

National GI Endoscopy Quality Improvement Programme

7th National Data Report
A RETROSPECTIVE REVIEW 2016 - 2021



CONJOINT BOARD OF ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND



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FOREWORD

The National GI Endoscopy Quality Improvement (NEQI) Programme is pleased to publish its 7th national data report.

As a result of the impact of the cyber-attack in May of 2021 on HSE servers, much of the analysis provided in the NEQI Programme's typical national data report is not available to us at this time. Accordingly, the NEQI working group has taken this opportunity to review the progress and achievements of the NEQI Programme to date. This decision was taken as a typical report would compare the previous year's data to the preceding years data and the effects of the cyber-attack on HSE servers have rendered at least two quarters of 2021 data unreliable. The preceding year's data has also been significantly affected by pandemic related restrictions in 2020. Comparing these two atypical years would not provide accurate or insightful information that could be used to identify areas of quality improvement.



This report will look at the evolution of the programme since 2016 and will also outline the next steps the programme hopes to take to advance our strategic goals over the coming years.

We hope that this review will provide insight into the effect of the NEQI Programme on participating hospital's key quality indicators over a five-year period and help us gain further insight into the benefits of participation in the programme for endoscopy units in Ireland. We also hope this report will highlight areas where further improvements can be made while providing direction to material that can help endoscopy units facilitate quality improvement initiatives.

The data covered in this report span from 2016 to 2020, with a separate section analysing the impact of the cyber-attack on 2021 data.

The programme would like to take this opportunity to express its sincere thanks to the local operational managers (LOM) and the clinical leads (CL) who have led the NEQI Programme in each hospital by continuing to collect and submit data during this period. We also wish to thank the HSE National Quality and Patient Safety Directorate who provide funding for this programme, the National Specialty QI Programme Steering Committee and to the National Specialty Quality Improvement Programme Management Team, RCPI for their continuous support.

Dr Jan Leyden,
Chair, National GI Endoscopy QI Working Group

WORKING GROUP, NATIONAL GI ENDOSCOPY PROGRAMME

Dr Jan Leyden (Chair)	Consultant Gastroenterologist, Mater Misericordiae University Hospital
Prof Fiachra Cooke	Consultant Colorectal Surgeon, University Hospital Waterford
Prof Glen Doherty	Consultant Gastroenterologist, St. Vincent's University Hospital
Ms Sharon Hough	Advanced Nurse Practitioner, St. James's Hospital
Dr Subhasish Sengupta	Consultant Gastroenterologist, Our Lady of Lourdes Hospital, Drogheda
Mr Kenneth Mealy	Consultant Surgeon, Wexford General Hospital
Prof Steve Patchett	Consultant Gastroenterologist, Beaumont Hospital Group Clinical Lead for GI Endoscopy, RCSI Hospitals Group
Dr Garret Cullen	Consultant Gastroenterologist, St. Vincents' University Hospital, Group Clinical Lead for GI Endoscopy, Ireland East Hospital Group
Dr Eoin Slattery	Consultant Gastroenterologist, University Hospital Galway, Group Clinical Lead for GI Endoscopy, Saolta University Healthcare Group
Dr Manus Moloney	Consultant Gastroenterologist, University Hospital Limerick, Group Clinical Lead for GI Endoscopy, UL Hospitals Group

PROGRAMME MANAGEMENT TEAM, ROYAL COLLEGE OF PHYSICIANS OF IRELAND

Conor Canavan	Programme Manager, National GI Endoscopy Quality Improvement Programme, RCPI
Caitriona McGrath	Manager, National Specialty Quality Improvement, RCPI

GLOSSARY OF TERMS

NEQI Programme	National Gastrointestinal (GI) Endoscopy Quality Improvement Programme.
NQAIS-Endoscopy	National Quality Assurance and Improvement System for Endoscopy.
Endoscopy Reporting System (ERS)	A local electronic reporting system where endoscopy units enter clinical details regarding procedures performed.
Key Quality Data	This refers to the data that are captured for the NEQI Programme to facilitate audit and quality improvement.
Key Quality Indicator (KQI)	A metric for which there is a sufficient evidence base to recommend a standard, e.g. caecal intubation rate.
Key Quality Target	A minimum or achievable value associated with key quality indicators.
Recommendation	A proposed course of action that should be implemented in each endoscopy unit to support quality improvement activities.
Minimum Target	The minimum acceptable value for a KQI.
Achievable Target	An additional aspirational value that should be aimed for if the minimum target is being met.
Procedure	For the purpose of this report, refers to a colonoscopy, oesophagogastrroduodenoscopy or a flexible sigmoidoscopy.
Colonoscopy (Col)	A procedure that allows the endoscopist to look directly at the lining of the large intestine or colon.
Oesophagogastrroduodenoscopy (OGD)	A procedure during which a small flexible endoscope is introduced through the mouth and advanced through the pharynx, oesophagus, stomach, and duodenum.
Flexible Sigmoidoscopy (FSig)	A procedure used to evaluate the lower part of the large intestine.
Quality Improvement (QI) Guidelines	Guidelines for the implementation of a Quality Improvement Programme in GI Endoscopy as developed by the NEQI Programme.
Clinical Lead (CL)	The clinician who has overall responsibility for the NEQI Programme in their unit.
Local Operational Manager (LOM)	An endoscopy nurse responsible for the data uploading process and maintaining the local hospital NQAIS-Endoscopy account.

SUMMARY OF REPORT

7th
National Data Report



47
Hospitals
are now part of
NEQI Programme



44 CLINICAL LEADS

43 LOCAL OPERATIONAL MANAGERS

722
Unique
NQAIS-Endoscopy
Accounts

1.4%

1.4% Increase
in National Caecal
Intubation Rate
between 2016-2020

10.1%

10.1% increase in
the percentage of
endoscopists meeting
the minimum target
for Caecal Intubation

3%

3.0% Increase
in Polyp Detection
Rates between
2016-2020

10.8%

10.8% increase in
the percentage of
endoscopists meeting
the minimum
target for Polyp
Detection Rate



968,266

Procedures captured
in NQAIS-Endoscopy
from 2016-2020

Annual number of procedures
in NQAIS-Endoscopy:

2016	172,567
2017	188,967
2018	210,148
2019	219,916
2020	176,668

**29% Increase
of procedures**
captured by
NQAIS-Endoscopy
between 2016-2020



1,117

Endoscopists
in NQAIS-Endoscopy
from 2016-2020

Annual numbers
of endoscopists in
NQAIS-Endoscopy:

2016	587
2017	619
2018	690
2019	708
2020	685

RECOMMENDATIONS

1	NQAIS-Endoscopy Upgrade	The NEQI working group recommend that NQAIS-Endoscopy is upgraded to enhance analytical capabilities and maximise the utilisation of data while also reducing the amount of work required to upload and maintain data. A degree of automation to the upload process is recommended to alleviate resource demands and lessen issues around staff turnover.
2	Training and Resourcing	The NEQI working group recommend that particular care is given to the handover of QI programme duties. When a QI clinical lead or local operational manager is leaving their role, a process should be in place to ensure that the responsibilities associated with running the programme are handed over to a named individual. Where this cannot take place for any reason the programme manager should be informed. This handover and training is essential to ensure consistency in data uploads.
3	Endoscopist Training	The NEQI working group recommend that NQAIS-Endoscopy data should be used by Trainees throughout their training period. To facilitate this, all new Trainees should be made familiar with the NEQI Programme and NQAIS-Endoscopy upon commencement of clinical rotations.
4	Governance Oversight for Local Endoscopy Systems	The NEQI working group recommend the establishment of a single point of contact between public hospitals and providers of endoscopy reporting systems. This will reduce the duplication of contracts and enhance version control for software in different hospitals. This point of contact would also enable a streamlined process for changes in relation to data collected for QI purposes.
5	Individual Health Identifier	The NEQI working group strongly support the introduction of an Individual Health Identifier (IHI) that will facilitate a link between histology and endoscopy data, presenting an opportunity to collect adenoma detection rates at a national level. The introduction of an IHI as part of the eHealth Strategy for Ireland would facilitate the creation of a more integrated national database which could lead to the development of new KQIs and/or refining of existing KQIs.
6	Protected Time for Quality Improvement	The NEQI working group recommend that protected time is afforded to clinicians in order to carry out QI activities. The NEQI working group acknowledge that due to the increase in volume and complexity of cases it is now more vital than ever that protected time is guaranteed. This will facilitate the review of processes and contribute to quality improvements locally that will positively impact patient care.

CHAPTER 1

INTRODUCTION TO THE NEQI PROGRAMME

1

In October 2011, the Conjoint Board of the Royal College of Physicians of Ireland (RCPI) and the Royal College of Surgeons in Ireland (RCSI) launched the National GI Endoscopy Quality Improvement (NEQI) Programme in collaboration with the National Cancer Control Programme (NCCP). Funding was provided by the HSE National Quality Improvement Team from 2014 and is now provided by the National Quality and Patient Safety Directorate.

Purpose of this report

This report facilitates informed decision making to determine the steps necessary in support of ongoing quality improvement (QI) processes within Irish endoscopic services. The NEQI working group encourage endoscopists to discuss the findings and recommendations in this report with colleagues, local hospital management and quality and patient safety teams. Where the report suggests that there may be areas in need of improvement, they should be discussed locally using hospital QI data. Where patient safety related concerns exist, they should be managed locally and escalated as appropriate in line with the relevant HSE policies.

What this report cannot do

This report cannot and should not be used to produce league tables or to compare hospitals, as no two hospitals will have the same patient profile. Different hospitals specialise in treating patients with different and sometimes much more complex needs, invalidating direct comparisons between hospitals.

Outlier Management

The NEQI Programme does not engage with individual sites who could be identified from this report. Locally, participants are requested to report and manage the QI data within their unit and to ensure the necessary actions to improve quality are initiated and referred to the appropriate person.

QI Clinical Lead (CL)	The QI clinical lead is a consultant endoscopist who has overall responsibility for the NEQI Programme in their hospital. They review, sign off and disseminate data which have been uploaded to NQAIS-Endoscopy from the local ERS.
Local Operational Manager (LOM)	The LOM is most frequently an endoscopy nurse who works in collaboration with the QI clinical lead to ensure that data is uploaded in accordance with the quarterly data upload schedule. They create the extract from the ERS, upload it to NQAIS-Endoscopy, clean the data and create key quality data reports to be signed off by the QI clinical lead.

Additional Context

The points below should be kept in mind when reading this report:

- All targets are on a per endoscopist basis. The analysis contained within this report reflects this wherever possible, for many Key Quality Indicators (KQIs), national performance and statistics based upon all cases performed within hospitals are also presented.
- All endoscopist based KQIs are calculated on an Endoscopist 1 (E1) and Endoscopist 2 (E2) basis. This means that an individual endoscopist's statistics will reflect all cases where the endoscopist was listed as an E1 or an E2 in their local Endoscopy Reporting System (ERS).

Definitions

Endoscopist 1 (E1):

The clinician who performs the majority of the procedure.

Endoscopist 2 (E2):

A clinician present in the procedure room during the procedure and who also provides some support to the primary Endoscopist (verbal or physical).

Hospital Identification

This report presents data on an aggregate basis to analyse hospital and endoscopist statistics from 2016 to 2020. Although hospital identification has been presented in previous reports, it has not been deemed necessary for this report, which is intended to act as a review of the NEQI Programme. Future reports will continue to be presented on a hospital identifiable basis.

TABLE 1: Summary of Key Quality Indicators

Key Quality Indicator	Key Quality Target	Additional Information
COLONOSCOPY		
Caecal intubation rate (CIR)	Minimum: ≥ 90% Achievable: ≥ 95%	CI Rate is calculated based on all colonoscopies performed as Endoscopist 1 or Endoscopist 2
Comfort Score	≥ 90%	90% of colonoscopies should have a comfort score of between 1 and 3 on the Gloucester Scale
Polyp detection	≥ 20%	N/A
Bowel Preparation	Minimum: ≥ 90% Achievable: ≥ 95%	N/A
OESOPHAGOGASTRODUODENOSCOPIES (UPPER GI)		
Duodenal 2nd part intubation (Duo 2)	≥ 95%	N/A
Retroflexion	≥ 95%	N/A
SEDATION		
Midazolam	Patients Aged below 70 years: Median dose is ≤5 mg per endoscopist Patients Aged above 70 years Median dose is ≤3 mg per endoscopist	This KQI applies to both Colonoscopies and OGDs.
Fentanyl	Patients Aged below 70 years: Median dose is ≤100mg per endoscopist Patients Aged above 70 years Median dose is ≤50mg per endoscopist	This KQI applies to both Colonoscopies and OGDs

The NEQI Programme has set out further KQIs which are not covered in this report and can be found in the [GI Endoscopy Quality Improvement Guidelines](#).

National Data Report Approval

This report has been developed by the NEQI working group and the programme management team. The report was approved by the working group on the 14th of November 2022.

This report received final approval for publication from the NSQI Programmes steering committee on the 21st of November 2022.

The report was also submitted to the HSE National Steering Group for Clinical Audit on the 21st of November 2022 for noting.

The report was sent to the Presidents of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland on the 24th of November 2022.

CHAPTER 2

DATA ANALYSIS

2

National QI data relating to the following key quality indicators (KQIs) were analysed in the preparation of this report:

- **COLONOSCOPY**
 - Caecal intubation rate
 - Polyp detection rate
 - Comfort score
 - Bowel preparation
- **UPPER GI ENDOSCOPY**
 - Duodenal second part intubation
 - Retroflexion
- **SEDATION**
 - Colonoscopy
 - Upper GI endoscopy

Targets have been set for colonoscopy, upper GI endoscopy and sedation KQIs. Where targets are absent, due to lack of sufficient evidence with which to base a standard upon, a recommendation is made. These targets and recommendations were developed by the NEQI working group, approved by the steering committee of the NSQI Programmes are subject to annual review.

The NEQI working group have selected the most appropriate KQIs for analysis in this report. These KQIs were selected on the basis of increasing data accuracy throughout the years in addition to clinical relevance.

Data Source

The data source for this report is Health Intelligence Ireland – NQAIS-Endoscopy.

