checkbox"/> Residence Dub postal	<input type="checkbox"/> Team code Dx 2-30	<input type="checkbox"/> Proc 1 group (RCs)	<input type="checkbox"/> Palliative care (Y)
<input type="checkbox"/> Transfer from	<input type="checkbox"/> Team code Proc 1	<input type="checkbox"/> Dx 1 ICD code	<input type="checkbox"/> Readm <7d (Y)
<input type="checkbox"/> Transfer to	<input type="checkbox"/> Team code Proc 2-20	<input type="checkbox"/> Dx 2-30 ICD code	<input type="checkbox"/> Readm <30d (Y)
<input type="checkbox"/> Admission date	<input type="checkbox"/> Ward admit	<input type="checkbox"/> Proc 1 ACHI code	
<input type="checkbox"/> Admission day	<input type="checkbox"/> Ward discharge	<input type="checkbox"/> Proc 2-20 ACHI code	
<input type="checkbox"/> Admission month		<input type="checkbox"/> Proc 1 date	
<input type="checkbox"/> Admission year		<input type="checkbox"/> Proc 2-20 dates	
<input type="checkbox"/> Admission week		<input type="checkbox"/> DRG name	
<input type="checkbox"/> Admission time		<input type="checkbox"/> DRG code	
<input type="checkbox"/> Discharge date		<input type="checkbox"/> Hospital acq code	
<input type="checkbox"/> Discharge day		<input type="checkbox"/> Hospital acq name	
<input type="checkbox"/> Discharge month		<input type="checkbox"/> Med fit for D/C date	
<input type="checkbox"/> Discharge year		<input type="checkbox"/> TF date to pre D/C RU	
<input type="checkbox"/> Discharge time			

Reset Excel On screen

To select data, tick the parameter boxes required. Unticking any option will exclude it from the list. The records can be viewed 'on screen' or exported to an Excel file by clicking the appropriate button. When parameters are displayed 'on screen' the columns are sortable, the titles are in blue and the sorting arrows are hidden until the user clicks on the title column they wish to sort. An explanation for each record parameter is outlined in Appendix 6.

In addition, the records previously filtered can be selected from the Explorer view (see above). Tick the option '*Use record explorer filters*' to restrict the listing to the criteria selected in the Explorer view. This option will not appear if the Explorer view has not been activated in the first instance.

To display a large amount of data (up to a million records) an additional feature was added to display records from the Records Select function, namely, the Common-Separated Values (CSV) file.

Reports from the Records Select can now be switched automatically from an Excel output to a CSV file output for larger files. This would mean a change from a previous limit of approximately 65,000 rows to a new limit of approximately 1m rows. However, the row number can be dependent on the column number in the file, i.e. if there are more columns you will be able to export fewer rows.

There is no visible change for users, as the file size is automatically calculated when the user clicks the export button. If the file size is less than 65,000 rows the default is adhered to and the data is exported in an excel file. If the file exceeds 65,000 rows and comes in within the CSV file limits then it automatically switches to the export format of CSV instead of Excel. CSV files can be opened similarly to an excel file using most applications like Microsoft office or R studio.

6.2 Medical Record Number (MRN) decryption

Medical Record Numbers are encrypted in NQAIS Clinical. Where there is a need to access the relevant clinical records, the Encrypted Medical Record Number (E-MRN) parameter can be selected as part of the record list (located on the top left of the records screen). The E-MRN can then be imported into the HIPE portal at the hospital level by users designated in line with local hospital governance guidelines. This decrypted MRN allows the clinical records to be retrieved and reviewed locally as required and under the supervision of appropriate clinical and administrative management.

6.3 Crosstab

The crosstab functionality is a generic tool that allows the flexible exploration of the selected records as displayed at the top of the screen in the 'selection box'. A description of the variables is shown in Appendix 5.

Simply drag the parameter of interest and drop it into one of the yellow boxes – count by, cut by, and cut by or table by, as required. Where any filter option (in the filters column) is unticked, those records will be excluded from the selection.

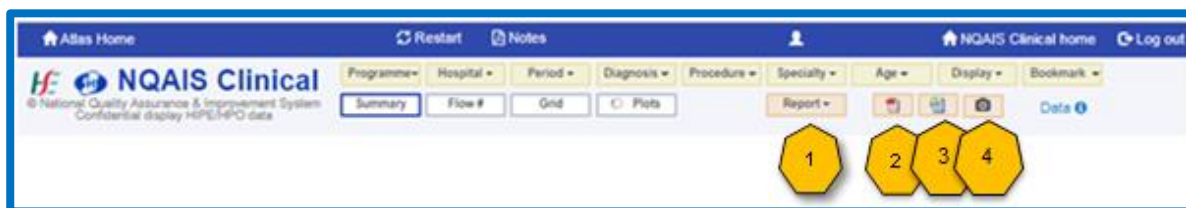
In 'on screen' view, the data columns can be sorted by clicking their headings and can be re-ordered by moving the heading from left to right. The data can be viewed on screen or exported to an Excel file by clicking the Excel button (see above). The selection criteria are shown as a separate sheet in Excel. As shown in the 'on screen' example below, a detailed '4 way' analysis of the data can be easily achieved. All columns can be sorted by clicking the column header, and hidden or shown using the option highlighted below.

	Residence county	Elective/Female	Elective/Male	Elective Readmission/Female	Elective Readmission/Male	Emergency/f
1	Carlow	1	11	3		Residence county
2	Cavan	12	16	-		Elective/Female
3	Clare	5	33	-		Elective/Male
4	Cork	37	67	2		Elective Readmission/Female
5	Donegal	22	48	3		Elective Readmission/Male
6	Dublin North	17	43	-		Emergency/Female
7	Dublin South	30	40	-		Emergency/Male
8	Galway	16	28			Emergency Readmission/Female
9	Kerry	8	28			Emergency Readmission/Male
10	Kildare	10	18			

7.0 Bronze reporting buttons

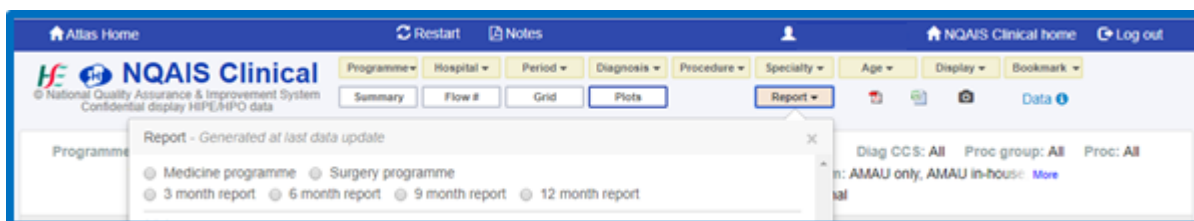


7.1 Report



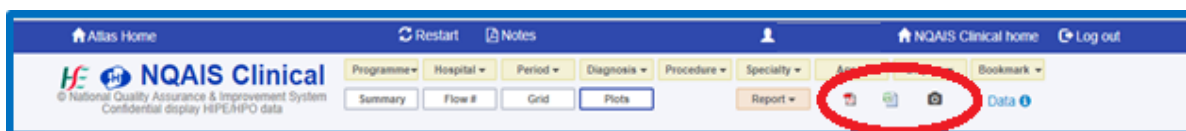
The Bronze Report button provides access to a standardised comprehensive report on the Surgery and Medicine Clinical Programmes for all relevant hospitals, hospital groups or selected hospitals.

Options include four time periods - 3, 6, 9 or 12 months.



The Reports are pre-generated at the time of the latest HIPE update and are overwritten with each update.

Export options - PDF, Excel and JPEG image.



The PDF button can be used to take an A4 snapshot of the material displayed on the screen and exported in PDF format



The Excel button can be used to export data, suitable for excel presentation, available on screen, where relevant, for further analysis.

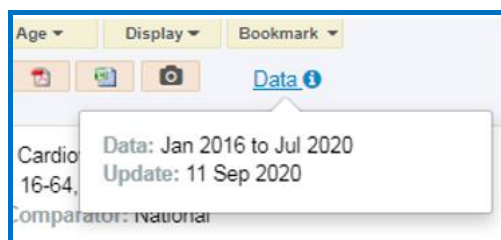


The camera button can be used to take an image of the material displayed on the screen and it will be exported in JPEG format.

Where an export is not relevant to Excel, a red circle  (or similar alert symbol) appears over the Excel button indicating that it is not accessible from that display.

8.0 Data button

The **Data** button identifies the range of data currently available in NQAIS Clinical - example below.



The date on which the latest HIPE file provided by the HPO was uploaded to NQAIS Clinical is also displayed.

9.0 Computations

This section outlines the calculations that underpin the diamond display, the setting of targets, the determination of the trim point, and the computation of the white, yellow and red bed day metrics.

