National GI Endoscopy Quality Improvement Programme

4th National Data Report
2018 (Q3 & Q4)
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<tr>
<th>Name</th>
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FOREWORD

Over the past year the National GI Endoscopy Quality Improvement (NEQI) Programme has completed its roll out to all public hospitals providing endoscopic services in Ireland. Although 100% of public hospitals are now participating in the NEQI Programme and have access to NQAIS-Endoscopy, not all public hospitals are represented in this year’s report. This is due to data for this reporting period not being available for those sites who joined the programme after the reporting period commenced. The NEQI Programme has also continued to roll out to private hospitals with ten private hospitals now uploading data to NQAIS-Endoscopy. It is hoped that this number will continue to increase in the future.

In contrast to previous reports, this year’s report covers data submitted to NQAIS-Endoscopy over a six-month period (1st of July to 31st of December 2018). This change in timeline is designed to facilitate the move from a June to July reporting year to a January to December reporting year, bringing the reports in line with other Specialty Quality Improvement Programme National Data Reports and reporting in the wider healthcare system.

The National Data Reports created by the NEQI Programme should be used to inform healthcare policies supporting the endoscopy service in Ireland. They can enable hospitals to see how they are performing compared to the national average, to identify areas in which they are excelling or if there are areas that need to be addressed with local management. Where statistics suggest that there may be an area in need of improvement, findings should be confirmed locally using local hospital data. This ability to benchmark performance relative to agreed national standards and other institutions, thus facilitating local quality assurance and improvement initiatives, is the key to the programme’s success.

In the coming year, the Programme will be taking steps to ensure a more user friendly NQAIS-Endoscopy with a more intuitive reporting function. As a result of this change, we aim to reduce the amount of time it takes to upload and report on Quality Improvement data. The NEQI Programme will also aim to further embed the use of quality improvement data in the everyday practices of Endoscopy Units.

The NEQI Programme Working Group would like to acknowledge the clinical leads and local operational managers within each hospital for leading on the continued work of data collection, collation and quality improvement initiatives in their hospitals.

Dr Jan Leyden,
Chair of the NEQI Programme Working Group
# Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>NEQI Programme</td>
<td>National GI Endoscopy Quality Improvement Programme</td>
</tr>
<tr>
<td>NQAIS-Endoscopy</td>
<td>National Quality Assurance and Improvement System for Endoscopy</td>
</tr>
<tr>
<td>Endoscopy Reporting System (ERS)</td>
<td>A local electronic reporting system where endoscopy units enter clinical details regarding procedures performed</td>
</tr>
<tr>
<td>Key Quality Data</td>
<td>Refers to the information that is captured for the NEQI Programme. This information is captured to facilitate future audit and review</td>
</tr>
<tr>
<td>Key Quality Indicator</td>
<td>These are standardized, evidence-based measures of health care quality e.g. Caecal Intubation Rate</td>
</tr>
<tr>
<td>Key Quality Target</td>
<td>Refers to the minimum or achievable value associated with Key Quality Indicators</td>
</tr>
<tr>
<td>Recommendation</td>
<td>Refers to suggestions for quality improvement put forward by the Working Group. They are based on the data presented in this report that should be implemented in each endoscopy unit to support quality improvement activities.</td>
</tr>
<tr>
<td>Minimum Target</td>
<td>Minimum threshold for a Key Quality Indicator</td>
</tr>
<tr>
<td>Achievable Target</td>
<td>This refers to an aspirational target that should be aimed for if the minimum target is being met.</td>
</tr>
<tr>
<td>Procedure</td>
<td>For the purposes of this report, this refers to a colonoscopy, oesophagogastrroduodenoscopy or a flexible sigmoidoscopy</td>
</tr>
<tr>
<td>Colonoscopy (Col)</td>
<td>A procedure that allows the endoscopist to look directly at the lining of the large bowel or (colon)</td>
</tr>
<tr>
<td>Oesophagogastrroduodenoscopy (OGD)</td>
<td>A procedure during which a small flexible endoscope is introduced through the mouth and advanced through the pharynx, oesophagus, stomach, and duodenum</td>
</tr>
<tr>
<td>Flexible Sigmoidoscopy (FSIG)</td>
<td>A procedure used to evaluate the lower part of the large intestine</td>
</tr>
<tr>
<td>Quality Improvement Guidelines</td>
<td>General principles for the implementation of the Quality Improvement Programme in GI Endoscopy as developed by the NEQI Programme</td>
</tr>
<tr>
<td>Clinical Lead</td>
<td>The clinician who has overall responsibility for the NEQI Programme in their unit</td>
</tr>
<tr>
<td>Local Operational Manager</td>
<td>A member of clinical staff as identified by the clinical lead who is responsible for the data uploading process and maintaining the local hospital NQAIS account</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION TO THE NEQi PROGRAMME
1. Introduction to the NEQI Programme