The National Quality Assurance and Improvement System for Endoscopy (NQAIS-Endoscopy)

NQAIS-Endoscopy functions as a central repository for QI data from participating hospitals' Endoscopy Reporting Systems (ERS). The data relating to the KQIs are extracted from NQAIS-Endoscopy and are used to produce the annual national data report on national metrics in endoscopy. Units can use the report to identify best practice and any variations, to review, improve and sustain the quality of their work in the context of national norms and targets set by the NEQI working group as well as international best practice.

Data and Information Lifecycle

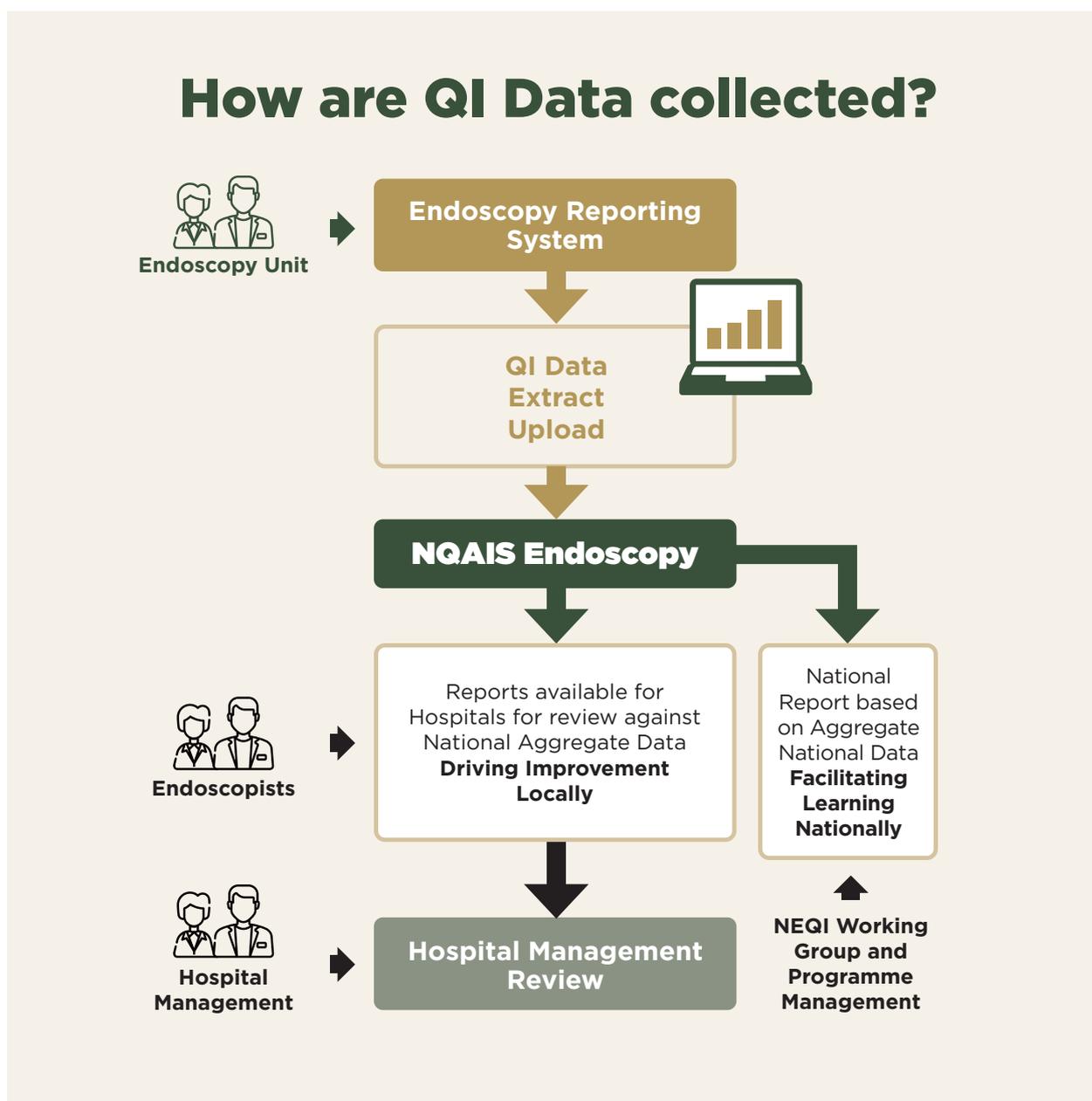
Data are initially captured in the local ERS. Data are then uploaded or submitted from the ERS manually on a quarterly basis to NQAIS-Endoscopy incorporating the previous three months in each upload.

Endoscopists and endoscopy nursing staff record clinical details for each procedure performed in their unit in an ERS. The data are then uploaded from each ERS to the central data repository, NQAIS-Endoscopy, via a CSV extract for reporting and analysis purposes by participants.

Once data have been uploaded, a local operational manager (LOM) checks the data quality and

maps any data which may not be recognised by NQAIS to standardised national codes. Once data have been cleaned, a report is created which represents the unit's data in relation to KQIs and national averages. This report is then reviewed and "signed off" by the clinical lead (CL). This "sign off" process transfers the local data into the national repository and commits them to the national data set.

Once the data reside in the national repository, endoscopists can run reports on the data and compare their statistics to national averages and targets as set out by the NEQI Programme in the GI Endoscopy Quality Improvement Guidelines. CLs, as well as individual endoscopists, are encouraged to run these reports at minimum on a quarterly basis.



The NSQI Programme management extract the 12-month dataset for analysis from NQAIS-Endoscopy in March of the following year, at which time all data must be uploaded for inclusion in the national data report. However, as the 2021 NQAIS-Endoscopy data have been impacted by the cyber-attack on HSE servers in May 2021, this national data report provides a retrospective five year review of data in addition to a separate analysis for the 2021 calendar year. This analysis utilises a complete data extract dating from 01/01/2016 to 31/12/2020 and an incomplete extract for the period from 01/01/2021 to 31/12/2021.

Date/Timeline

The data contained within this report can be split into two categories:

- 2016 to 2020:** The full dataset presented in this report relating to procedures performed from 2016 to 2020 were collected between 1st January 2016 and 31st December 2020.
- 2021:** Specific analysis has also been carried out to look at the data quality of data collected in 2021. These incomplete data were collected between 1st January 2021 and 31st December 2021.

Scope of Report

In Scope:

Inpatient and outpatient cases are captured in the dataset; however, we are unable to differentiate between these cases at this time due to limitations in the current local systems.

Although the children’s hospitals do not currently participate in the NEQI Programme, a small number of paediatric procedures are captured in the dataset along with the adult procedures. However, no distinction is made in the report at this time.

Data are collected from public, voluntary and private sites and can be differentiated based on the hospital name provided.

Out of Scope:

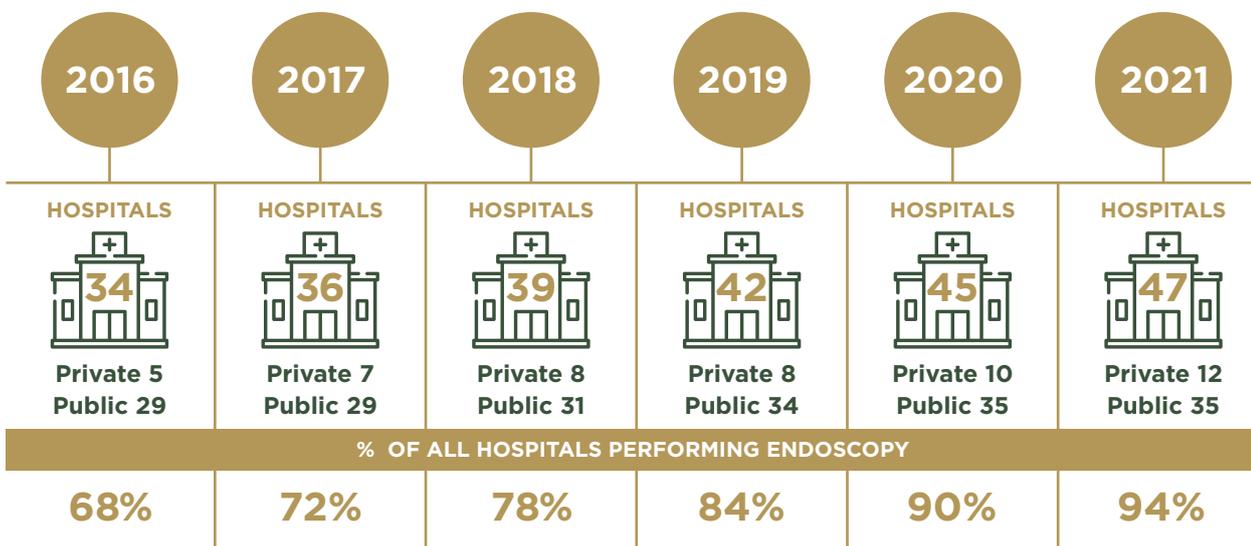
GI endoscopic procedures may be performed in Intensive Care Units (ICU) or in theatre. Although some units have the ability to capture this data in their endoscopy reporting system, it will not be collected in all units.

A number of hospitals are referral centres for oesophageal and gastric disorders, where reaching the landmarks required for KQIs in this report is not the intention of a procedure. Endoscopy reporting systems are currently unable to differentiate between these procedures and as such the NQAIS-Endoscopy dataset will not include these data.

Data Coverage

Participating Hospitals

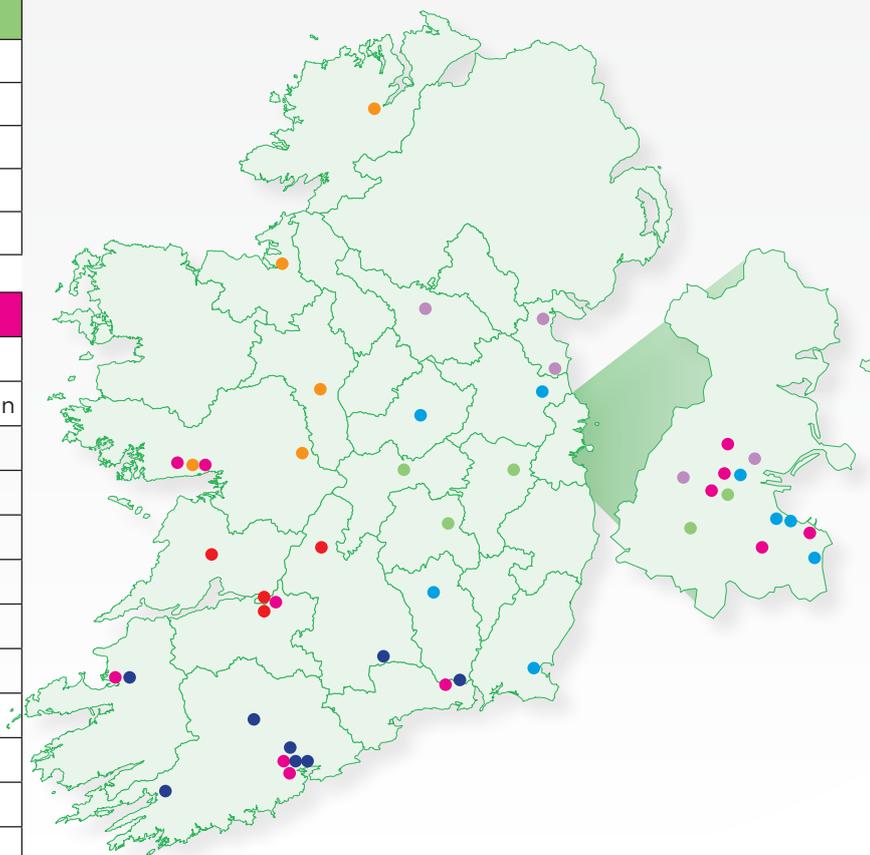
This report presents QI data across six years. The data in this report represent the number of hospitals participating in the programme for any given year. The number of hospitals contributing data to the national data set increased from 34 in 2016 to 45 in 2020. A full list of the 47 hospitals currently participating in the NEQI Programme can be found on page 15.



HOSPITALS SUBMITTING DATA TO NQAIS-ENDOSCOPY IN 2021

Dublin-Midlands Hospital Group
Midland Regional Hospital Portlaoise
Midland Regional Hospital Tullamore
Naas General Hospital
St James's Hospital
Tallaght University Hospital

Private Hospitals
Beacon Hospital, Dublin
Blackrock Health Blackrock Clinic, Dublin
Bon Secours Hospital Cork
Bon Secours Hospital Dublin
Bon Secours Hospital Galway
Bon Secours Hospital Limerick
Bon Secours Hospital Tralee
Blackrock Health Galway Clinic
Blackrock Health Hermitage Clinic
Mater Private Network, Cork
Mater Private Network, Dublin
UPMC Whitfield Hospital



Ireland East Hospital Group
Mater Misericordiae University Hospital
Regional Hospital Mullingar
Our Lady's Hospital Navan
St Columcille's Hospital, Loughlinstown
St Luke's Hospital, Kilkenny
St Michael's Hospital, Dun Laoghaire
St Vincent's University Hospital
Wexford General Hospital

South/South West Hospitals Group
Bantry General Hospital
Cork University Hospital
Mallow General Hospital
Mercy University Hospital, Cork
South Infirmary Victoria University Hospital
South Tipperary General Hospital
University Hospital Kerry
University Hospital Waterford

RCSI Hospitals Group
Beaumont Hospital, Dublin
Cavan General Hospital
Connolly Hospital, Blanchardstown
Louth County Hospital
Our Lady of Lourdes Hospital, Drogheda

Saolta University Healthcare Group
Letterkenny University Hospital
Portiuncula University Hospital
Roscommon University Hospital
Sligo University Hospital
University Hospital Galway

UL Hospitals Group
Ennis Hospital
Nenagh Hospital
University Hospital Limerick
St John's Hospital, Limerick

CHAPTER 3

DATA QUALITY

3

It is important that those collecting and using the QI data can have confidence in the quality of the data. The data collected must be reliable, accurate, relevant and timely to facilitate decision making and associated quality improvements to provide safer, higher quality care for patients.