The principal concepts underlying the computations are as follows:

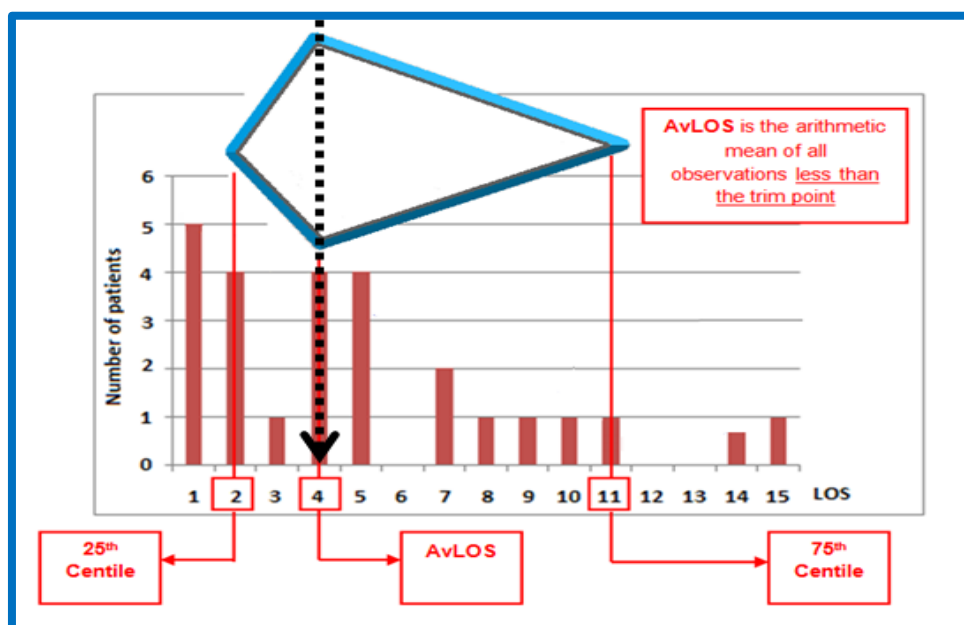
- The distribution of LOS values tends to be skewed to the left with larger numbers of shorter stays, and smaller numbers of longer stays.
- The AvLOS is the arithmetic mean calculated after the removal (trim) of very long LOS values.
- The shape of the diamond is determined by the spread of the data as summarised by the 25th and 75th centiles and the invisible line at the 'height' of the diamond represents the AvLOS, if this line were to be continued down the x axis.
- Each diamond plot in each ribbon in NQAIS Clinical is uniquely created to convey the 'shape' of the LOS of selected records and colour-coded white/yellow/red to represent whether the AvLOS is on target, near target or off target respectively.

A knowledge of data flow within HIPE is useful (see Appendices 6 and 7).

9.1 Principle of computing the diamond shape

The NQAIS Clinical diamond summarises in one graphic two concepts.

- The left and right hand tips (25th and 75th centiles) are computed from all the records selected (including longer-stay cases).
- The 'height' of the diamond is computed from the arithmetic mean of the records excluding longer-stay cases (those exceeding the 75th centile plus three times the inter-quartile range. i.e. the trim point) as determined from the national dataset of diagnoses and procedures.



The frequency of records with the same LOS is displayed above the x axis as shown in the figure above. The LOS closest to the 25th and 75th centiles pinpoint the left the right diamond tips respectively. The invisible line going top to bottom through the diamond points to the AvLOS on the x axis.

Worked example

In this selection of 32 patients, the records are sorted by LOS, with the shortest on top.

Each record comprises 3.1% of the total number (volume) of records, so the cumulative percentage of records increases by 3.1% for each record row.

The 25th and 75th centiles are identified by selecting those records with cumulative percentages closest to these values, and then tracking across to identify the corresponding LOSs.

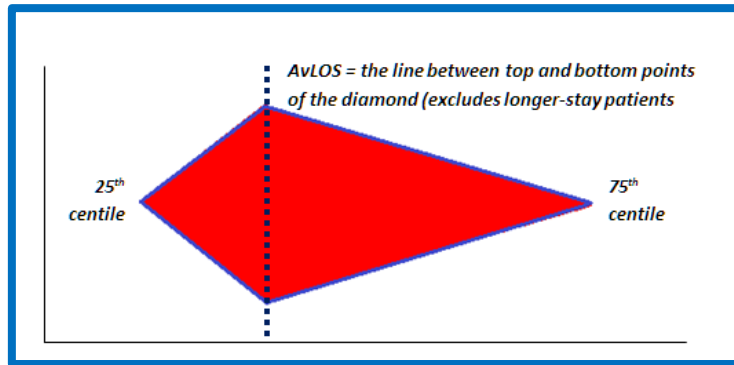
In the example, the 25th and 75th centiles are 2 and 11 days respectively.

The AvLOS is found by excluding the last five records (as they are beyond the trim point, determined from the national dataset for the same diagnosis or procedure).

The arithmetic mean is then computed on the remaining 27 records, giving an AvLOS of 5.85 days (158/27), represented by the diamond height.

The figure below summarises the components of the diamond for this example, namely the left and right tips and the AvLOS height. The height of the diamond is set at the point on the x-axis for the AvLOS for that procedure or diagnosis, there is an invisible straight line that runs through the highest point and lowest point of the diamond on to the x-axis.

	A	B	C	D	E
	Trim	LOS	RecCount	Cumulative %	
1		1	1	3.1%	
2		1	2	6.3%	
3		1	3	9.4%	
4		1	4	12.5%	
5		1	5	15.6%	
6		2	6	18.8%	
7		2	7	21.9%	
8		2	8	25.0%	
9		2	8	28.1%	
10		3	10	31.3%	
11		4	11	34.4%	
12		4	12	37.5%	
13		4	13	40.6%	
14		4	14	43.7%	
15		5	15	46.9%	
16		5	16	50.0%	
17		5	17	53.1%	
18		5	18	56.3%	
19		7	19	59.4%	
20		7	20	62.5%	
21		8	21	65.6%	
22		9	22	68.8%	
23		10	23	71.9%	
24		11	24	75.0%	
25		14	25	78.1%	
26		15	26	81.3%	
27		25	27	84.4%	
28	Trim	45	28	87.5%	
29	Trim	52	29	90.6%	
30	Trim	52	30	93.8%	
31	Trim	53	31	96.9%	
32	Trim	211	32	100.0%	
33					
34					
35					
36					
37					
38					



9.2 Determination of the national trim points.

The trim point for each diagnosis and procedure by admission stream and age grouping is calculated using HIPE records for all hospitals from the two most recently completed calendar years (i.e. in 2019, 2017 and 2018 data are used). Trim points are data-driven, using national data and refreshed annually or as appropriate.

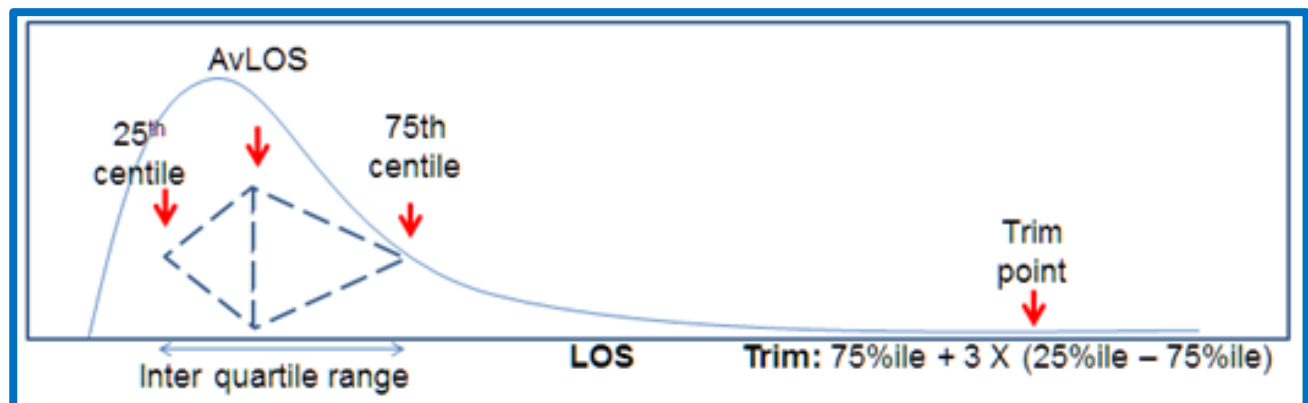
Each trim point is determined by identifying the 75th centile plus three times the interquartile range (25th to 75th centile) for the diagnosis or procedure.

The trimming process ensures that the 'stretching' effect on the arithmetic mean of cases with very long LOS values is reduced and the AvLOS value is clinically more meaningful.

The figure below shows the relationship of the 25th and 75th centiles, the AvLOS and the trim point.

As illustrated, the number of records beyond the trim point tends to be a small number, but these cases can account for a very large number of bed days.

The trim point is considered a good approximation for the number of patients who remain in hospital after they are medically fit for discharge and are awaiting transfer to an alternative care setting.



Where the LOS exceeds the trim point these are excluded from the diamond, they appear in bed days used but not in the average length of stay.

To allow for comparison with other statistical approaches, NQAIS Clinical also displays the AvLOS computed with and without post-trim cases (longer stay patients)

9.3 Trim terminology in NQAIS Clinical

You will come across terminology relating to 'trim' throughout the NQAIS Clinical system. The following is an explanation of terminology.

- Incl. trim: includes all 'long stay' and 'short stay' patients' records
- Excl. trim: excludes 'long stay' patients' records

Section of the key flow metrics in the Summary Report below:

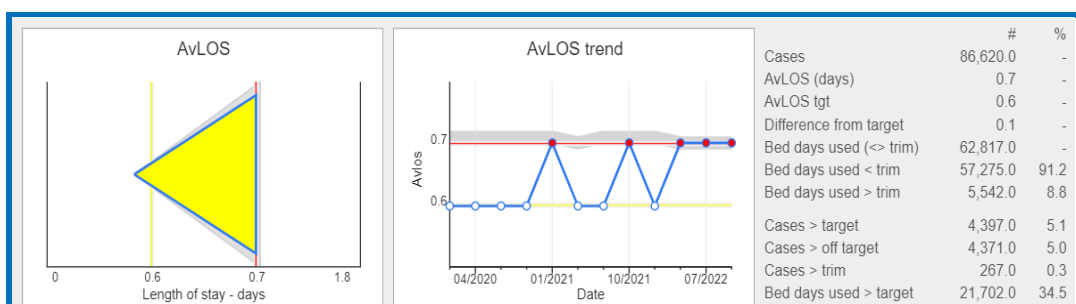
Key flow metrics by patient stream		Metrics depend
		Streams total
AvLOS (excl trim)		
This period		2.0
12 mth ago		1.9
Difference (12m)		0.1
AvLOS (incl trim)		
This period		2.3
12 mth ago		2.1
Difference (12m)		0.2

Section of the Flow Report below:

AvLOS AMP All (days) (incl trim) #
AvLOS AMP All (days) (excl trim) #

- Beds/day Pre trim: beds/day used by 'short stay' patients and excludes beds/day used by 'long stay' patients
- Beds/day Post trim: only includes beds/day used by 'long stay' patients
- In Crosstabs
- AvLOS Total: includes all patients 'long stay' and 'short stay' patients' records
- AvLOS pre-trim is the AvLOS for patients excluding the 'long stay' patients
- AvLOS post trim is the AvLOS for patients who were 'long stay' and beyond the trim point
- In enlarged plots view:
- BDU less than (<) trim: bed days used by 'short stay' patients and excludes bed days used by 'long stay' patients
- BDU greater than (>) trim: bed days used by 'long stay' patient and excludes bed days used by 'short stay' patients
- AvLOS (< >) trim includes all patients records ('short stay' and 'long stay')

Section of the enlarged plots view below:



9.4 Target setting approach

AvLOS targets are calculated comparing clinical teams with their peers carrying out similar work in Irish HSE-funded hospitals (see Section 5.6 *Understanding the diamond plot*).