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 October 2011 in collaboration with the National Cancer Control Programme (NCCP). As of 2014, this programme has been funded by the HSE National Quality Improvement Team.

HOW THE PROGRAMME WORKS

Participating endoscopy units have agreed to implement practical quality improvement measures, as outlined in the Guidelines for the National GI Endoscopy Quality Improvement Programme. The units who have gone live are recording their QI data on the National Quality Improvement and Assurance System for Endoscopy, NQAIS-Endoscopy.

Hospitals upload their QI data to NQAIS-Endoscopy via a data extract obtained from the local Endoscopy Reporting System (ERS). Once the data has been uploaded and cleaned by the Local Operational Manager, it is then reviewed and “signed off” by the Clinical Lead. This sign off process transfers the local data into NQAIS-Endoscopy.

Once the data is stored 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: https://rcpi-live-cdn.s3.amazonaws.com/wp-content/uploads/2019/08/Guidelines-Verison-5-UR.pdf. Clinical Leads, as well as individual endoscopists, are encouraged to run these reports at minimum on a quarterly basis. It is recommended that local QI data reports are communicated to senior hospital management and Clinical Governance / Quality and Patient Safety Committees.

THE PURPOSE OF THE NATIONAL DATA REPORT

This report will facilitate informed decision making on the future steps to be taken to support the ongoing quality improvement processes within Irish endoscopic services. The NEQI Working Group encourages endoscopists to identify their units within the report and to discuss their local performance against the targets, recommendations and national averages with colleagues, local hospital management and Quality and Patient Safety teams. Where statistics suggest that there may be an area in need of improvement, findings should be discussed locally using local hospital QI data. Where there are any patient safety related concerns they should be managed locally and escalated as appropriate in line with the relevant HSE policies.

WHAT THIS REPORT CANNOT BE USED FOR

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 comparisons between hospitals..

HOSPITALS WE WORK WITH

In Q3 & Q4 of 2018, 42 public and private hospital Endoscopy units contributed their data to the programme’s dataset.
HOSPITALS CONTRIBUTING DATA TO THE 4TH NATIONAL DATA REPORT

Bantry General Hospital
Blackrock Clinic
Bon Secours Hospital Tralee
Cork University Hospital
Galway University Hospital
Letterkenny University Hospital
Mater Misericordiae University Hospital
Midlands Regional Hospital Mullingar
Naas General Hospital
Our Lady’s Hospital, Navan
Sligo University Hospital
St. James’ Hospital
St Michael’s Hospital, Dun Laoghaire
University Hospital Limerick

Beacon Hospital
Bon Secours Hospital Dublin
Cavan General Hospital
Ennis Hospital
Hermitage Medical Clinic
Louth County Hospital
Mater Private Hospital
Midlands Regional Hospital Portlaoise
Nenagh Hospital
Portiuncula University Hospital
South Infirmary-Victoria University Hospital
St. John’s Hospital Limerick
St. Vincent’s University Hospital
University Hospital Limerick

Beaumont Hospital
Bon Secours Hospital Galway
Connolly Hospital Blanchardstown
Galway Clinic
Kerry University Hospital
Mallow General Hospital
Mercy University Hospital
Midlands Regional Hospital Tullamore
Our Lady of Lourdes Hospital, Drogheda
Roscommon University Hospital
South Tipperary General Hospital
St. Luke’s General Hospital
Tallaght University Hospital
University Hospital Waterford
Wexford General Hospital
CHAPTER 2
INTRODUCTION TO ANALYSIS
2. Introduction to Analysis

The information presented in this report is based on data pertaining to quality improvement activities performed in endoscopy units across Ireland. This data has been uploaded to NQAIS-Endoscopy from Endoscopy Reporting Systems (ERS) in 42 hospitals nationwide. Although the programme has now been successfully rolled out to 45 hospitals in total, this report contains data from the 42 hospitals who had data available for this reporting period.