HIQA recommend the use of a data quality framework, which will enable the programme to assess the current data quality and necessary improvements using the following four tools 1) data quality strategy 2) data quality assessment 3) reporting on data quality and 4) a data quality improvement cycle.¹

Data Quality Statement

The programme acknowledges the challenges that exist in relation to the quality of the data submitted and collected in 2021 owing to the impact of the cyber-attack on HSE servers. This has rendered the data extract for 2021 incomplete and not sufficiently representative of clinical practice for the purposes of national analysis.

Data Quality Assessment

Data are considered under the following five dimensions of quality; accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity and relevance.¹

ACCURACY AND RELIABILITY:

The QI data collected for the NEQI Programme consist of nine KQIs, designed to measure quality at both a local and national level in endoscopic units in participating public and private hospitals. The accuracy of the data uploaded to NQAIS-Endoscopy is fundamentally dependant on the correct input of data to each hospital's ERS for these KQIs. Trends are analysed on annual and monthly bases for each KQI in the national data report dating back to 2016 when the first dataset was created. Duplicate cases are removed from the dataset as part of the data validation process by the programme management.

Additional data visualisation provides comparisons over the previous four years based on the volume of procedures and procedure type.

The data coverage varies between 34 and 45 public, voluntary and private endoscopy units from 2016 to 2020, representing significant data coverage.

The programmes QI Guideline document provides detailed information on the QI data that should be collected and associated targets and recommendations contributing to increased reliability of data collection.

COMPLETENESS:

The data completeness levels for each of the years analysed in this report are listed below:

YEAR	PROCEDURE CODES MISSING/TOTAL PROCEDURES	% DATA COMPLETENESS
2016	15/172567	99.99%
2017	12/188967	99.99%
2018	17/210148	99.99%
2019	45/219916	99.98%
2020	37/176668	99.98%

This was calculated by the number of procedure codes used in KQI calculation missing from NQAIS-Endoscopy during each year.

¹ Health Information and Quality Authority (2018) "Guidance on a data quality framework for health and social care" <https://www.hiqa.ie/sites/default/files/2018-10/Guidance-for-a-data-quality-framework.pdf>

The completeness of the data between 2016 and 2020 is regarded as sufficiently high so as not to impact the fitness for use of the dataset. As the result of the cyber-attack on HSE servers in May 2021, the 2021 data completeness has been deemed unverifiable.

TIMELINESS AND PUNCTUALITY:

Data relating to the same suite of KQIs should be uploaded quarterly to NQAIS-Endoscopy for a retrospective three-month period. Endoscopy units are requested to have completed their final data uploads to NQAIS-Endoscopy by the end of March each year for inclusion in the annual national data report. The programme upload schedule can be accessed [on the RCPI website](#). In addition, the Lapsed Participation Process can also be [viewed on the website](#) outlining the necessary steps when a site is no longer compliant with the upload schedule.

The annual national data report is normally launched within the 12 months after the reporting period.

The NEQI working group are updated monthly by the programme manager regarding data upload compliance nationally.

All quarterly uploads from 1st January 2016 to 31st December 2020 were completed by participating hospitals for this period and as such the data presented in this report are accurate at the time the dataset was extracted from NQAIS-Endoscopy. It is possible that some cases relating to the report timeline may have been uploaded in the period between data extraction and publication of this report.

As two quarters of this year were significantly impacted by the cyber-attack, data from this period of time are analysed and reported on separately.

The programme acknowledges that uploads are performed manually and can be time consuming, contributing to some expected delays in the uploading of the data.

Only 84% of possible quarterly uploads have been uploaded for 2021. Following communications from the HSE, public and voluntary hospitals were advised to prioritise retrospectively entering patient related data over quality improvement data. As a result, many units have not uploaded all quarters for 2021 and will not be expected to do so retrospectively owing to limited resources being available.

COHERENCE AND COMPARABILITY

All participating endoscopy units are contacted on a quarterly basis by the programme manager and encouraged to access their own data in NQAIS-Endoscopy provided they have the appropriate permissions. Here they can compare their own performance over time to the national aggregate and provide a report for colleagues and hospital management.

Since 2020, hospitals are identified by name in the national data report. The NEQI working group advise against using the report to produce league tables and to exercise caution if attempting to compare hospitals to one another as no two hospitals will have the same patient profile. Different hospitals will specialise in treating patients with different and sometimes more complex care needs, making direct comparisons between hospitals ineffective.

As previous national data reports have reported on either a July to June basis, or as the case in the 4th National Data Report, a Q3 & Q4 basis, KQI data reported on in this report may differ from those presented in reports published prior to the 5th National Data Report.

The current dataset reported on by the NEQI Programme facilitates quality improvements within GI endoscopy but cannot be linked with datasets provided by the other National QI Programmes in Histopathology and Radiology or with the HIPE database.

A data dictionary is maintained by the programme manager, cataloguing and describing the structure and content of the data to maintain consistency in data collection.

ACCESSIBILITY AND CLARITY

All participating endoscopy units may access their own data in NQAIS-Endoscopy. Training is provided to aid the reliability of this process.

The extraction and uploading of the data are performed following agreed pathways depending on the ERS in place. Further training or any refreshing of specific elements can be requested from the programme manager.

The analysis of the data once extracted from NQAIS-Endoscopy is performed consistently by the programme manager and presented in the national data report.

Previous reports are hosted by the RCPI website and can be [viewed on the RCPI website](#).

RELEVANCY

The purpose of the data is to aid decision making in the context of the endoscopy department. Detailed data are supplied on nine of the KQIs outlined in the QI Guidelines document and broken down on national, hospital and endoscopist levels in the national data report to aid visualisation of both areas of improvement and those requiring increased scrutiny.

There are currently six different local ERS used across the country resulting in challenges in the uniform collection of data. Any ERS used in a participating hospital should have the ability to accurately record the quality improvement data required for the NEQI Programme.

The working group review and assess the KQIs and the targets set on an ongoing basis in terms of relevance and based on feedback from colleagues.

Reporting on Data Quality

Data quality is monitored by the programme management with reports currently made to the working group and steering committee as appropriate.

Continuous Improvement of Data Quality

Greater discussion between all parties will indicate if the data currently available meet the needs of the endoscopy departments and on the use of reports locally which will enable the programme to generate a more detailed picture on the use of the data. Future development of Endoscopy Reporting Systems in Ireland will allow NQAIS-Endoscopy to collect more detailed data from participating hospitals while expanding the amount of data fields collected. This will allow the NEQI Programme to provide an enhanced and more in depth analysis in the future.

Data Quality Progression

To examine the progression of data quality over the past five years, an example of a data quality issue can be investigated for each year. The primary data quality issues encountered in NQAIS-Endoscopy are:

- Cases with invalid endoscopist ID: NQAIS-Endoscopy does not recognise the code for the endoscopist – this will affect endoscopist level statistics but not hospitals level statistics.
- Cases with invalid organ site ID: This is when NQAIS-Endoscopy does not recognise the code for where the procedure reached its conclusion, this will affect KQIs for both endoscopist and hospital level statistics.

TABLE 2: The main NQAIS-Endoscopy data quality issues each year from 2016 to 2020

	2016	%	2017	%	2018	%	2019	%	2020	%
Cases with missing endoscopist ID	200	0.11%	318	0.16%	261	0.12%	272	0.12%	651	0.36%
Cases where E1 and E2 are the same	519	0.30%	467	0.24%	411	0.19%	550	0.25%	340	0.19%
Cases with invalid endoscopist ID	11,433	6.51%	10,488	5.37%	7,319	3.43%	4,883	2.22%	1,633	0.91%
Cases with invalid organ/site codes	15	0.01%	12	0.01%	17	0.01%	45	0.02%	48	0.03%
Total Cases	175,605		195,290		213,430		219,916		179,971	

Table 2 shows the prevalence of each of the most significant data quality issues in NQAIS-Endoscopy since 2016. The table shows that by far the most common data quality issue in 2016 was “Invalid Endoscopist ID”, which impacted 6.5% of cases covered in that report. This is compared to the next most common data quality issue for that year, cases where Endoscopist 1 and Endoscopist 2 were listed as the same, on 0.3% of cases. The “invalid endoscopist ID” error usually occurs when the endoscopist has multiple profiles in the ERS or when there are multiple medical council registration numbers (MCRN) for the endoscopist in NQAIS-Endoscopy. This is a relatively simple data quality issue to rectify by mapping the missing code to the relevant clinician. Low levels of cases with missing endoscopist ID means higher accuracy in national reports regarding the number of endoscopists reaching targets and the number of procedures per endoscopist. It also allows endoscopists to see high levels of accuracy in their own statistics.

FIGURE 1: Percentage of Cases in NQAIS-Endoscopy with an invalid Endoscopist ID, 2016 to 2020

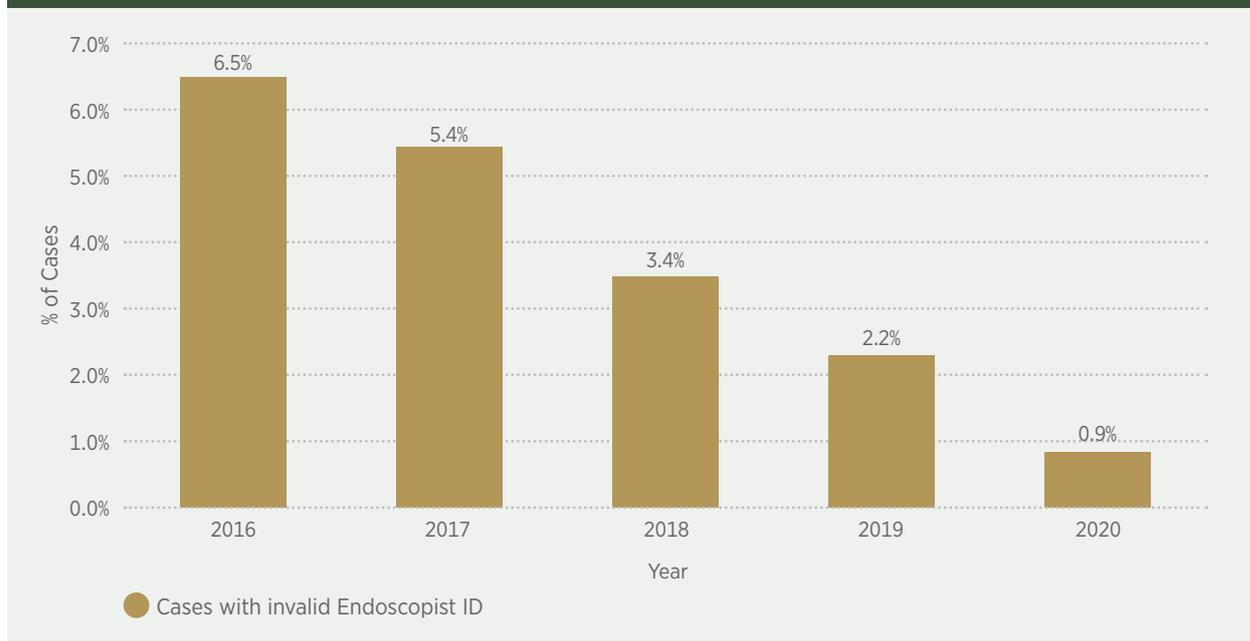


Figure 1 illustrates the increase in data quality from 2016 to 2020. The initial figure of 6.5% of procedures with an invalid endoscopist ID in 2016 decreased by 86% to 0.9% in 2020. This represents a substantial improvement in the accuracy of endoscopist level statistics presented in national data reports as well as an increase in the accuracy of local hospital reporting. The NEQI working group also believe that familiarity with the data collection systems and processes have contributed to this increase in data quality.

It is recommended that clinicians discuss how the data can be used to drive quality improvement locally and that the NQAIS-Endoscopy reports are communicated to senior hospital management and quality and patient safety teams on a quarterly basis.

Other Data Quality Issues

As the information presented in NQAIS-Endoscopy is reliant on the data that can be extracted from the ERS, data quality issues can arise in specific hospitals depending on the ERS capabilities to record certain items required for QI data analysis and whether relevant fields are mandatory.

An example of this type of data quality issue is the recording of upper GI endoscopy KQIs over the years. As reported in previous national data reports, the NEQI Programme was aware that certain units were using a version of the ERS that did not require the relevant boxes to be ticked as mandatory for the calculation of these KQIs. Given the routine nature of the KQIs for duodenal second part intubation and retroflexion/J Manoeuvre, it was clear to the NEQI working group at the time that this presented a data quality issue. As the ERSs were upgraded along with feedback from the NEQI Programme, these boxes were made mandatory and the accuracy of hospital level reporting increased.

FIGURE 2: National duodenal second part intubate rate and retroflexion rate, 2016 to 2020.

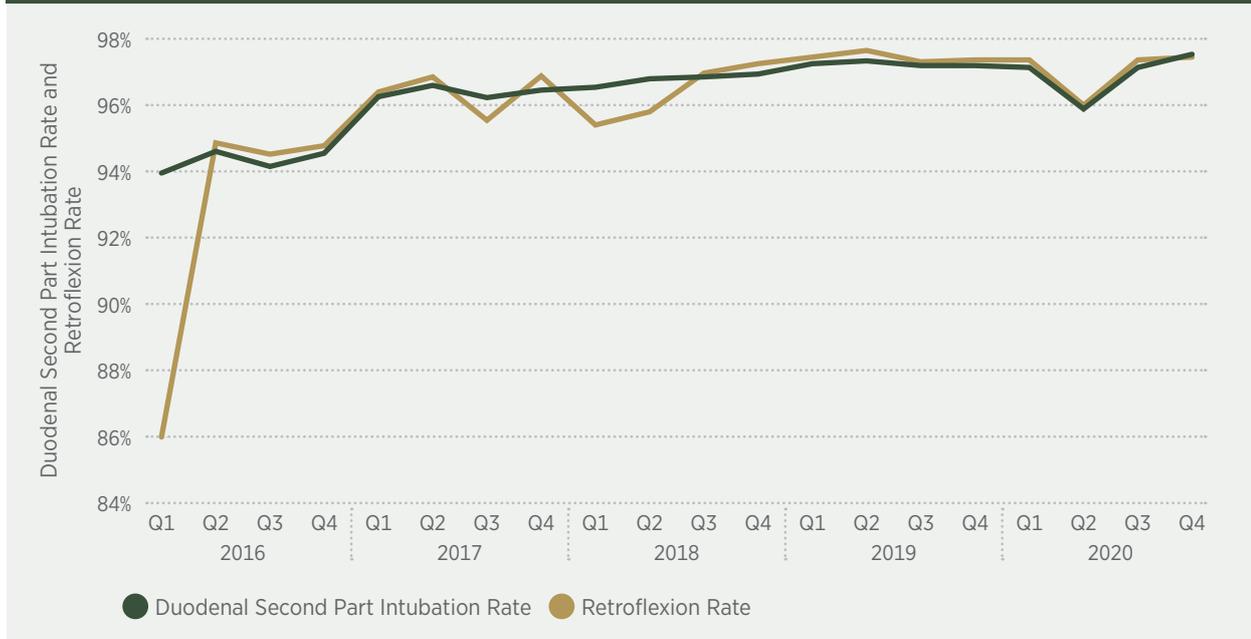


Figure 2 shows the year-on-year scores for the two upper GI Endoscopy KQIs covered in previous national data report. This graph illustrates poor data quality for both KQIs, particularly retroflexion rates which were at 86% in 2016. As familiarity with the programme increased and the quality of data inputting progressed, an increase in the scores for both KQIs is seen until 2020. The reduction in variation between the two scores would suggest that data quality for both upper GI KQIs reached a satisfactory level of accuracy at this point nationally.