Hospitals included in the target setting calculation for procedures and CCS diagnoses are all public funded hospitals under the governance of the 7 hospital groups. These hospitals are listed under the hospital filter button in the NQAIS Clinical system. A two year model for targets is used at the moment.

When we do targets and trim point setting, where volumes of records and consultants allow we set independent target by age group with CCS / Procedure and stream.

- Targets are set for procedures and diagnoses in the middle of the current year using the previous 2 complete years of data, not including the current year's data (as it would not be a complete set), for example, when calculating 2019 targets, 2017 and 2018 years data were used.
- Current targets use 2017 and 2018 data.
- Targets, once set, are applied retrospectively to all years of data in NQAIS Clinical, therefore, there may be some differences identified in previous years reports when the targets are applied.
- Every discharge record is associated with a single target either procedure or diagnosis.

The targets for each diagnosis and procedure by admission stream and age group are set by computing the AvLOS achieved by the top quartile of teams nationally. People undergoing a classified surgical procedure are assigned procedure targets and the remainder are assigned diagnosis targets, apart from elective day cases, where procedure targets are used for both surgical and clinical cases.

9.5 Procedure and diagnosis classifications

Procedures are designated by national clinical advisors as surgical or clinical. Procedures performed 20 or more times per year nationally are categorised into procedure groups.

9.6 Classifying procedures

- Surgical Procedures (>20 procedures per year, or 2 years in present calculations) are identified as surgical in nature by national clinical advisors who review all procedures performed 20 or more times nationally. They are classified into one of the 19 surgical groups.
- Clinical (non-surgery) procedures >20 procedures per year are classified into 18 clinical groupings.
- Low volume procedures are those performed <20 times per year or currently over 2 years less than ten times in the most recent year.
- No procedures – where no procedures are performed.

9.7 Classifying diagnoses

Diagnoses are mapped into CCS-IM-2020 by Health Intelligence, Health and Wellbeing, HSE, in consultation with the Healthcare Cost and Utilization Project (HCUP) in the USA. The 19,980 approx. diagnoses using ICD 10 AM / ACHI / ACS edition 10 (from 1st Jan 2020) are mapped into 1 (only) of the 297 Clinical Classification System (CCS) for diagnoses which come under 19 groups of major diagnoses categories.

9.8 Target setting of procedures

(a) Procedure targets are set by categorising procedures into those who had surgery and those who did not have surgery (see NQAIS Clinical Target setting approach diagram below). Procedure targets are used for those who had surgery, for all others CCS of diagnosis targets are used (see below for CCS of diagnosis target setting). There is one exception in the case of elective day cases – targets are always set as procedures.

(b) Procedures are then placed into their admission (flow) stream: emerg. same day; emerg. stay; elect. day case; elect. stay; newborn; mat stay; mat. same day;

(c) Then they are placed into age bands

(Note: if the number of procedures in any age band is less than 20 over the 2 years, or the number of consultants is less than 4, then the all ages together value is used for the target).

(d) Targets are then set by each procedure using the process identified in the section below: Computing AvLOS targets for diagnoses and procedures, which include a worked example.

9.9 Patients admitted under surgery who do not have a surgical procedure

When no surgical (knife to skin) procedure is performed, stay cases (in-patient) and emergency day cases are classified and their targets set on the basis of the admission principal diagnosis.

9.10 Medical patients who have a surgical procedure

For patients admitted under medicine who have a surgical procedure performed, procedure targets are used, by agreement with the national clinical programmes. However the patient's record may be included under a medicine specialty. The specialty of the consultant is designated by the HIPE coders who follow a set of criteria based on Australian Coding Standards augmented by the Irish Coding Standards rules.

9.11 Target setting of CCS of diagnoses

(a) Diagnoses are categorised into the Clinical Classification System (CCS) for diagnosis.

Patients who have not had a principal surgical procedure or where they have not been admitted as an elective day case will have their target set by CCS of diagnosis (e.g. clinical procedures, low volume or no procedure – see mapping of procedures above).

(b) CCS of diagnoses are placed into their admission (flow) stream: AAU only, AAU in-house, emerg non-AAU (*these admissions streams include emerg same day and emerg stay discharges*), elective stay, mat stay, mat same day and new-born.

(c) Then they are placed into age bands.

(Note: if the number of diagnoses in any age band is less than 20 over the 2 years, or the number of consultants is less than 4, then the all ages together value is used).

(d) Targets are set by CCS of diagnosis using the process identified in the section below. Computing AvLOS targets for diagnoses and procedures includes a worked example.

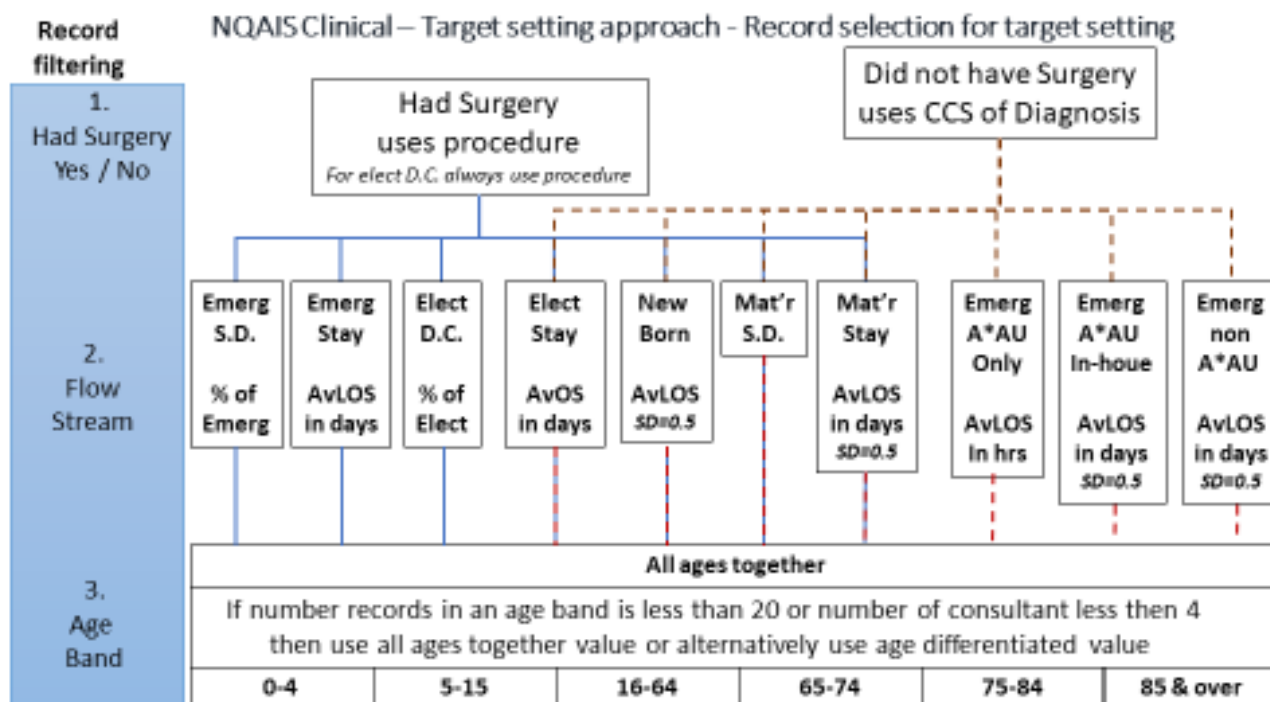
9.12 Elective day cases

For elective day cases, the targets are set by the surgical (knife to skin) or clinical principal procedure, rather than by diagnosis.

For elective day cases, procedure targets are used because the patient has already been assessed by a senior clinician and a decision has been made on how to progress their treatment i.e. the procedure to be performed. Most elective day cases have a procedure performed, as it is primarily the reason for their admission, as an elective day case, therefore procedure targets are used. Procedures are driven by the consultant responsible for the principal procedure

9.13 Age groupings

NQAIS Clinical targets are standardised by the following age categories: 0-4; 5-15; 16-64; 65-74; 75-84; 85 years and over.



4. Set Targets

Individual consultant discharge activity is AvLOS-ed (including trim), the consultants are sorted by AvLOS, the AvLOS of the consultant at volume adjusted median is adopted as the **red line off target value**. The **yellow line near target value** is the AvLOS of the volume adjusted 25thile consultants for a similar set of data records.

Note: the exception that Elective day case is set by procedure for surgical and clinical procedures

5. **Set Trim point:** sort record by LOS. Trim point = LOS at 75thile + 3 * (LOS at 75thile – LOS at 25thile)

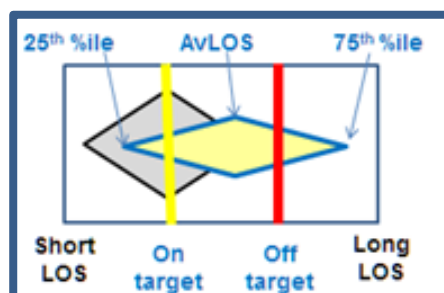
9.14 Computing AvLOS targets for diagnoses and procedures

AvLOS targets are data driven for each diagnosis and procedure category separately using HIPE data from two recent calendar years. A quartile approach of consultant teams working in HSE funded hospitals is adopted.

9.15 'On target' and 'off target' determination

The 'on target' value (yellow line) is the top quartile (25th centile) AvLOS for cases managed by their clinical teams for the same diagnosis or procedure, adjusted for volume.

The 'off target' value (red line) is the median (50th centile) AvLOS for cases managed by their clinical teams for the same diagnosis or procedure, adjusted for volume.



- The 'on target' AvLOS value (yellow line) is the top quartile (25th centile) and represents 'best practice' nationally. It is the AvLOS of the consultant on or

spanning the 25th centile. The top teams achieve an AvLOS equivalent to or better than the consultant at the 25th centile. Furthermore, approximately one in four patients will be managed by top quartile consultants.

- The 'off target' value (red line) is the median AvLOS (50th centile) and indicates a very long AvLOS. It refers to the AvLOS achieved by the slowest half (50th centile) of the class for that diagnosis or procedure. The 'off target' AvLOS is considered to be a pass value.
- Teams achieving an AvLOS between the 'on target' and 'off target' values are classified as being close to target (second quartile).

Clearly it is important to interpret the variance between 'on target' and 'off target' values in the context of its clinical significance and the optimisation of AvLOS and bed days used.

Worked example

- Each team's AvLOS is calculated by dividing the bed days used (BDU) by the number of patients.
- Teams are sorted by the AvLOS of their patients - the team with the shortest AvLOS is at the top (team QFHM).
- The cumulative number and cumulative percentage of cases are calculated for each team.
- The 'on target' value is found by identifying the AvLOS of the team or spanning the top 25th centile (top quartile). By convention, the 'on target' line is indicated by the yellow line. In the example, team LPPI with an AvLOS value of 15.11 identifies the 'on' target value.
- The off target value is found by identifying the AvLOS of the team with an AvLOS equal to or spanning the 50th centile of the cumulative percentage. The off target value is indicated by the red line. In the example, team QINK with an AvLOS of 18.47 identifies the 'off target' value.

	A	B	C	D	E	F	G	H
1	Consultant	#Inpat	BDU	AvLOS	Accum # Inpat	ACM%ile	Off Target	Close to target
2	QFHM	1	2	2.00	1	0.9%		
3	OPJM	1	6	6.00	2	1.8%		
4	LMOS	1	9	9.00	3	2.6%		
5	LFLH	4	38	9.50	7	6.1%		
6	QFHI	1	11	11.00	8	7.0%		
7	MFKO	18	224	12.44	26	22.8%		
8	NKKR	1	14	14.00	27	23.7%		
9	LPPI	9	136	15.11	36	31.6%		
10	MGFN	4	61	15.25	40	35.1%		
11	QINK	19	351	18.47	59	51.8%		
12	NHPO	6	124	20.67	65	57.0%		
13	LENI	22	479	21.77	87	76.3%		
14	QIQP	14	324	23.14	101	88.6%		
15	NELI	5	120	24.00	106	93.0%		
16	ORPQ	8	198	24.75	114	100.0%		

Cumulative time curve and trends (7 day indicator)

The time curve uses the national snapshot value for 7 days (9 hours for AAU only), setting the yellow line as 95% and red as 90% of this value to provide a visual context for the time trend. This is a pictogram that is a visual aid to interpretation of LOS over time.

Crystals instead of diamonds

A crystal shape is used when the 25th and 75th centiles are too close together to create the diamond shape.

In these circumstances, a flattened and fixed 'crystal' shape is displayed. The crystal shape will often apply when very small numbers are involved or for day cases.

9.16 Computation of white, yellow and red bed days (on target, near target and off target)

A summary and clinically meaningful predictive metric referred to as 'red bed days' describes the potential win for additional patients (whether from the emergency department or waiting lists) if AvLOS were to move closer to the target (top quartile). The metric helps to identify processes within the hospital(s) to prioritise for review and is a key component of the NQAIS Clinical Summary view.

Hospital bed capacity is a scarce and expensive resource which should be used judiciously for the greatest benefit for the greatest number of patients. When patients are delayed at various points in the care pathway, or when discharge is delayed for any reason, more hospital resources are used.

For a given diagnosis or procedure, some clinical teams discharge their patients more rapidly on average than their peers. It is important to note that each clinical team in Ireland tends to manage a mix of young and old, relatively healthy patients and patients with complex co-morbidities.

NQAIS Clinical reviews all discharges for each admission/principal diagnosis or principal procedure and determines the 'on target' AvLOS as that achieved by the top quartile of clinical teams. The 'off target' AvLOS is the mid-point (median) of AvLOS for all clinical teams. Acute hospitals have a relatively small number of patients who remain in hospital for a prolonged period of time. There may be a range of reasons for greater lengths of stay e.g. the unavailability of appropriate alternative facilities, unsuitable domestic circumstances, or awaiting fair deal funding etc. These patients, however, can use a significant number of bed days. NQAIS Clinical uses a calculated trim point to identify such 'longer stay' patients – the LOS at the 75th centile plus 3 times the 'interquartile range' (i.e. the LOS difference between the 25th centile and the 75th centile).

A common question asked at the hospital level is: 'what would the impact be if the LOS were moved closer to the target?'

To answer this question, the difference between the actual number and the 'on target' number and 'off target' number of bed days used is translated into a simple summary metric referred to as yellow and red bed days respectively.

However, it is important that the yellow and red bed day metrics are interpreted as optimistic estimates of the potential of reducing AvLOS and increasing patient throughput. While it would be obviously incorrect to expect all clinical teams in all hospitals to be in the top quartile, the metric should greatly help identify areas for priority review within the hospital.

White, yellow and red bed day calculations

The gold filter buttons including the hospital, period, diagnosis, procedure specialty, age group, and the streams that you have selected determine what set of records is being analysed.

Each row of the summary report stratifies the above selection of records to an individual diagnosis, procedure or specialty.

To calculate the proportion of white bed days used for the selected group or cohort of patients, the target value of the team that is on or spans the 25th centile, is multiplied by the number of patients in the group to generate the value for white beds; e.g. if there are 50 patients in the group and the target value for the 25th centile is 4.0 days, then the group would have 200 white beds.

If the total number of bed days used by the group is less than the calculated white bed days, then all the bed days used are white bed days. In this case the number of white bed days is given by the total number of bed days used.

The figure of white bed days is divided by the number of days within the time period to give the proportion of beds used per day that are 'white bed days'.

To calculate the proportion yellow bed days used for the selected group of patients, the target value of the team that is on or spans the 25th centile is subtracted from the value of the team that is on or spans the 50th centile. This figure is then multiplied by the number of patients in the group, to generate the yellow bed days; e.g. if there are 50 patients in the group and the 25th centile value is 4.0 and the 50th centile value is 6.0, then the group would have 100 yellow days $((6.0 - 4.0) \times 50)$.

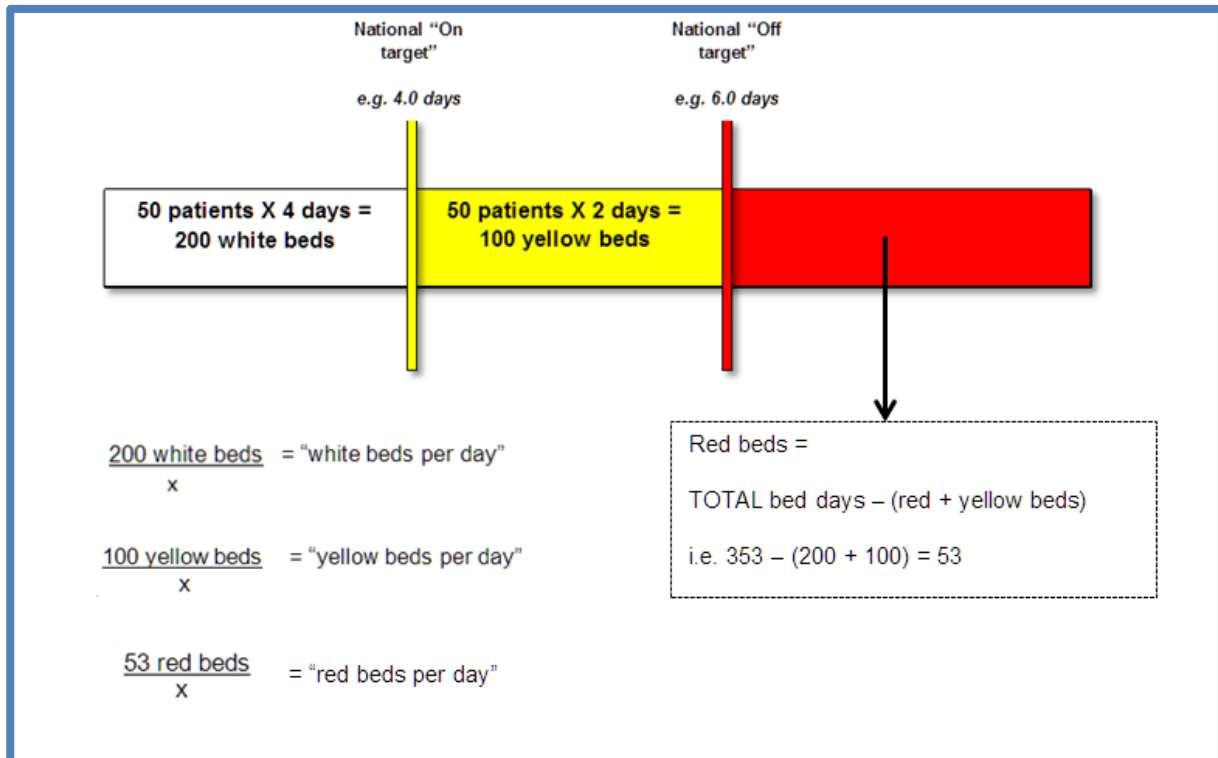
If the total number of bed days used by the group is less than the sum of calculated white and yellow bed days then the number of yellow bed days is given by subtracting the calculated white bed days from the total bed days used by the group.