It should be noted that some centres are specialist centres that would expect to see lower scores for these KQIs based on a specific case mix. However, the number of hospitals not meeting target for duodenal 2nd part intubation reduced from 13 hospitals in 2016 to four hospitals in 2020.

Example of Data Quality Considerations from Hospitals

NOTE FROM BLACKROCK HEALTH BLACKROCK CLINIC

Blackrock Clinic are aware that retroflexion may not be possible in some OGD cases as some of our patients have undergone bariatric or upper GI cancer resection surgery. The prevalence of these specialist procedures means that statistics relating to key quality indicators for upper GI procedures will be effected for a number of endoscopists in the hospital. The impact of case mix on these KQIs highlight the need to confirm statistics collected in NQAIS-Endoscopy against local hospital data

CHAPTER 4

2021 DATA OVERVIEW

4

Data collected in NQAIS-Endoscopy were significantly affected by the cyber-attack in May 2021. Although the data stored within NQAIS-Endoscopy were secure during this period, there was a significant impact on the ability to record data in the local Endoscopy Reporting Systems, and on the accuracy of the data that could be collected. During this time of significant pressure for endoscopy units, some had to resort to alternative methods of recording procedure details, such as paper-based recording.

For the 2021 year there was 471 out of a potential 560 uploads for all hospitals combined (4 uploads for each unit for each quarter that were involved in the programme). As a result, NQAIS-Endoscopy currently reports 83% data completeness levels for 2021.

Why the data cannot be used as per other years

In May 2021, many units began using alternative methods for collecting procedure related data as some electronic reporting systems could not be used. These methods included using offline software systems and paper-based records. This primarily effected the data for Q2 and Q3 in 2021, with Q2 suffering the largest impact with 22% of units unable to upload data for this quarter.

As hospitals were advised to prioritise the use of resources to address clinical record keeping, many were not in a position to also retrospectively upload QI-related data into NQAIS-Endoscopy. For those units that recorded procedure-related information on paper, these data could not be validated owing to the absence of some data points required for NQAIS-Endoscopy uploads and the risks associated with transcription of data. As a result, the validity of these data could not be guaranteed by the programme. Subsequently, comparing the 2021 data to the 2020 data would not deliver reliable or useful insights from the data contained within NQAIS-Endoscopy.

Data reliability and completeness have been restored to their previously high levels (100% completeness in previous years) from Q4 2021 onwards. Future reports will return to the hospital level statistics which were presented in previous years.

FIGURE 3: National number of colonoscopies by month, 2018 to 2021.

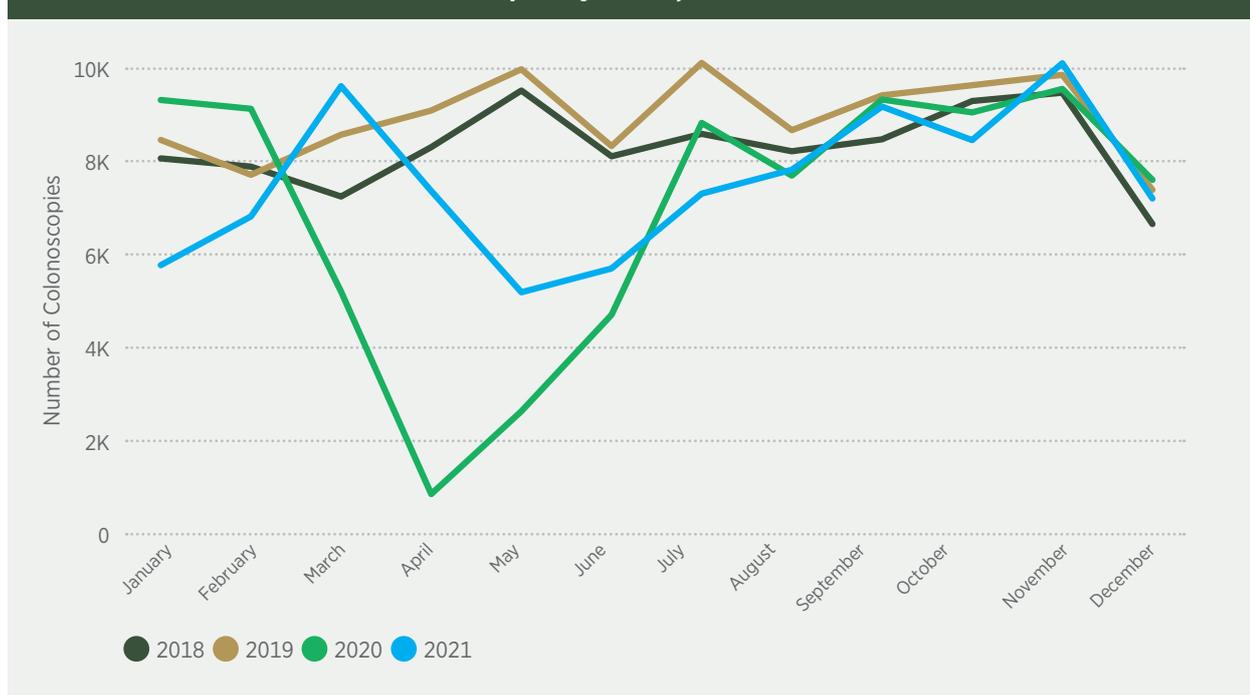


Figure 3 highlights the decrease in the number of colonoscopies submitted into the NQAIS-Endoscopy repository during the affected period between April and September (Q2 and Q3 uploads) 2021. The number of colonoscopies recorded for this period does not reflect practice as the number of procedures performed in May 2021 is represented as being a 51% decrease when compared to the same month for 2019, and despite the 2021 dataset containing four more hospitals during this period.

MAIN IMPACT OF CYBER-ATTACK ON NQAIS-ENDOSCOPY IN 2021

- Incomplete quarterly data uploads due to use of paper records and offline software during cyber-attack
- Incomplete retrospective data entry of paper records due to resource limitations
- Potential for loss of data during the transcribing of records from paper to ERS.

Endoscopy Workload Post-Pandemic

As the cyber-attack occurred in Q2 of 2021, it can be said that the data for Q1 2021 was reliable in terms of the information collected. However, Q1 2021 was also the period of the third wave of the COVID-19 pandemic, as such the number of procedures performed will be affected by this. Although this is not enough data to glean insights into key quality indicators, it can be used as a sample of workload that can be compared to previous years.

FIGURE 4: Total number of procedures in Q1, 2018 to 2021.

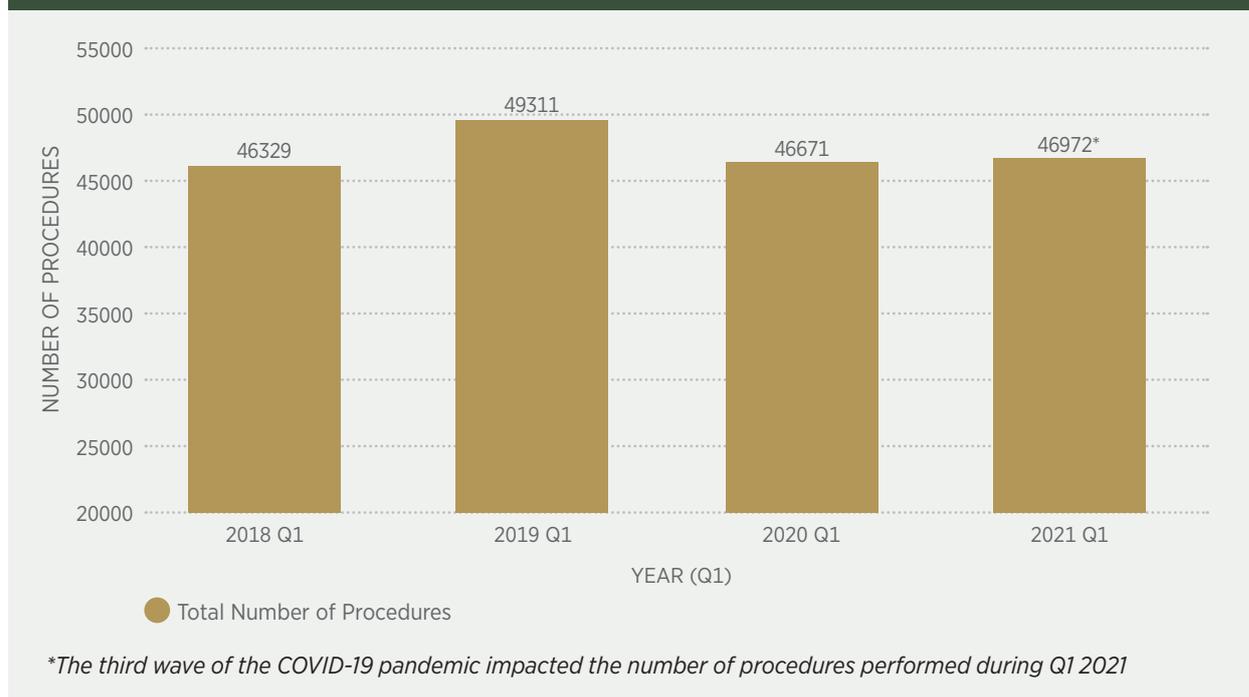
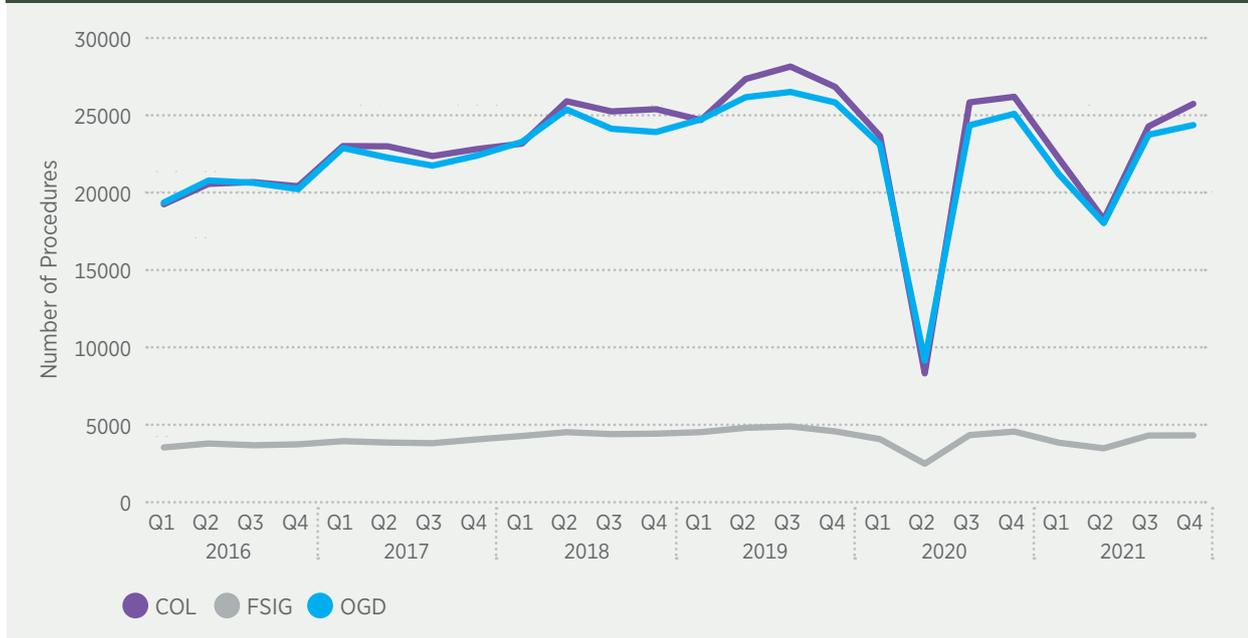


Figure 4 shows that the dataset for Q1 2021 (46 hospitals) has a similar number of procedures to Q1 2018 (39 hospitals). The number of procedures performed in Q1 2021 remained comparable to the initial pandemic affected quarter of 2020, with only 301 more procedures performed in Q1 2021. The datasets for both Q1 2020 and Q1 2021 contained 42 and 45 hospitals respectively.

It is the opinion of the NEQI working group that despite the challenges posed by the third wave of the pandemic in 2021, endoscopy units managed to restore significant levels of procedural activity in Q1 of 2021 (Figure 5).

FIGURE 5: National number of procedures by quarter for colonoscopies, OGDs and flexible sigmoidoscopies, 2016 to 2021.



CHAPTER 5

NEQI GUIDELINE DEVELOPMENT

5

The NEQI Programme was established to provide a framework that enables hospitals to drive quality improvement by using key quality indicators to compare their own scores against national averages and key quality targets.

To achieve this goal the NEQI Programme created the first set of national QI guidelines for the implementation of a QI programme in GI endoscopy. The initial key quality indicators set out in this document were created using the AGREE II Tool, which allowed the programme to analyse and rank the most appropriate key quality indicators based on a number of metrics. The result of this process led to the publication of Version 1 of the NEQI Guidelines which provided a support tool for hospitals to implement the programme locally.

As the first guidelines were created prior to the full roll out of the required IT systems (Endoscopy Reporting Systems and NQAIS-Endoscopy) they were based on the accuracy and relevance of the data available at the time.

Table 3 below shows the evolution of the QI Guidelines since the NEQI programme commenced along with the key changes contained within each version. It is envisioned that the QI Guidelines will continue to evolve as data collection and reporting tools are developed to attain maximum utilisation of the available data.

TABLE 3: Evolution of NEQI Guidelines from 2011 to present.

YEAR	VERSION	UPDATE
2011	V1	Original guidelines
2012	V2	Updated to reflect the requirements specification for the ICT solution of the programme
2014	V3	Updated to reflect advanced surveillance models for Barrett's oesophagus, adenomas, ulcerative colitis and the addition of family risk groups.
2016	V4	Updated to reflect new number of procedures guidance.
2017	V5	Updated to align these guidelines with the quality assurance guidelines of BowelScreen
2021	V6 (current)	Full revision of guidelines. Distinguishing between KQIs where accurate data are available and recommendations to be used locally where NQAIS was in place. The recommended sedation doses for fentanyl were split based on age category. Comfort score updated to be more in line with clinical practice.

CHAPTER 6

FUTURE KQIS AND DATA DEVELOPMENTS

6

As the NEQI Programme continues to evolve, it will introduce new KQIs across new procedure types. Further development of the data collected in NQAIS-Endoscopy will also facilitate more in-depth data analysis and lead to valuable insights in the process.

Upcoming Developments

Endoscopic Retrograde Cholangiopancreatography (ERCP)

The next procedure type data to be collected in NQAIS-Endoscopy will be ERCP. This procedure is used to diagnose and treat problems in the liver, gallbladder, bile ducts and pancreas. It combines X-ray and the use of an endoscope. As this procedure is relatively low volume in comparison to other endoscopic procedures such as colonoscopies or OGDs, it is likely that KQIs will not follow the standard format of a percentage of procedures with a quality standard made. As the procedure is performed in a low number of hospitals by few endoscopists, it is likely that this method of calculation would be easily skewed by low numbers.

The programme aims to collect only overall volume of procedures performed, similar to how flexible sigmoidoscopies are currently reported on. This will allow the programme to establish a vital first step by accurately providing how many hospitals and endoscopists are currently providing ERCP services. Providing this background to the data will contribute to increased effectiveness for any future KQIs.

ERCP will not be reported on nationally in upcoming national data reports until data are mature and all aspects of data protection have been adhered to. Given the low numbers, it is likely that this KQI will be presented by hospital group rather than individual hospital.

Endoscopic Ultrasound (EUS)

Once ERCP has been successfully collected by the NEQI Programme, the programme will begin the process of bringing endoscopic ultrasound (EUS) into the system. EUS procedures examine the inside of the digestive tract. It can detect pancreatic cancer, colon cancer, as well as cancer that has spread to other parts of the body. EUS can also detect inflammatory bowel disease (IBD), pancreatitis and other causes of abdominal pain.

Further Enhancements to Data Analysis

The data displayed in NQAIS-Endoscopy, and subsequently in local and national reports, are based on data exported from each hospital's local Endoscopy Reporting System (ERS). As such, the depth of analysis is determined by what data can be collected from the system.

Since the programme began reporting on mature data in 2016, it has become apparent that some minor adjustments to the ERSs will facilitate the collection of important information while also providing more in-depth understanding of the statistical findings currently reported on.

Analysing Data on Trainee/Non-Trainee basis

The ability to analyse data on a Trainee and non-Trainee basis will allow more specific analysis of all endoscopist level statistics. Currently, there is no reliable way to differentiate between these two groups in NQAIS-Endoscopy. If this feature was to be introduced, it would allow more reliable analysis of what cohorts are and are not meeting targets for KQIs.

For example, between 30% and 40% of endoscopists are consistently not meeting the minimum target for caecal intubation. To date, there has been speculation as to the potential make-up of this group, which is potentially comprised of a high proportion of trainees. However, the NEQI working group have been unable to say with confidence whether or not this is correct. It is expected that Trainees have lower KQIs than established endoscopists. The ability to split data along these lines would give a more accurate picture of both Trainee non-Trainee KQI scores.

Inpatient/Outpatient

It is expected that the level of difficulty for a procedure involving an inpatient will be higher than those involving an outpatient. The ability to split data along inpatient and outpatient lines will allow additional factors to be accounted for in data analysis. Currently, NQAIS-Endoscopy reports on all procedures combined, and as such is unable to provide much needed insight into units or periods of time that result in more inpatient procedures than usual. This was the case during the pandemic related restrictions. During this time an increase in the proportion of inpatient procedures relative to outpatient procedures was reported. The ability to filter data along these lines will provide a more accurate and relevant picture, allowing caseloads to be more accurately compared.

Screening / Symptomatic Endoscopies

Given the nature of screening and symptomatic endoscopies, and the demographics involved in each, the resulting KQIs for these groups should be slightly different. The targets associated with these KQIs could vary due to the difference in the type of patient involved in each procedure. Currently NQAIS-Endoscopy does not differentiate between these two types of procedures. Future ability to analyse statistics based on whether they were screening or symptomatic procedures will provide more accurate insights for KQIs.

CHAPTER 7

IMPACT OF NQAIS- ENDOSCOPY DATA

7

The NEQI programme is collating some of the most real-time endoscopy data available in the Irish healthcare service. The benefit of presenting such real-time findings is that participating units have the ability to access NQAIS-Endoscopy any time, to compare their own performance in relation to certain targets against the national aggregate and to develop an action plan to address any issues. Access to reliable and accurate data is vital when using these data to inform decision-making on the service being provided.

Since the outset of the NEQI programme, participating units have dedicated considerable time and effort to the accurate recording of data, with high levels of data completeness maintained from the start. Over the years considerable improvements to the endoscopy service and patient care have been achieved by using NQAIS-Endoscopy data.

Identification of areas in need of improvement

NQAIS-Endoscopy has been consistently used to identify areas in need of improvement across the country. Reports generated from NQAIS-Endoscopy, both local and national, allow hospitals and individuals to compare their KQIs against targets as well as national averages. This allows hospitals to investigate their scores and determine where low scores may reflect areas in need of improvement and where they may reflect a specific case mix or data quality issue.

Bowel preparation scores have been consistently below the minimum target since the programme's inception. However, since 2020 these scores have begun to improve. The NEQI working group believe this may be related to the use of nurse triaging during the pandemic. As nurse triage is continued in some hospitals, NQAIS-Endoscopy data will allow us to measure the impact of nurse triaging on bowel preparation as well as other KQIs.

Use of data in JAG accreditation

The current Joint Advisory Group on Gastrointestinal Endoscopy (JAG) accreditation scheme was established in 2005 and along with the Global Rating Scale (GRS), has supported endoscopy services across the UK and Republic of Ireland to focus on standards and identify areas for development. JAG accreditation is awarded to high-quality gastrointestinal endoscopy services.

NQAIS-Endoscopy data is now also central to the accreditation of endoscopy units by the Joint Advisory Group. In order to reach the standard needed for accreditation each unit must be participating in the NEQI Programme.

Use of data in Endoscopist Training

Since 2021, NQAIS-Endoscopy data have been utilised by the National Training Committee for endoscopist training purposes. Below is a note from Prof Glen Doherty, Committee Chair & Training Lead, HSE Acute Operations Endoscopy Programme regarding the importance of NQAIS-Endoscopy data in GI endoscopy skills training.

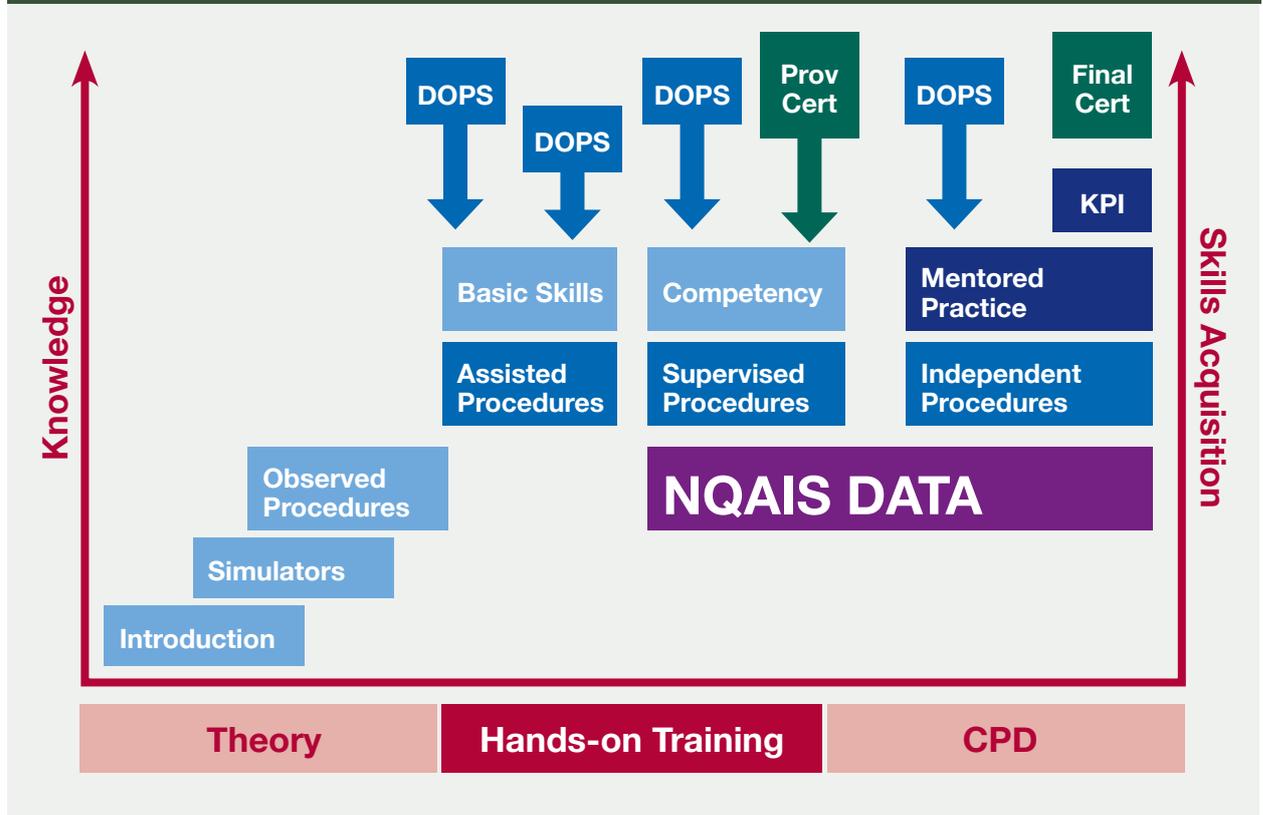
The National Endoscopy Training Committee; an initiative of the HSE Acute Operations Endoscopy Programme

In 2021, the National Endoscopy Training Committee published a Competency Model for Skills Training in GI Endoscopy in Ireland. The competency model is an outcomes-based approach to skills training and certification upper and lower GI endoscopy. The competency model has been adopted by gastroenterology and surgical specialty training programmes in Ireland. This competency model places NQAIS-Endoscopy data firmly at the heart of skills training in GI endoscopy. At each stage of training, review of NQAIS-Endoscopy reports are a key tool for monitoring progress in training. To obtain certification to perform endoscopy independently, Trainees must demonstrate their competency using NQAIS-Endoscopy data, as well as undergoing regular DOPS evaluation.

The National Endoscopy Training Committee is also responsible for the Skills Training for Endoscopic Procedures (STEPS) Programme. The aim of the STEPS Programme is to bring all GI endoscopy training courses in the Ireland under one umbrella, with standardised content and learning objectives. The National Endoscopy Training Committee is working with both the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland to develop and deliver STEPS courses for physicians, surgeons and nurse endoscopists working in GI endoscopy.

To learn more and to download publications from the HSE Acute Operations Endoscopy Programme please visit www.hse.ie/eng/about/who/acute-hospitals-division/clinical-programmes/endoscopy-programme/

FIGURE 6: Summary of pathway to competency in GI endoscopy - Competency model for skills training in Gastrointestinal Endoscopy in Ireland.



Establishment of Group Leads for Endoscopy

Group leads for endoscopy in public hospitals were established in 2018. The group leads have access to NQAIS-Endoscopy at a group level, providing another layer of data review that will benefit endoscopy services and ultimately patient care.

Each year group leads receive individualised hospital group level national data report information which can be brought to senior management meetings.

Data Sharing

The NEQI Programme, along with the National Specialty QI Programmes for Histopathology and Radiology, have recently reviewed their information governance procedures. This move has facilitated further utilisation of NQAIS-Endoscopy data which was not previously possible. NQAIS-Endoscopy data can now be shared once approved by the programme's governance with individuals or organisations on a once off or on an ongoing basis.

Link with Acute Operations Endoscopy Programme

As of 2022, the Acute Operations Endoscopy Programme has been provided with total numbers of procedures for public hospitals on a month-on-month basis, with data being updated quarterly. This data provides insight which can inform decision making in hospitals on a routine basis. Previously data could only be used once published in the national data report, this could often be 18 months behind the current date.

Research - Cancer Care in Ireland 2020, The Impact of the COVID-19 Pandemic

The NEQI Programme, along with the Histopathology QI and Radiology QI Programmes participated in a collaboration with the Faculty of Pathology (RCPI), the National Cancer Control Programme (NCCP) and Prof Mark Lawler, Associate Pro-Vice Chancellor and Professor of Digital Health, Queens University Belfast; Scientific Director DATA-CAN (Health Data Research, UK) to investigate the impact of the COVID-19 pandemic on cancer services in Ireland.