The figure of yellow beds is divided by the number of days in the time period to generate the proportion of beds used per day that are 'yellow bed days'.

To calculate the proportion of red beds, the sum of the white and yellow days calculated for the group of patients above is subtracted from the actual number of days used by the selected group of patients; e.g. if the actual length of stay for all 50 patients was 353, then the proportion of red beds would be 53. This figure is divided by the number of days in the time period to give the proportion of beds used per day that are 'red bed days'.

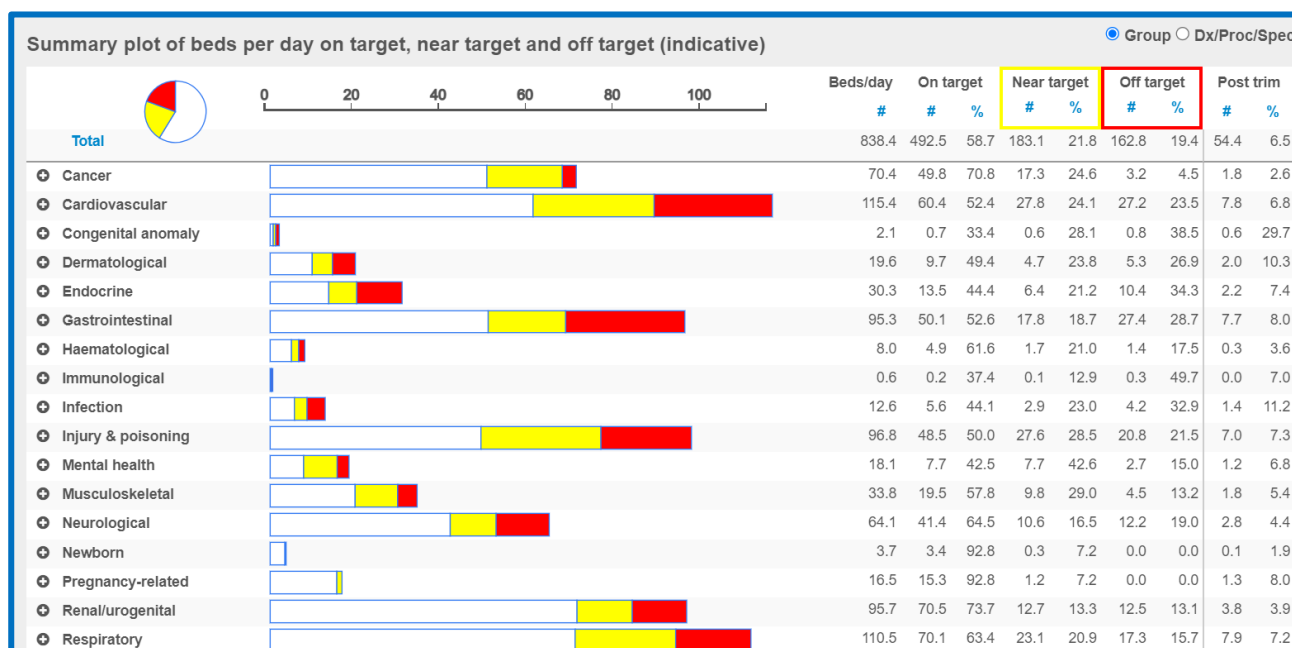
Where a group of patients has a combined total of bed days that is less than or equal to the sum of the calculated white and yellow beds, then there will be no value for 'red beds' used per day.

If the selected group of patients includes patient groups with different target values, e.g. elective stay and emergency stay for same diagnosis, then the calculations outlined above are carried out for each group and combined.



In the diagram x is equal to the number of days in the period selected in the gold filter buttons.

Example of display of white, yellow and red bed days and the associated metrics



9.17 Red Bed Day interpretation

As mentioned previously in this document this metric should be interpreted in light of the following considerations:

- It is a summary metric derived from clinical team peer averages and not from LOS for individual patients.
- It is retrospective - based on HIPE (discharge) data. HIPE data in NQAIS Clinical is refreshed monthly and is approximately 6 weeks in arrears as by this time the nationally collated dataset is considered sufficiently complete.
- It can be influenced by sudden and marked variations in discharge processes in the period of interest such as ward closures or discharge initiatives e.g. the availability of step down beds.
- It assumes that beds used in the admission streams are available seven days a week, this is not always the case and may give rise to fluctuations.
- Where patients have been discharged having stayed for a long period of time in hospital their total LOS is attributed to BDU in that month. Ward closures will reduce the number of bed days used. Discharge initiatives such as the availability of step down beds may allow the transfer of a higher than normal number of longer stay patients in a given month.
- The type of bed used during the hospital stay (e.g. rehabilitation, acute ward, etc.) is not available for inclusion in the analysis at this time.
- It assumes that bed occupancy is constant and does not take into account fluctuations in bed occupancy in the period of interest.

- It is inappropriate to assume that the metric is an indicator of the number of beds that are required or not required in the system.
- It should be interpreted in the context that not all teams in all hospitals can be in the top quartile (i.e. 100% cannot be in the top 25%).
- The red bed days metric should be interpreted as an indicator for where quality improvement initiatives, in the delivery of safe patient care, may provide process improvement.

9.18 Issues to take note of in the NQAIS Clinical system

- Plots report – double check to ensure that you have not overlapped your selection of admission streams.
- CrossTabs output: The label on the row that shows 'No proc' for discharge summaries displays 'No principal procedure' on the records.
- JPEG button is not operational if the button is grayed out. This is by design (*JPEG cannot be generated for Explorer pop-up, Records selection, CrossTab, ...*)
- Large volumes of records will be slow to load – where there are too many records to load the timeframe may be need to be broken into shorter periods of time
- Tipperary residence codes of Tipperary North riding (1700) and Tipperary South Riding (0800) have been re-instated in the HIPE system. All cases in 2019 and 2020 have been updated to reflect this. The combined Tipperary county code (1708) has been withdrawn.
- When no diagnoses, procedures or specialties have been selected in the filter buttons, the system defaults to display all diagnoses, procedures and specialties.
- The Flow Report is only relevant for the Acute Medicine admission streams i.e, AAU only, AAU in-house, Emerg non-AAU and Elective stay.

9.19 Research

NQAIS Clinical can be used to access data for research purposes. A Guide to using NQAIS Clinical for Research is available. A number of researchers who have published articles identify NQAIS Clinical as the source of their data.

Appendix 1. Key metrics available in the NQAIS Flow Report

Total cases #
LOS =0 (same day) discharges #
LOS =0 (same day) discharges %
LOS 1-2 days discharges #
LOS 1-2 days discharges %
LOS 1-2 days BDU #
LOS 1-2 days BDU %
LOS 3-14 days discharges #
LOS 3-14 days discharges %
LOS 3-14 days BDU #
LOS 3-14 days BDU %
LOS >2 days discharges #
LOS >2 days discharges %
LOS >2 days BDU #
LOS >2 days BDU %
LOS >14 days discharges #
LOS >14 days discharges %
LOS >14 days BDU #
LOS >14 days BDU %
LOS >30 days discharges #
LOS >30 days discharges %
LOS >30 days BDU #
LOS >30 days BDU %
LOS overnight discharges #
LOS overnight discharges %
LOS overnight BDU #
AMAU all discharges #
AMAU all discharges %
AMAU only discharges #
AMAU only discharges %
AMAU in-house discharges #
AMAU in-house discharges %
AvLOS >2 days #
AvLOS >14 days #
AvLOS >30 days #
AvLOS overnight (days) #
AvLOS AMP All (days) (incl trim) #
AvLOS AMP All (days) (excl trim) #
Readmission 7 days #
Readmission 7 days %
Readmission 30 days #
Readmission 30 days %
AMAU all #
AMAU same day #
AMAU same day %
AMAU in-house #
AMAU in-house %
AMAU only #
AMAU only %
AMAU all % emergency

AMAU in-house % emergency

Beds/day #

Beds/day on target #

Beds/day on target %

Beds/day near target #

Beds/day near target %

Beds/day off target #

Beds/day off target %

Beds/day post trim #

Beds/day post trim %

Appendix 2. NQAIS Clinical - useful screen hints

- ✓ When the message 'Processing ...' appears, the background dims and selections are temporarily inactivated to allow the numbers to be crunched and intricate graphics to be created. Network, Atlas server and local browser issues can affect the response time.
- ✓ Refresh the system daily by holding down Ctrl and hitting R. Always refresh the system after system updates or if screen abnormalities are experienced. Should screen abnormalities persist, try switching to another browser.
- ✓ Click F11 to go to full screen. Click F11 again to exit full screen.
- ✓ Click Ctrl (or Fn) and + together to magnify the display. Some display elements may rearrange.
- ✓ Click Ctrl (or Fn) and – together to shrink the display. Some display elements may rearrange.
- ✓ The message 'No data available for the current selection' indicates that the selected filters found no matching data. Widening your search criteria may then show the required results.
- ✓ Where data do not meet the selection criteria, the cell in the table shows a dash.
- ✓ Small numbers can result in trends and plot displays appearing rather 'erratic' – and should be interpreted in this context.