An initial report entitled "Deploying Data-Driven Intelligence to measure the impact of COVID-19 on cancer care and cancer patients", in December 2020, a second report entitled "Cancer Care in Ireland 2020, The Impact of the COVID-19 Pandemic" was published in December 2021 with additional Radiology QI and NCRI data. This was a comprehensive study led by the Faculty of Pathology, RCPI and one that has identified the value of the NSQI programmes data collection and analysis in assessing the significant impact on diagnoses in cancer services. The full report can be accessed on the RCPI website. <https://rcpi-live-cdn.s3.amazonaws.com/wp-content/uploads/2022/01/Cancer-Care-and-Covid-in-Ireland-in-2020-Final.pdf>

CHAPTER 8

KEY QUALITY INDICATORS FROM 2016 TO 2020

8

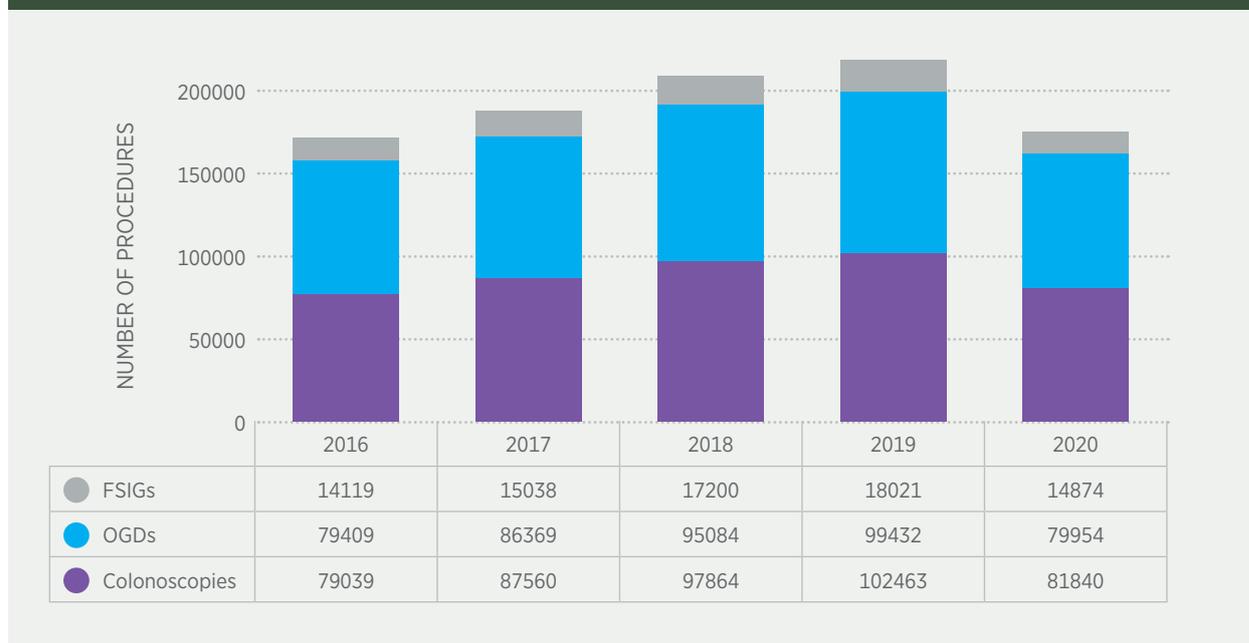
Using the key quality indicators (KQIs) set out in the National GI Endoscopy Quality Improvement Guidelines (V.6) it is possible to track sites ability to meet key quality targets across a range of areas. Although this annual national data report shows a brief comparison to the previous year, this section will go into more depth and analysis of the KQI findings from 2016 to 2020.

In previous reports, the number and percentage of endoscopists or hospitals meeting target was the primary focus. It is the opinion of the NEQI working group that, although this is useful at a high level, it does not accurately reflect all the improvements which have taken place in endoscopy units since 2016.

A more suitable method of analysing these improvements is to look at the spread of findings over the years. This reveals if the number of hospitals and endoscopists meeting KQI targets has increased overall, including those hospitals reporting lower KQI scores, or if the increase in national KQI figures is driven by a small number of participating hospitals with disproportionately high KQI scores.

These statistics should be interpreted in the context of the number of hospitals and endoscopists who are participating in the NEQI Programme and subsequently contributing data to the national data set. Each year since 2016 there has been an increase in the overall number of procedures and endoscopists until 2020 when the effect of pandemic-related restrictions can again be seen.

FIGURE 7: National number of each procedure type, 2016 to 2020.

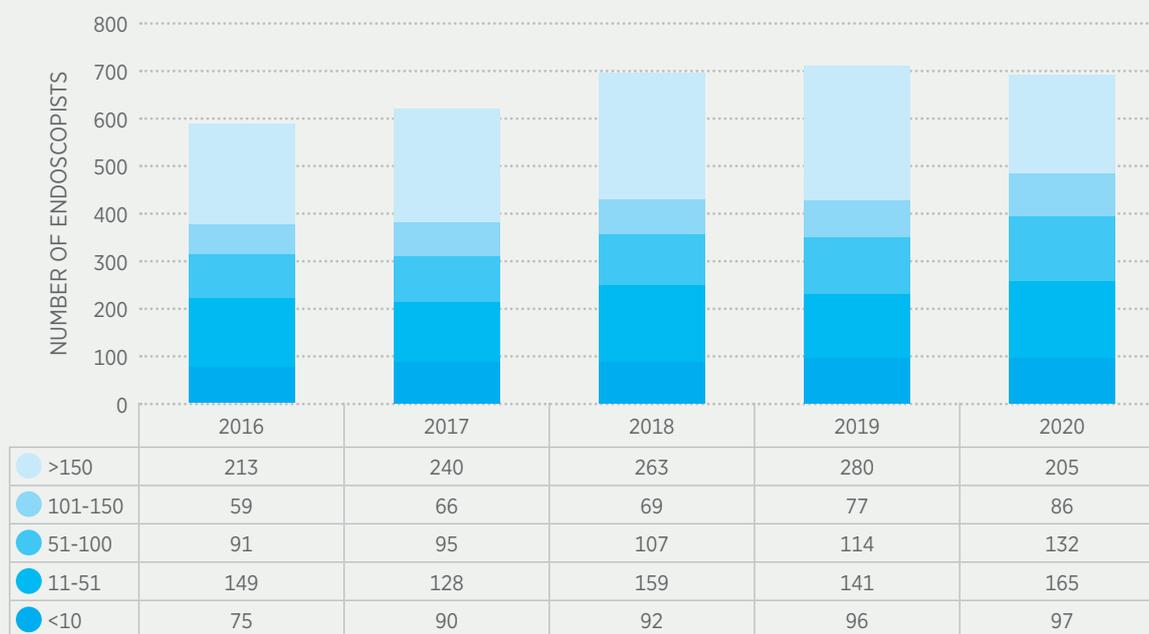


The number of procedures collected in NQAIS-Endoscopy increased each year from 2016 to 2019, with a 29% increase seen between these two years. **Figure 7** reveals that the percentage of each procedure type performed remained consistent throughout the increase in total number of procedures. In 2020, data show a dramatic reduction in the number of procedures performed as a result of restrictions relating to the COVID-19 pandemic. The number of procedures performed in 2020 was similar to that of 2016 despite the dataset containing nine more hospitals.

The impact of the COVID-19 pandemic was analysed in the 6th national data report, which can be found on the [RCPI website](#).

The NEQI working group believe that increasing the percentage of flexible sigmoidoscopies relative to the overall number of procedures can positively impact patient waiting lists in the future.

FIGURE 8: Total number of endoscopists per year by endoscopy activity category, 2016 to 2020.



Endoscopist Activity Category: ● <10 ● 11-51 ● 51-100 ● 101-150 ● >150

The endoscopy activity category shows each endoscopist in a category based on the numbers of procedures they performed for that calendar year.

Similar to the trend shown in **Figure 7**, the number of endoscopists performing procedures recorded in NQAIS-Endoscopy was increasing until 2019 (Figure 8). The reduction in the number of endoscopists contained within the data set in 2020 compared to 2019 was 3%, less than reduction in number of procedures.

Figure 8 also highlights that the number of endoscopists performing over 100 colonoscopies saw a minor yet steady increase year on year from 2016 to 2020. However, when the additional hospitals contributing to the dataset annually are accounted for, this could explain this steady increase.

The largest increase in the endoscopist procedure activity category is seen for those who performed 51 – 100 procedures (Figure 8). This group increased from representing 15.5% of the dataset in 2016 to 19.3% in 2020.

RECOMMENDATION

The NEQI working group recommend that protected time is afforded to clinicians in order to carry out QI activities. The working group acknowledge that due to the increase in volume and complexity of cases it is now more vital than ever that protected time if guaranteed. This will facilitate the review of processes and contribute to quality improvements locally that will positively impact patient care.

Key Quality Indicators Year on Year

In order to assess the change in KQIs for hospitals participating in the NEQI Programme from 2016 to 2020 the NEQI working group have selected the KQIs for which there has been the most accurate data since 2016 and are also most clinically relevant. This report focuses on caecal intubation rate, polyp detection and bowel preparation rates for this reason. Caecal intubation rates and polyp detection rates are analysed on both a hospital and endoscopist basis whereas bowel preparation is analysed at a hospital level only.

To facilitate this analysis the report utilises two kinds of whisker and box plot graphs. The first of these graphs is used to show hospital level progress over time. The second graph style, while including all the information provided by the first graph, provides additional context on the number of procedures performed by each endoscopist. The number of procedures is represented by the size of the dot in the graph, with the larger dot representing higher number of procedures. This allows to further highlight the cohort who are not meeting target.

A full explanation of whisker and box plots is provided below to assist in the interpretation of the analysis in this section.

Whisker and Box Plots

The box in this style of chart represents the middle 50% of scores for a population. The top and bottom of the box represent the upper and lower quartile respectively (75% and 25%).

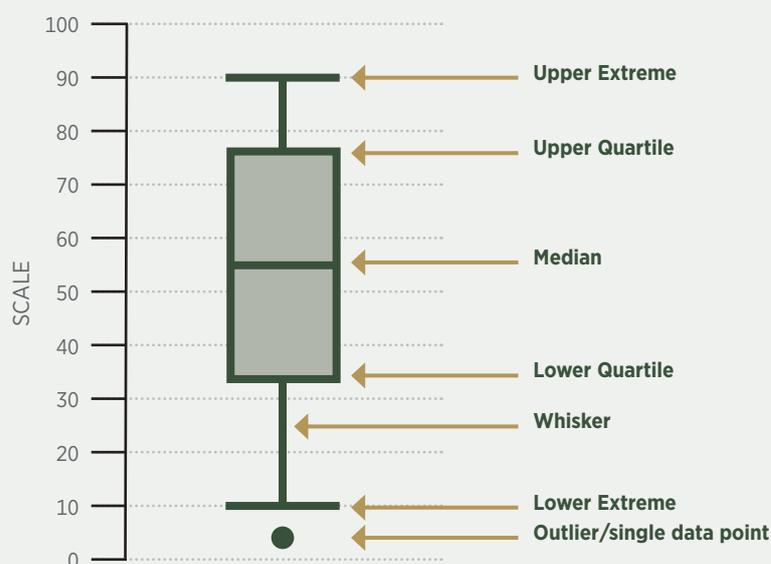
The line in the box represents the median for this KQI, this is the middle or central score.

The upper and lower extremes are 1.5x the interquartile range. Points that fall outside of these extremes can be said to be outliers.

The benefit of using this graph for year-on-year analysis is that it allows us to see if the middle 50% has changed over time.

Over time the box would ideally get smaller (reduction in variation) and move up the Y axis (improvement in performance). We would also hope to see a reduction in the number of outliers. This would represent a potential all over quality improvement in the relevant KQI.

FIGURE 9: The different elements used as part of a whisker and box plot chart



Caecal Intubation Rates

Caecal intubation rate (CIR) is one of the key quality indicators for colonoscopy. CIRs are affected by several factors including age, sex, low BMI, bowel cleansing, sedation, diverticular disease and general health status. It is expected that every unit has a policy stating that endoscopists and endoscopy nurses in the procedure room should agree that the relevant landmark has been reached before recording caecal intubation in the ERS.

Key Quality Indicator:

- Number of colonoscopies where the terminal ileum / caecum / anastomosis has been reached, expressed as a % of total colonoscopies performed per Endoscopist

Key Quality Target:

- **Minimum Target:** 90% of colonoscopy cases should reach the terminal ileum/caecum or anastomosis (adjusted only for obstructing lesions)
- **Achievable Target:** 95% of colonoscopy cases should reach the terminal ileum/caecum or anastomosis (adjusted only for obstructing lesions)

FIGURE 10: Hospital caecal intubation rate comparing the year-on-year performance of all hospitals combined, 2016 to 2020.

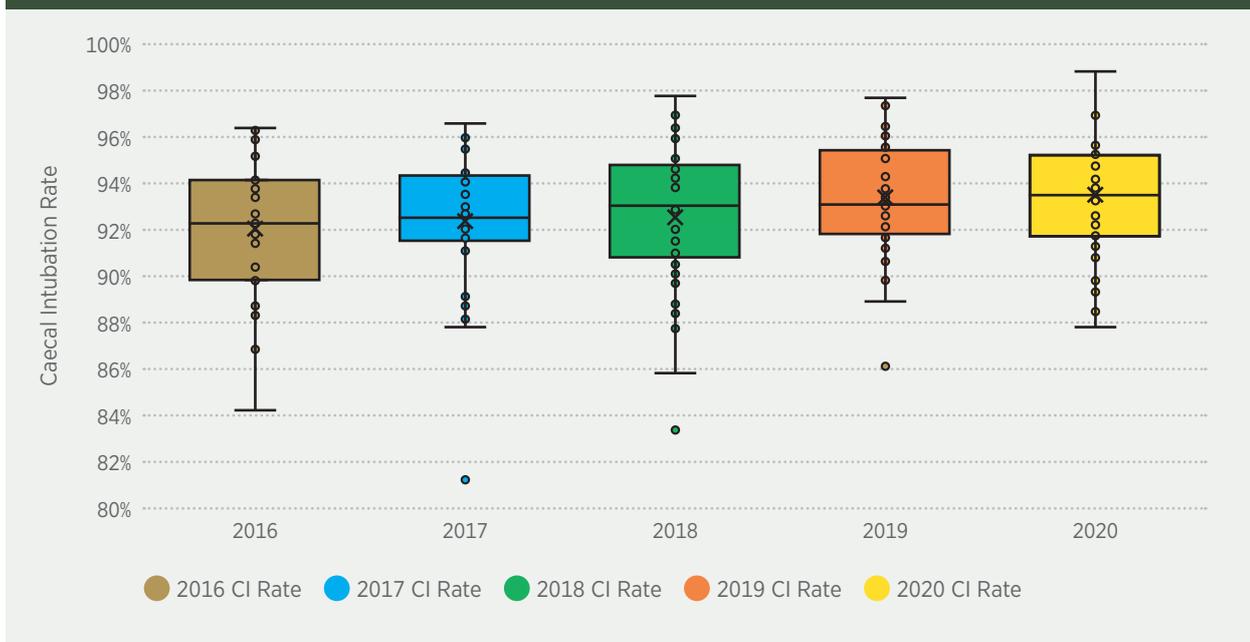


Figure 10 shows each hospital's caecal intubation rate from 2016 to 2020 on the y-axis with each year represented by a colour along the x-axis. Each dot represents hospitals' scores for a particular year. The box represents the middle 50% of hospitals, the size of this box indicates how much variation there is between hospitals. The lower end of this box is the lower quartile, and the central line represents the median. The movement of these boxes over time will indicate how scores have changed for the hospitals as a grouped entity. Improvement in hospitals' scores would be reflected by the box becoming smaller each year and progressing up the y-axis. We would also hope to see a reduction in the number of dots outside the bottom whisker, this would represent a reduction in outliers.