Appendix 3. Definition of admission streams

1. AMP all - elective (medical specialty) admissions staying one or more nights in hospital AND all emergency admission regardless of length of stay in hospital, including same day discharges.
2. Formula: AMP all = type of admission emergency (4 or 5) OR [type of admission elective (1 or 2) AND date of discharge different than date of admission].
3. AAU only – emergency admissions to the AAU and discharged from hospital directly from the AAU. Patients admitted to the AAU and then spent any time in another ‘in-house’ ward are counted separately as ‘AAU in-house’. ‘AAU all’ refers to the sum of ‘AAU only’ and ‘AAU in-house’.
4. Formula: AAU only = type of admission emergency (4 or 5) AND admitting ward the same than discharge ward AND mode of emergency admission AAU (2 or 5).
5. AAU in-house - emergency admissions to the AAU but discharged from hospital from a ward other than the AAU.
6. Formula: AAU in-house = type of admission emergency (4 or 5) AND [admitting ward different than discharge ward OR mode of emergency admission different than AAU (2 or 5)].
7. Emergency non-AAU - emergency admissions (including same day or LOS = 0) but excluding patients discharged directly from the AAU.
8. Formula: Emergency non-AAU = type of admission emergency (4 or 5) AND mode of emergency admission different than AAU (2 or 5).
9. Elective stay - elective admissions discharged on a calendar date greater than the admission date
10. Elective day case – elective admission and discharged on the same day.
11. Emergency same day – emergency admissions and discharged from hospital on the same day.
12. Emergency stay – emergency admissions discharged on a calendar date greater than admission date
13. Elective stay – elective admissions discharged on a calendar date greater than the admission date.
14. Emergency all – the sum of emergency same day and emergency stay
15. Maternity same day – Maternity admissions discharged on the same day
16. Maternity stay – Maternity admissions discharged on a calendar date greater than the admission date
17. Maternity all – The sum of maternity same day and maternity stay
18. Newborn: Neonates admitted to hospital for care or observation up to the age of 28 days (0-27 days old) as an emergency/unplanned admission.

Appendix 4. Summary table samples

Summary tables by patient streams

☒ Key flow metrics

Beds per day: ☐ Total ☐ On target ☐ Near target ☐ Off target ☐ Post trim ☐ Cases

Key flow metrics by patient stream

Metrics dependent on HIFE coding completeness

	Total	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
		#	%	#	%	#	%	#	%	#	%
AvLOS (excl trim)											
This period	5.7	5.5		6.5		6.9		6.0		5.7	
12 mth ago	5.8	5.7		6.7		7.0		5.8		5.8	
Difference (12m)	-0.1	-0.2		-0.2		-0.1		0.2		-0.1	
AvLOS (incl trim)											
This period	7.1	5.1		8.4		9.1		7.9		7.1	
12 mth ago	7.2	5.3		8.7		9.2		8.1		7.2	
Difference (12m)	-0.1	-0.2		-0.3		-0.1		-0.2		-0.1	
LOS											
LOS 0 (same day)	16096	12776	79.4	68	0.4	3252	20.2	0	0.0	16096	100.0
LOS 1-2 days	13922	667	4.8	2174	15.6	8665	62.2	2416	17.4	13922	100.0
LOS 3-7 days	17853	263	1.5	3154	17.7	13087	73.3	1349	7.6	17853	100.0
LOS 8-14 days	8512	55	0.6	1334	15.7	6507	76.4	616	7.2	8512	100.0
LOS 15-30 days	4830	8	0.2	680	14.1	3716	76.9	426	8.8	4830	100.0
LOS > 30 days	2559	1	0.0	315	12.3	1976	77.2	267	10.4	2559	100.0
Cases											
This period	63772	13770	21.6	7725	12.1	37203	58.3	5074	8.0	63772	100.0
12 mth ago	67981	15054	22.1	8676	12.8	38771	57.0	5480	8.1	67981	100.0
Difference (12m)	-4209	-1284	30.5	-951	22.6	-1568	37.3	-406	9.6	-4209	100.0
On target days											
This period	236007.1	2343.1	1.0	33198.4	14.1	180689.2	76.6	19776.4	8.4	236007.1	100.0
12 mth ago	253416.4	2569.0	1.0	37821.3	14.9	191908.9	75.7	21117.1	8.3	253416.4	100.0
Difference (12m)	-17409.3	-225.9	1.3	-4622.9	26.6	-11219.7	64.4	-1340.7	7.7	-17409.3	100.0
Near target days											
This period	119806.1	703.0	0.6	18023.8	15.0	89303.9	74.5	11775.5	9.8	119806.1	100.0
12 mth ago	126938.0	789.0	0.6	20235.3	15.9	93486.6	73.6	12427.1	9.8	126938.0	100.0
Difference (12m)	-7131.9	-86	1.2	-2211.5	31.0	-4182.7	58.6	-651.6	9.1	-7131.9	100.0
Off target days											
This period	97273.8	6022.9	6.2	13947.8	14.3	68678.9	70.6	8624.1	8.9	97273.8	100.0
12 mth ago	108764.6	6968.5	6.4	17081.4	15.7	74061.9	68.1	10652.8	9.8	108764.6	100.0
Difference (12m)	-11490.8	-945.6	8.2	-3133.6	27.3	-5383	46.8	-2028.7	17.7	-11490.8	100.0
Post trim days											
This period	56515.0	0.0	0.0	8366.0	14.8	42684.0	75.5	5525.0	9.8	56515.0	100.0
12 mth ago	61239.4	0.0	0.0	8951.5	14.6	44686.5	73.0	7765.0	12.7	61239.4	100.0
Difference (12m)	-4724.4	0	-0.0	-585.5	12.4	-2002.5	42.4	-2240	47.4	-4724.4	100.0

Beds per day by patient stream - On target

	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
	#	%	#	%	#	%	#	%	#	%
Cancer	0.1	0.1	18.5	10.5	111.3	63.1	46.5	26.4	176.5	100.0
Cardiovascular	7.6	1.3	86.2	14.7	466.5	79.5	26.5	4.5	586.9	100.0
Congenital anomalies	0.0	0.4	0.2	21.4	0.6	52.5	0.3	25.8	1.1	100.0
Endocrine	0.8	1.0	11.1	13.1	67.5	79.9	5.1	6.0	84.5	100.0
Gastrointestinal	1.0	0.7	18.8	13.2	114.3	80.2	8.4	5.9	142.5	100.0
Haematological	0.6	1.6	7.9	20.5	27.5	71.0	2.7	6.9	38.7	100.0
Infection	0.4	0.5	8.6	13.3	54.8	84.7	1.0	1.5	64.7	100.0
Injury & poisoning	0.3	0.3	10.2	9.6	94.0	88.3	1.9	1.8	106.4	100.0
Mental & behavioural	0.2	0.6	6.6	22.3	22.1	74.1	0.9	3.0	29.8	100.0
Muscular Skeletal	2.3	2.9	12.4	15.8	57.4	73.3	6.3	8.0	78.3	100.0
Neurological	5.2	3.8	23.5	17.3	97.7	71.8	9.7	7.1	136.1	100.0
Other	2.1	1.1	12.0	6.5	85.2	46.2	85.2	46.2	184.5	100.0
Renal & Genital	0.5	0.2	30.8	13.8	185.0	83.0	6.7	3.0	222.9	100.0
Respiratory	4.5	0.6	116.1	15.8	596.1	81.1	18.1	2.5	734.7	100.0
Skin diseases	0.5	1.1	7.3	17.6	31.6	75.7	2.4	5.7	41.7	100.0
To Be Classified	0.2	1.1	2.7	11.8	19.0	84.5	0.6	2.6	22.5	100.0
Unclassified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Beds per day by patient stream - Off target

	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
	#	%	#	%	#	%	#	%	#	%
Cancer	0.9	0.9	8.1	8.5	39.3	41.6	46.2	48.9	94.5	100.0
Cardiovascular	17.8	9.1	20.3	10.3	140.1	71.3	18.4	9.3	196.6	100.0
Congenital anomalies	0.0	2.2	0.0	0.0	1.0	106.2	0.0	0.0	0.9	100.0
Endocrine	2.3	4.7	10.1	20.6	32.9	67.0	3.8	7.7	49.2	100.0
Gastrointestinal	2.5	4.3	8.6	14.6	40.6	69.2	7.0	11.8	58.7	100.0
Haematological	1.5	8.8	3.5	20.3	9.0	52.1	3.2	18.8	17.2	100.0
Infection	1.6	4.9	3.3	10.0	27.3	83.8	0.4	1.4	32.6	100.0
Injury & poisoning	1.6	1.4	6.6	5.6	104.2	88.3	5.6	4.8	118.0	100.0
Mental & behavioural	0.6	1.6	9.2	26.6	24.2	69.6	0.8	2.2	34.7	100.0
Muscular Skeletal	5.3	8.2	10.6	16.4	45.5	70.6	3.1	4.8	64.4	100.0
Neurological	10.0	15.4	9.6	14.8	42.4	65.1	3.1	4.7	65.1	100.0
Other	5.0	10.9	10.7	23.2	39.1	84.4	0.0	0.0	46.3	100.0
Renal & Genital	1.9	2.7	11.5	15.9	50.5	69.7	8.5	11.7	72.4	100.0
Respiratory	14.7	7.2	40.3	19.6	146.2	71.2	4.0	2.0	205.2	100.0
Skin diseases	1.1	6.6	2.9	16.9	11.8	69.6	1.2	6.9	17.0	100.0
To Be Classified	0.7	3.3	1.6	8.1	17.5	87.4	0.3	1.3	20.0	100.0
Unclassified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Beds per day by patient stream - Near target