Each year from 2016 to 2020 an increase in the median hospital score can be seen, from 92.3% in 2016 to 93.5% in 2020. A staggered increase can be observed in the lower and upper quartiles

across these years, with a slight reduction in 2020, potentially due to the pandemic. A reduction in the number of outliers can be seen between 2017 and 2020. The lowest scoring hospital in 2020 had a 3.6% higher score than the lowest scoring hospital in 2016.

Potential reasons for the outliers seen in 2017, 2018 and 2019 include some data coding errors whereby left colonoscopies were not being coded as flexible sigmoidoscopies. As caecal intubation is not required in FSIG or left colonoscopies, this reduces the caecal intubation rate significantly for hospitals where this coding was taking place.

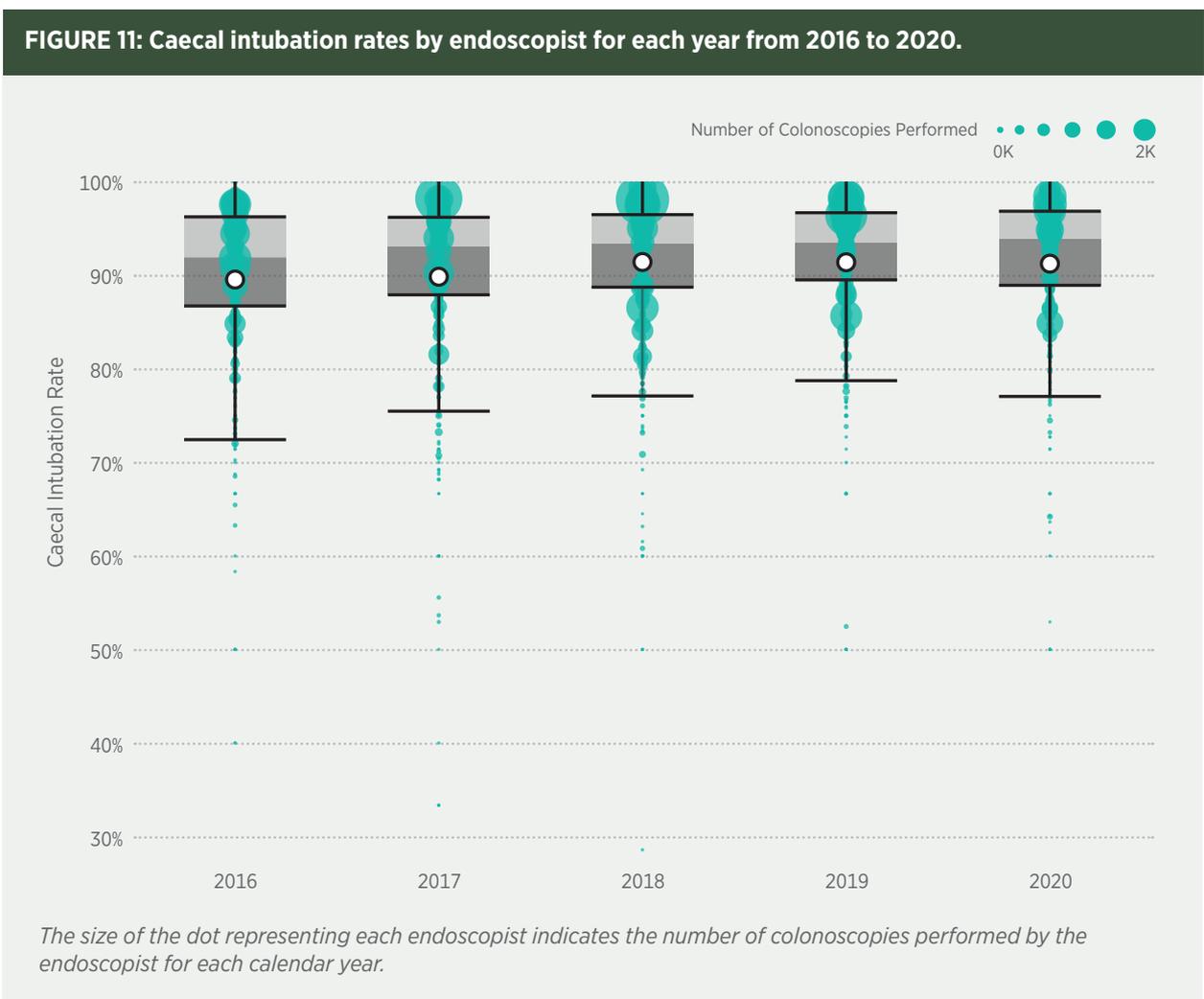


Figure 11 illustrates the caecal intubation rate for individual endoscopists; however, this figure also provides additional context in the form of the number of colonoscopies performed per endoscopist. This is indicated by the size of each dot, with the smaller the size corresponding to the smaller volume of procedures. As per the legend in the top right of the chart, the smallest of the dots represents one procedure with the largest of the dots representing a figure that is over 1600 procedures.

The data shows that the lowest caecal intubation rates each year relate to endoscopists with very low numbers of procedures, generally under five colonoscopies (Figure 11). While this highlights the effect of low number of procedures on KQI calculations, the NEQI working group also believe the graph highlights that inexperienced people should not be performing colonoscopies unsupervised. Where there are endoscopists with a larger number of colonoscopies performed, indicated by larger circles, the NEQI working group believe that some of these instances may be related to endoscopists who specialise in procedures where the intention is not to reach the caecum.

Polyp Detection Rate

Internationally accepted guidelines on colonoscopy performance indicators recommend monitoring direct or proxy markers for detection of suspicious lesions including polyps and adenomas. Due to the inability to link endoscopy and histology reporting systems at this time, the NEQI Programme measures polyp detection rates rather than measuring direct adenoma detection rates. International standards suggest that polyps can be expected in at least 20% of cases.

Key Quality Indicator:

- Number of colonoscopies with polyps detected expressed as a percentage of total colonoscopies per Endoscopist

Key Quality Target:

- $\geq 20\%$ of all colonoscopies should have a polyp(s) detected

FIGURE 12: Hospital polyp detection rate comparing the year-on-year performance of all hospitals combined, 2016 to 2020.

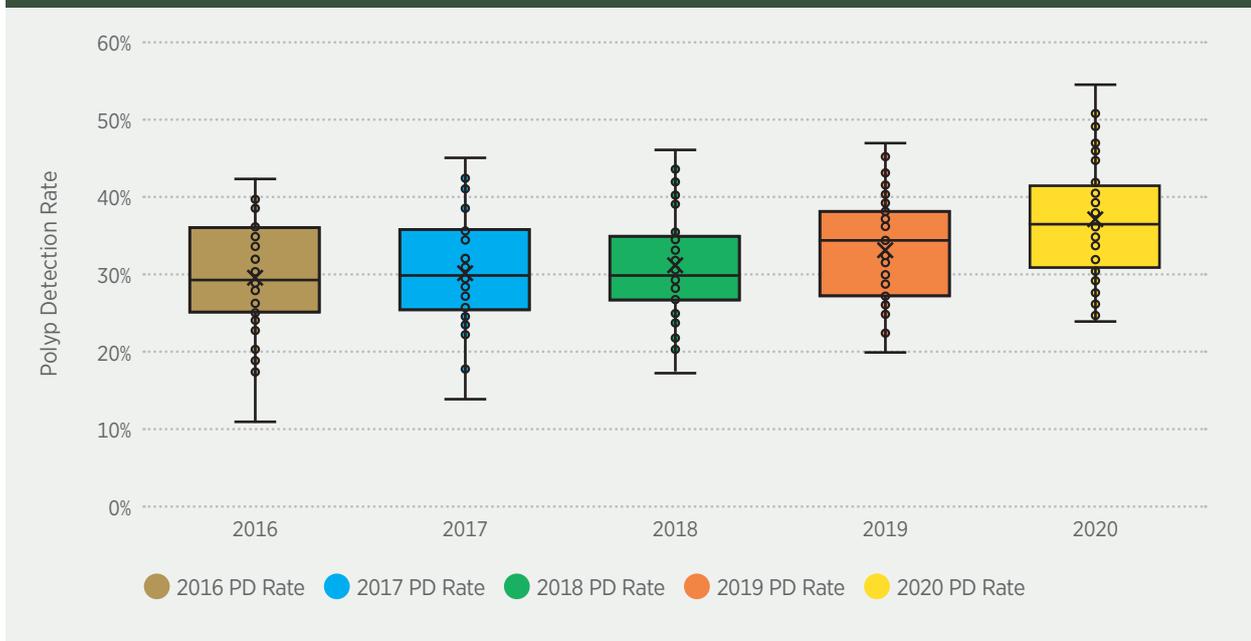


Figure 12 shows the spread nationally of hospital polyp detection rates from 2016 to 2020. Throughout the years a gradual increase in polyp detection rates can be seen for all hospitals with between 2016 and 2019 before a significant increase during 2020. It is likely that the increase during 2020 was related to the procedure case mix performed during the pandemic related restrictions. Although NQAIS-Endoscopy does not currently have the ability to split the data based on inpatient and outpatient status, the NEQI working group expect that the proportion of inpatient colonoscopies relative to the overall number of colonoscopies performed will have increased significantly during 2020. This is due to the fact that elective day case procedures for outpatients were impacted negatively during this time, as a result they will not account for the same high volume of procedures as in previous years. The NEQI working group suggest that the accelerated increase in hospitals' polyp detection rates could relate to more targeted, symptomatic and consultant delivered colonoscopies that were performed during 2020 as a result of the pandemic.

The lowest and highest performing hospital in 2016 and 2020, recorded a 7% and 11% increase respectively. The median national score has increased yearly, from 29% in 2016 to 36% in 2020.

FIGURE 13: Polyp detection rates by endoscopist for each year from 2016 to 2020.

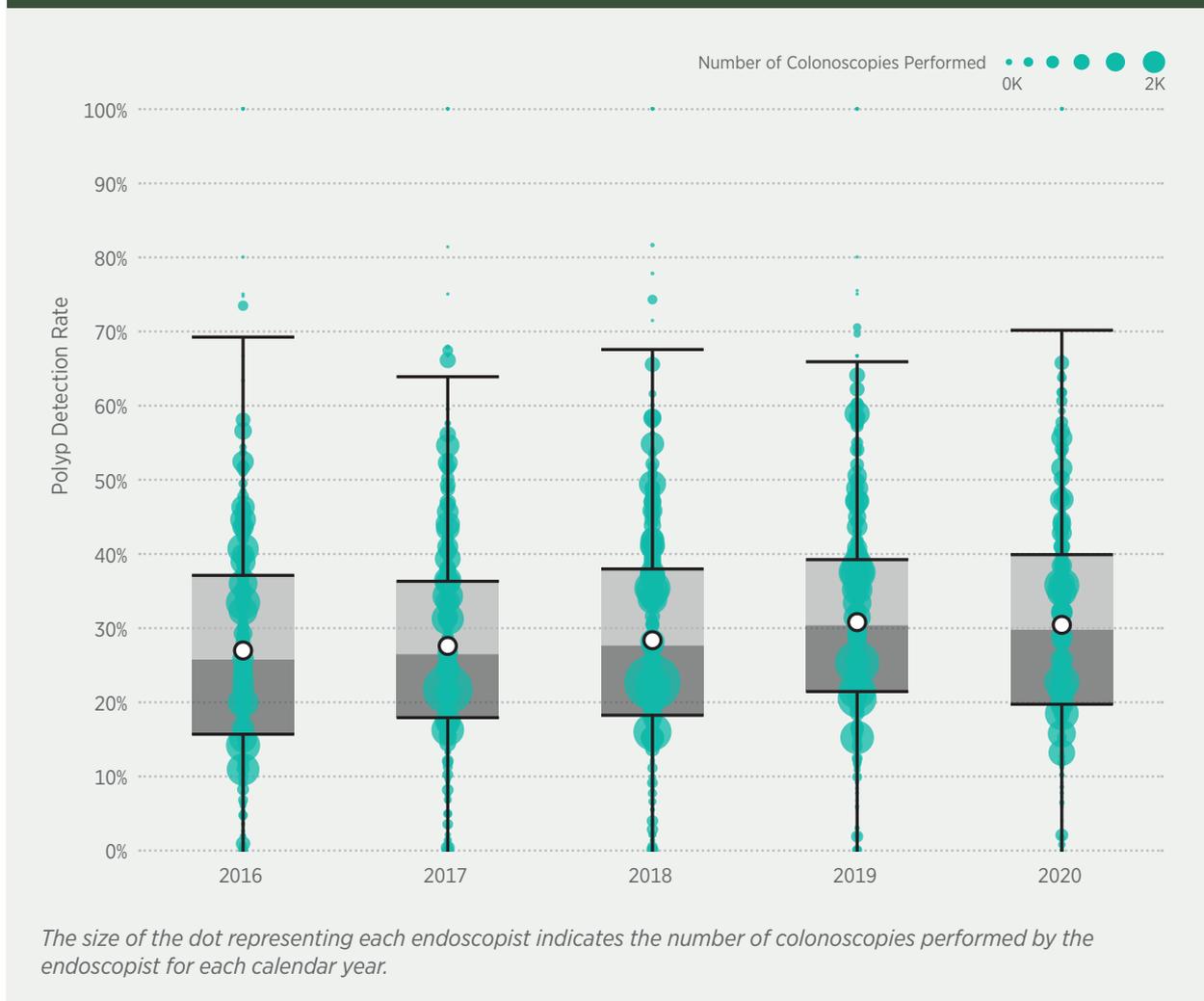


Figure 13 illustrates the combined polyp detection rates and number of colonoscopies per endoscopist yearly from 2016 to 2020. Endoscopist's polyp detection rates are indicated by the circle's position on the y-axis, each circle represents an individual endoscopist. The number of colonoscopies performed by the endoscopist during that year across all hospitals that they have worked in is indicated by the size of each circle.