	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
	#	%	#	%	#	%	#	%	#	%
Cancer	0.1	0.1	13.5	12.1	71.9	64.1	26.7	23.8	112.1	100.0
Cardiovascular	2.0	0.8	43.4	17.2	194.3	76.9	12.9	5.1	252.6	100.0
Congenital anomalies	0.0	0.4	0.1	17.4	0.4	55.5	0.1	17.0	0.8	100.0
Endocrine	0.3	0.7	7.3	16.7	33.3	76.2	2.8	6.4	43.7	100.0
Gastrointestinal	0.4	0.4	11.7	12.2	77.1	80.2	6.9	7.2	96.2	100.0
Haematological	0.2	0.7	3.5	16.6	16.1	76.1	1.4	6.6	21.2	100.0
Infection	0.2	0.4	6.0	16.8	28.8	81.3	0.5	1.4	35.5	100.0
Injury & poisoning	0.2	0.2	9.1	9.7	83.2	89.0	1.0	1.1	93.5	100.0
Mental & behavioural	0.1	0.4	5.1	21.5	17.9	75.3	0.7	2.8	23.8	100.0
Muscular Skeletal	0.7	1.2	10.5	18.1	43.4	74.7	3.5	6.0	58.1	100.0
Neurological	1.4	1.7	16.7	19.4	62.3	72.4	5.6	6.6	86.1	100.0
Other	0.7	0.6	7.6	6.7	52.1	45.8	44.7	39.3	113.6	100.0
Renal & Genital	0.2	0.2	15.2	15.3	80.1	80.6	4.0	4.0	99.4	100.0
Respiratory	1.2	0.5	45.4	17.5	201.7	77.9	10.7	4.1	259.0	100.0
Skin diseases	0.2	0.6	4.6	16.4	21.4	76.2	1.9	6.8	28.1	100.0
To Be Classified	0.1	0.4	2.7	12.2	19.4	86.2	0.3	1.3	22.5	100.0
Unclassified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Beds per day by patient stream - Cases

	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
	#	%	#	%	#	%	#	%	#	%
☛ Cancer	0.8	2.5	3.0	9.7	15.8	50.4	11.7	37.3	31.4	100.0
☛ Cardiovascular	44.4	23.8	20.8	11.2	107.9	57.9	13.2	7.1	186.3	100.0
☛ Congenital anomalies	0.0	7.7	0.1	15.4	0.3	44.2	0.2	32.7	0.6	100.0
☛ Endocrine	5.3	22.8	3.2	13.7	13.4	58.0	1.3	5.5	23.1	100.0
☛ Gastrointestinal	5.6	13.2	5.3	12.4	28.4	66.6	3.3	7.9	42.7	100.0
☛ Haematological	3.3	23.4	2.3	16.5	7.1	51.3	1.2	8.8	13.9	100.0
☛ Infection	2.3	17.6	1.6	12.5	9.0	68.1	0.2	1.9	13.2	100.0
☛ Injury & poisoning	2.5	8.5	3.0	10.2	23.6	79.6	0.5	1.7	29.6	100.0
☛ Mental & behavioural	1.1	12.2	1.3	15.4	6.2	71.1	0.1	1.3	8.8	100.0
☛ Muscular Skeletal	14.4	45.0	3.4	10.6	12.5	39.1	1.7	5.3	32.0	100.0
☛ Neurological	27.2	37.5	8.8	12.1	33.4	46.0	3.1	4.3	72.5	100.0
☛ Other	12.5	22.2	4.3	7.7	26.4	46.9	13.1	23.2	56.3	100.0
☛ Renal & Genital	3.0	7.5	5.6	13.9	29.9	73.6	2.0	5.0	40.6	100.0
☛ Respiratory	27.6	18.5	21.7	14.5	95.2	63.8	4.8	3.2	149.2	100.0
☛ Skin diseases	3.0	28.3	1.7	15.7	5.6	52.0	0.4	4.0	10.7	100.0
☛ To Be Classified	1.7	28.4	0.6	9.5	3.5	60.5	0.1	1.5	5.8	100.0
☛ Unclassified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Beds per day by patient stream - Post trim

	AMAU only		AMAU in-house		Emerg non-AMAU		Elective stay		AMP all	
	#	%	#	%	#	%	#	%	#	%
☛ Cancer	0.2	0.5	2.0	5.2	16.6	42.3	20.4	52.0	39.2	100.0
☛ Cardiovascular	0.2	0.2	12.5	11.3	88.3	79.7	9.8	8.8	110.9	100.0
☛ Congenital anomalies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
☛ Endocrine	0.3	1.1	5.1	19.8	18.3	71.6	1.9	7.5	25.6	100.0
☛ Gastrointestinal	-0.6	-2.2	4.0	14.3	21.9	78.5	2.6	9.4	27.9	100.0
☛ Haematological	0.3	2.8	2.0	21.7	5.6	59.5	1.5	16.0	9.4	100.0
☛ Infection	-0.1	-0.6	1.6	7.8	18.3	92.2	0.1	0.5	19.9	100.0
☛ Injury & poisoning	-0.2	-0.3	1.8	3.3	49.1	91.3	3.1	5.8	53.8	100.0
☛ Mental & behavioural	-0.5	-2.6	6.6	35.9	12.0	65.5	0.2	1.3	18.4	100.0
☛ Muscular Skeletal	0.4	1.5	5.6	18.8	21.9	73.6	1.8	6.2	29.8	100.0
☛ Neurological	1.2	3.5	6.1	17.5	25.6	73.8	1.8	5.2	34.7	100.0
☛ Other	0.6	1.2	6.6	14.1	28.6	61.3	10.9	23.4	46.7	100.0
☛ Renal & Genital	0.1	0.2	6.7	11.9	45.9	81.7	3.5	6.2	56.3	100.0
☛ Respiratory	-2.7	-1.9	32.8	22.2	113.5	76.9	4.1	2.8	147.6	100.0
☛ Skin diseases	0.1	1.0	0.7	8.3	7.8	87.9	0.2	2.8	8.9	100.0
☛ To Be Classified	0.0	0.7	0.0	0.4	6.0	98.6	0.0	0.4	6.1	100.0
☛ Unclassified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix 5. Record selection and crosstabs parameter definitions

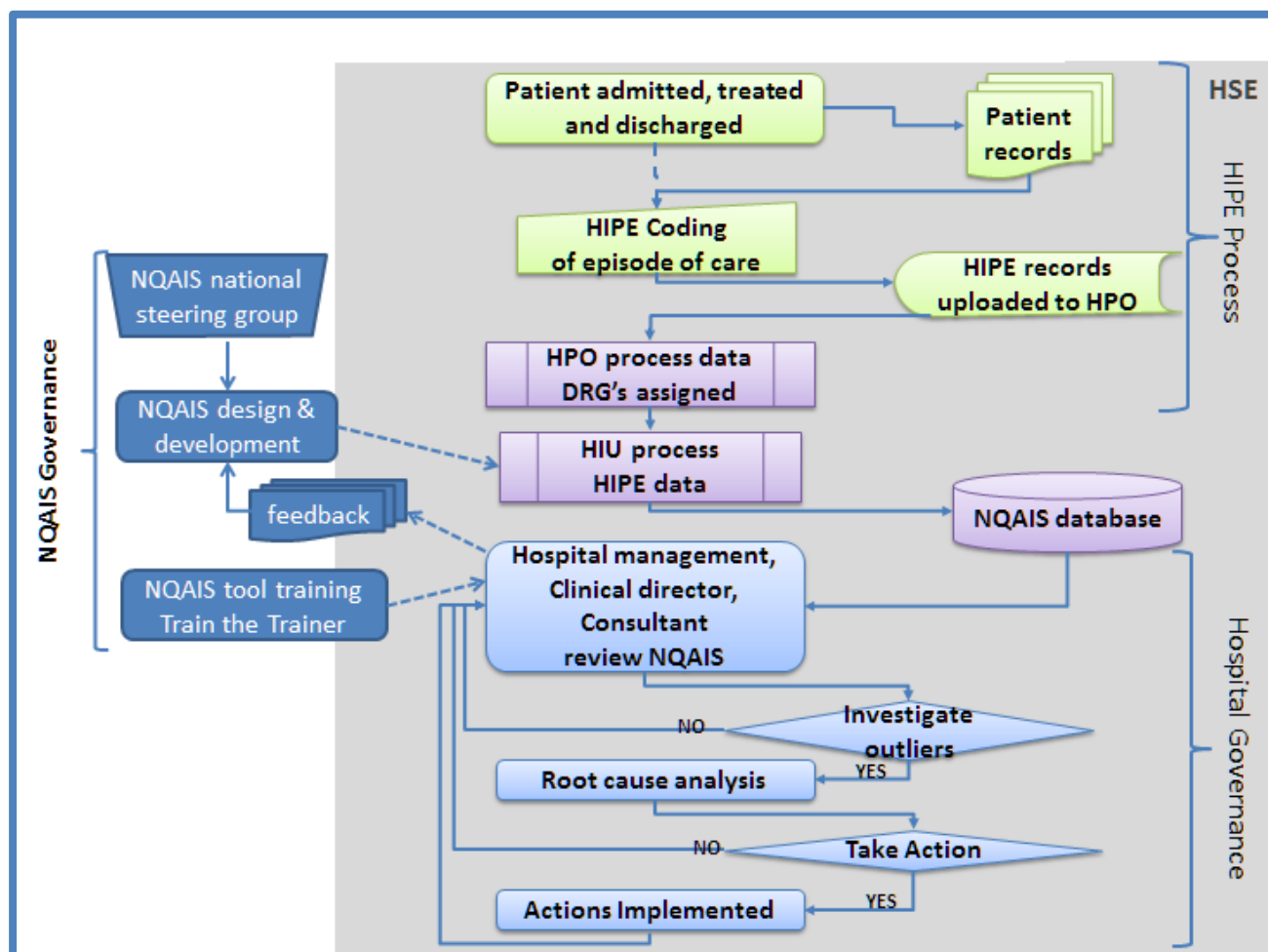
See *Healthcare Pricing Office HIPE Data Dictionary* for further details (www.hpo.ie)