Similar to **Figure 12**, a gradual increase in the lower quartile of endoscopist scores can be seen, along with an increase in the median and a slight increase in the upper quartile between 2016 and 2020.

There is a slight decline in the endoscopists' polyp detection rates, along with an increase in the spread of scores, overall, in 2020. It is the opinion of the NEQI working group that this may have been due to the decrease in the number of endoscopists performing colonoscopies during the 2020, which saw a steep decline in the overall numbers of colonoscopies performed and a change in the demographics and case mix of patients being seen at this time.

Bowel Preparation Score

Effective bowel preparation is critical to ensure a detailed visual examination of the bowel. To date no single bowel preparation for colonoscopy has emerged as consistently superior over another. Good bowel preparation supports improved polyp detection and caecal intubation. Poor bowel preparation is associated with failure to reach the caecum and hinders the detection of lesions.

Key Quality Indicator:

- Total number of colonoscopies with adequate and excellent bowel preparation scores, as defined below, expressed as a % of all colonoscopies performed

Key Quality Target:

- Minimum: Bowel preparation described as excellent or adequate in $\geq 90\%$ of colonoscopies
- Achievable: Bowel preparation described as excellent or adequate in $\geq 95\%$ of colonoscopies

Bowel Preparation Definitions

Excellent: No or minimal solid stool and only clear fluid requiring suction

Adequate: Collections of semi-solid debris that are cleared with washing/suction

Poor: Solid or semi-solid debris that cannot be cleared

FIGURE 14: Bowel preparation rates per hospitals, comparing the year-on-year performance of all hospitals combined, 2016 to 2020.

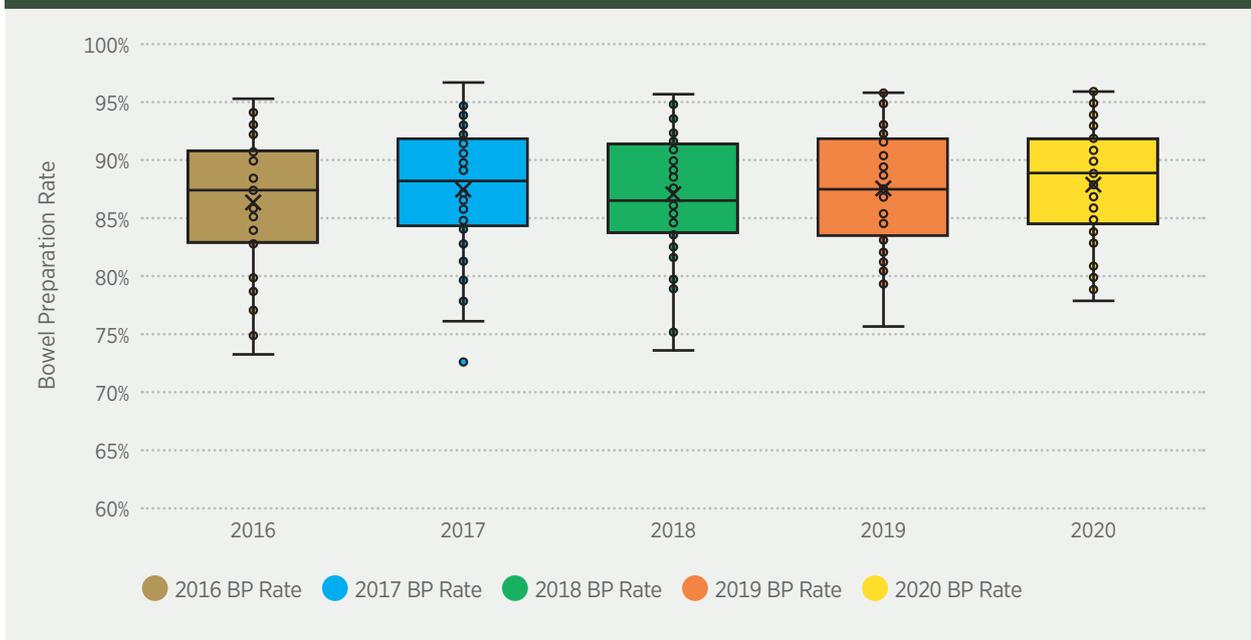
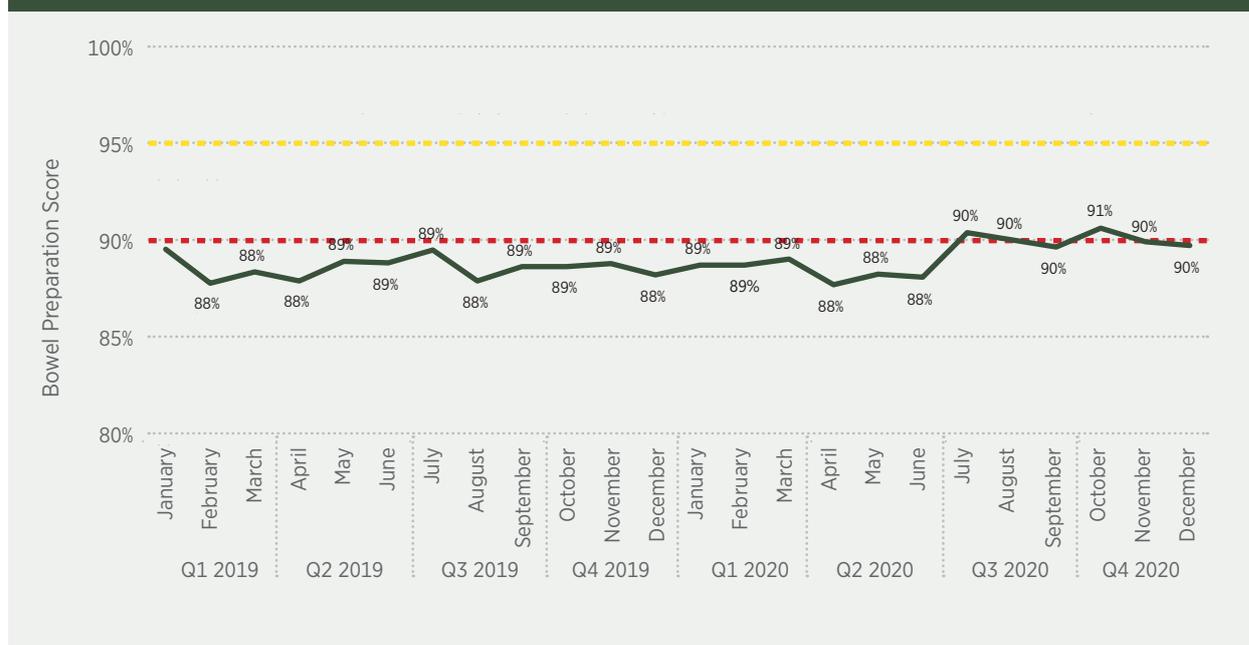


Figure 14 illustrates the bowel preparation rates for hospitals participating in the NEQI Programme since 2016. Unlike previous graphs in this section of the report, Figure 13 does not reflect a gradual improvement in bowel preparation scores over time. In 2016, 2017 and 2018 between three and five hospitals scored 80% or below for this KQI, well under the minimum target of 90% of cases with a bowel preparation score of excellent or adequate.

However, **Figure 14** shows an increase in bowel preparation rates for nearly all hospitals in 2020, with the national median being at its highest since national data reporting began, at 89% for that year.

The NEQI working group believe that this increase in 2020 may be related to the introduction of nurse triaging during the pandemic. **Figure 15** shows the national bowel preparation score during 2019 and 2020. This appears to corroborate the working group opinion, that steps taken during the pandemic, predominantly the introduction of nurse triaging, had a significantly positive impact on bowel preparation.

FIGURE 15: National bowel preparation rate from 1st January 2019 to 31st December 2020.



CHAPTER 9

NEXT STEPS FOR THE NEQI PROGRAMME

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Over the coming years the NEQI Programme aims to build on the progress made to date and to further achieve the programme's goals by enhancing the IT systems used for data collection and interpretation and how the data are used by participating sites:

1. Focus on Patient Care

A focus for the future will be utilising NQAIS-Endoscopy data in ways that maximise a positive impact on patient care. This focus will be key to the programme's objectives over the coming years.

2. Moving From Quality Assurance to Quality Improvement

During the first years of the NEQI Programme the NQAIS-Endoscopy data was primarily used for quality assurance (QA) purposes. This means that data were used to help participants measure their performance and provide them with the systems required to attain a minimum standard for quality in endoscopy.

Now that the NEQI Programme has been established in 47 units, and the data collected are at a reliable level, the programme aims to further support participants in using the NQAIS-Endoscopy for QI purposes. This will mean identifying areas in need of improvement, taking baseline measurements using the data, implementing a quality improvement initiative, and re-auditing the area once the initiative is complete. Although this is currently taking place in some units it is the programme's aim to further develop this utilisation of the data for all participants.

Useful resources for carrying out QI initiatives can be found in the HSE National Quality and Patient Safety Directorate's **Prospectus of Education and Learning Programmes** and on the **RCPI Quality Improvement Website**. The NEQI working group and the programme management team are happy to assist in the development of any new initiatives.

FIGURE 16: Example of Quality Assurance Versus Quality Improvement



RCPI QI Learning offers bespoke training to organisations or hospital groups that could include onsite course delivery to specific staff or clinical areas, or co-designed collaborative programmes that address key priority areas for many teams at once. Intensive bespoke training can be delivered to many people in one institution to expand quality improvement capability across the board.

Collaborative programmes are short-term learning programmes that bring together multiple teams from similar settings to work alongside each other in implementing similar change initiatives. The delivery of a collaborative is co-designed and can be in-person, virtual or blended and typically runs for 6-18 months.

For example, in partnership with the National Stroke Programme, the Acute Stroke Collaborative set out to reduce the time from patient arrives at hospital with FAST positive symptoms (stroke symptoms) to decision on treatment time. Two cohorts were run with one team achieving a significant 47% reduction in patient arriving to treatment time.

Information on courses available can be found here
<https://courses.rcpi.ie/catalog?pagename=Quality-and-Leadership>

3. Progressing Automated Uploads & NQAIS-Endoscopy Developments

A key priority of the NEQI Programme is to enhance the capabilities of NQAIS-Endoscopy in order to develop data collection and data use.

The programme will work to develop an automated upload process in the coming months. It is hoped that this move towards an automated process will free up valuable clinician time that is currently spent creating and uploading data extracts.

The NEQI Programme will be in touch with participating hospitals in the future in this regard.

4. Development of New Key Quality Indicators

As mentioned in Chapter 7, the NEQI Programme will continue to develop new KQIs and reassess older KQIs as the relevant IT systems improve and expand to collect more detailed data. The programme will begin with the collection of data on ERCP and EUS, before setting KQIs for both these fields. As more detailed analysis becomes possible through future IT developments, it may be possible to refine other KQIs to account for factors such as patient status, procedure type and endoscopist training level.

CHAPTER 10

CONCLUSION

10

The events of 2021 have presented several challenges for the NEQI Programme. As outlined in this report, the loss of accurate national data for Q2 and Q3 of 2021 has caused significant disruption to the NEQI Programme's ability to report on national data for this year. When this is combined with effects of the pandemic on endoscopy data in 2020 and Q1 of 2021, conclusions can not be drawn in the same manner as previous national data reports. However, this has also presented an opportunity for the programme to use this year's report to look at the evolution of the programme since 2016, when the first national data report was published.

Analysis of key quality indicators suggests that statistics have improved on a national, hospital and endoscopist level since 2016. The information presented in this report shows that these improvements are not just down to a small number of high achieving hospitals but rather reflect an overall improvement for the programme's participants as a whole.

The NEQI Programme is proud of the achievements laid out in this report and aims to build on this progress by expanding its IT capabilities, number of KQIs and levels of analysis in the near future.

The data contained within NQAIS-Endoscopy continues to be some of the most useful real time data for endoscopy in Ireland. The programme aims to maximise its utility going forward, continuing to contribute data for both research and operational purposes as outlined in this report.

The NEQI working group are keen to highlight that the NQAIS-Endoscopy data can now be used in conjunction with the National Training Framework to avail of performance enhancement opportunities. The gap in data available for Q2 and Q3 of 2021 will present significant challenges for endoscopists tracking their procedures during this time. The NEQI Programme will work with the National Endoscopy Training Committee to assure that this disruption is kept to a minimum.

With the tendering process for a new Endoscopy Reporting System for public hospitals currently underway, there is an opportunity to make a number of enhancements to the data submitted to the national repository. A subsequent redevelopment of NQAIS-Endoscopy will allow all these enhancements to be delivered efficiently and to a high standard. It is hoped that these improvements will enhance the programme's analytical capabilities while also reducing the time needed to upload and process data for participants.

The NEQI Programme would like to sincerely thank all the QI Clinical Leads and Local Operation Managers for their efforts, commitment, and continued support throughout the year. We hope to move forward into the next reporting period with a reinforced focus on the importance of quality improvement in endoscopy services in Ireland.



Royal College of Physicians of Ireland
Frederick House, South Frederick St., Dublin 2.
Phone: +353 1 863 9700
Email: [SQIProgrammes@rcpi.ie](mailto:SQIProgrammes/rcpi.ie)

[Twitter.com/RCPI_news](https://twitter.com/RCPI_news)
[Facebook.com/RoyalCollegePhysiciansIreland](https://facebook.com/RoyalCollegePhysiciansIreland)
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