	Parameter name	Parameter explanation
1	AAU indicator	Admitted to AAU only, AAU in-house, not via AAU
2	Admission date	Date patient admitted to hospital
3	Admission day	Day of week of admission
4	Admission month	Month of admission
5	Admission source	Home, nursing home, transfer from other hospital etc.
6	Admission time	Time of admission
7	Admission type	Elective, emergency, maternity, new born
8	Admission week	Admission week 1 to 52
9	Admission year	Year of admission
10	Age by 1 year	Age of patient by 1 year age group
11	Age by 5 year	Age of patient by 5 year group
13	ASA score all	ASA score all procedures (comma separated)
14	ASA score Proc 1	ASA score Proc 1 (principal procedure)
15	Charlson score group	Charlson Index - NQAIS categories
16	Charlson score value	Charlson Index - actual value
17	Discharge alive/dead	Discharged either alive or dead
18	Discharge date	Date patient discharged from hospital
19	Discharge day	Day of week of discharge
20	Discharge destination	Home, nursing home, transfer to other hospital etc.
21	Discharge month	Month of discharge
22	Discharge time	Time of discharge
23	Discharge year	Year of discharge
24	DRG code	Diagnostic Related Group code assigned by DRG grouper
25	DRG description	DRG description from ICD-10-AM / ACHI
26	Dx 1 group (CCS-IM)	Dx1 (admission) diagnosis by CCS-IM (Irish Modification) group name
27	Dx 1 ICD code	Dx 1 (admission) diagnosis by ICD-10-AM code
28	Dx 1 name (CCS-IM)	Dx 1 (admission) diagnosis by name (CCS-Irish Modification)
29	Dx 2-30 ICD code	Dx 2-30 (additional) diagnosis by ICD-10-AM codes (comma separated)
30	Dx 2-30 name	Dx 2-30 (additional) diagnosis by ICD-10-AM names (comma separated)
31	Dx1 name ICD name	Dx 1 (admission) diagnosis ICD-10-AM name
32	Emer adm 12m (#)	No. of emergency admissions to same hospital in previous 12 months
33	E-MRN	Encrypted medical record number (MRN)
34	Gender	Male or female
35	Hospital acq code	Hospital acquired condition code/s ICD-10-AM
36	Hospital acq name	Hospital acquired condition name/s ICD-10-AM
37	Hospital name	Hospital name
38	ICU/CCU bed days	Count by number intensive care bed days
39	LOS post-op	Number of days in hospital following proc 1 (surgical)
40	LOS pre-op	Number of days in hospital before proc 1 (surgical)
41	LOS total	Length of stay total (same day = 0.5)

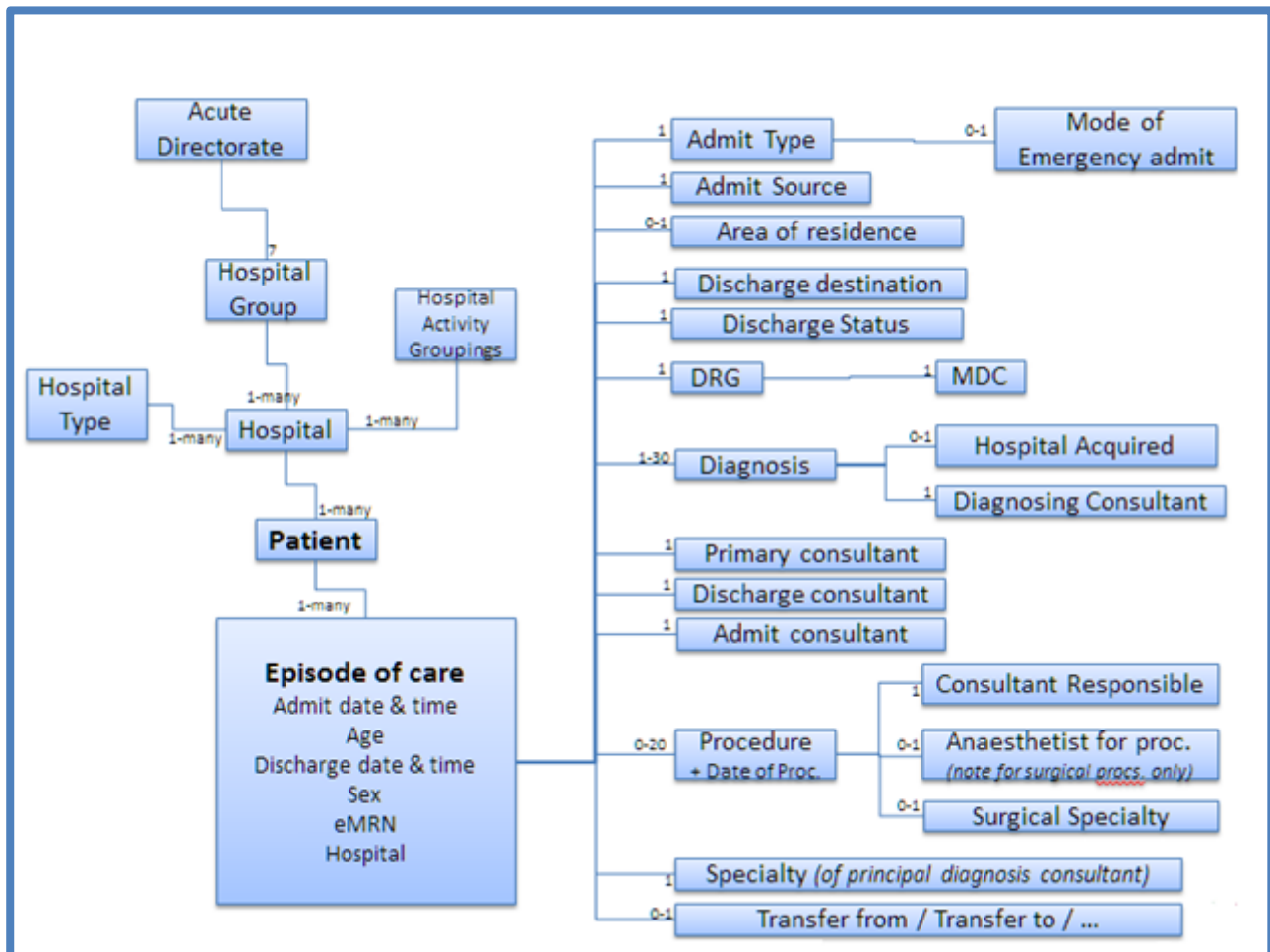
42	LOS trim (value)	LOS post trim
43	LOS trim (Y/N)	Flag if LOS was trimmed (NQAIS definition) - yes/no
45	Medical card (Y/N)	Current medical card (yes/no)
46	Palliative care	Flag if palliative care code (ICD Z51.5)
47	Proc 1 date	Proc 1 (principal procedure) date
48	Proc 1 group (RCs)	Proc1 (principal procedure) by group (RCPI/RCSI categories)
49	Proc 1 ICD code	Proc 1 (principal procedure) by ICD code
50	Proc 1 name (RCs)	Proc1 (principal procedure) by name (RCPI/RCSI categories)
51	Proc 1 surg (Y/N)	Procedure 1 (principal) operative surgical yes/no (RCSI categories)
52	Proc 2-20 date	Proc 2-20 (additional procedures) dates
53	Proc 2-20 ICD code	Proc 2-20 (additional procedures) by ICD-10-AM codes (comma separated)
54	Proc 2-20 ICD name	Proc 2-20 (additional procedures) ICD-10-AM names (comma separated)
55	Public/private	Public or private discharge status
56	Readm <30d (Y/N)	Flag if readmitted as emergency within 30 days
57	Readm <7d (Y/N)	Flag if readmitted as emergency within 7 days
58	Readm info	Readmission info - no. days post discharge, Dx 1 and Proc 1
59	Residence all	Residence - all areas
60	Residence county	Residence by county (ROI)
61	Residence Dub postal	Residence by Dublin postal area
62	Same day discharge (Y/N)	Flag if admission date = discharge date
63	Specialty (pr) group	Specialty principal group (DOH categories)
63	Specialty (dis) group	Specialty discharge group (DOH categories)
63	Specialty discharge	Specialty discharge team (DOH categories)
64	Specialty principal	Specialty principal team (DOH categories)
66	Surg Proc 2-20 date	Additional surgical procedure date/s (comma separated)
67	Team code admission, discharge, principal	Encrypted team code for admission, discharge, principal consultant
68	Team code Dx 1	Encrypted team code (consultant) for Dx1
68	Team code Dx 2-30	Encrypted team code (consultant) for Dx 2-30 (comma separated)
68	Team code Proc 1	Encrypted team code (consultant) for Proc 1
69	Team code Proc 2-20	Encrypted team code (consultant) for Proc 2-20 (comma separated)
70	Time admission	Time at which patient was admitted to hospital
71	Time discharge	Time at which patient was discharged from hospital
72	Transfer from	Source of transfer
73	Transfer to	Destination of transfer
74	Ward admit	Admission ward code
75	Ward discharge	Discharge ward code
76	Ukraine Temporary Protection Directive	HIPE collects data where patients are covered by the Ukraine Temporary Protection Directive (having been allocated a PPS number) and guidance on this flag is contained in the HIPE Instruction manual (hpo.ie)
77	Pal Care/T invol	Indicates if the Palliative Care Team were involved
78	Covid-19 indicator	The COVID19 flag is set where the patient has a lab confirmed COVID-19. Diagnosis is blank otherwise. This diagnosis may not be have occurred during the hospital visit so the flag is set if the patient has either U07.1 coded or the patient indicates they have previously been diagnosed with lab confirmed COVID-19.
79	Mode of Emerg adm	Indicates where the patient was treated prior to being admitted into the hospital as an emergency in-patient or when the patient was treated only in a registered Acute Medical Assessment Unit (AMAU) or in a registered Acute Surgical Assessment Unit (ASAU).
80	TF to pre D/C RU	Transfer to pre discharge rehab unit within the hospital

81	Med fit for d/c date	The medical discharge date is the date where a patient had been identified as being fit for discharge (sometimes referred to as "clinically fit for discharge date").
82	Discharge Mode	Identifies the type of post-acute care to be received by the patient following their discharge from acute care (i.e. the end of their in-patient or day case stay) if applicable to a case e.g. long term care or rehab care

Appendix 6. Data informed decision making



Appendix 7. HIPE record components



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