DATA COLLECTION

Endoscopists and Endoscopy nursing staff from Endoscopy units record clinical details for each procedure performed in their Endoscopy unit on an ERS. Anonymised data is then uploaded from each ERS to the central data repository, the National Quality Assurance and Information System for Endoscopy (NQAIS-Endoscopy) via a CSV extract, for reporting and analysis by staff who have been trained by the programme management team.

The data in this report was recorded in each of the 42 Hospitals contributing data to the NEQI Programme from the 1st of July to the 31st of December 2018. These hospitals include 34 public hospitals and 8 private hospitals and provide the entire data population for this report.

Data was collected, for Oesophagogastroduodenoscopies (OGD), Flexible Sigmoidoscopies (FSIGs) and both screening and symptomatic Colonoscopy (COL) procedures, across Key Quality Indicators (KQIs) as set out in the GI Endoscopy QI Guidelines.

No patient identifiable information is collected in NQAIS-Endoscopy. Hospital identifiable data in the national dataset is currently anonymised. When reading the report, note that the same hospital identifier has been used throughout (e.g. Hospital 1 refers to the same hospital throughout) and corresponds to the same Hospital ID used in the previous three National Data Reports where applicable.

DATA ANALYSIS

The data completeness rate for this report is 100%. The information presented in this report is intended to act as a flag, with each unit confirming any potential improvements or issues using their own local data. The points below should be kept in mind when reading this report:

- This report should not be used to directly compare hospital performance.
- All targets are on a per Endoscopist basis. The analysis contained within this report reflects this wherever possible. For many 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 Endoscopist’s statistics will take into account all cases where the Endoscopist was listed as an E1 or an E2 in their local Endoscopy Reporting System.

Definitions of Endoscopist 1 and Endoscopist 2 can be found on page 23. The analysis in this report does not include statistics where the Endoscopist has only been recorded as E2 with no E1 procedures.

The data in this report was compared against targets for KQIs as set out in the National GI Endoscopy QI Guidelines.

APPROVAL PROCESS

This report has been drafted by the Working Group of the National GI Endoscopy QI Programme and was then approved by the Specialty Quality Improvement Programme Steering Committee and the Conjoint Board of RCPI and RCSI.
## Key Quality Indicators Covered in This Report:

<table>
<thead>
<tr>
<th>Key Quality Indicator</th>
<th>Key Quality Target</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colonoscopy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caecal Intubation (CI) Rate</td>
<td>Minimum: ≥90% Achievable: ≥95%</td>
<td>CI Rate is calculated based on all colonoscopies performed as Endoscopist 1 or Endoscopist 2</td>
</tr>
<tr>
<td>Comfort Score</td>
<td>≥80%</td>
<td>Comfort Score is assigned using the modified Gloucester Scale</td>
</tr>
<tr>
<td>Polyp Detection</td>
<td>≥20%</td>
<td>N/A</td>
</tr>
<tr>
<td>Bowel Preparation</td>
<td>Minimum: ≥90% Achievable: ≥95%</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Oesophagogastroduodenoscopies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duodenal 2nd Part Intubation (Duo 2)</td>
<td>≥95%</td>
<td>N/A</td>
</tr>
<tr>
<td>Retroflexion</td>
<td>≥95%</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sedation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midazolam</td>
<td><strong>Patients Aged below 70 years of age:</strong> Median dose is ≤5mg per Endoscopist <strong>Patients Aged above 70 years of age:</strong> Median dose is ≤3mg per Endoscopist</td>
<td>This KQI applies to both Colonoscopies and OGDs.</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>Median: ≤100mcg</td>
<td>This KQI applies to both Colonoscopies and OGDs.</td>
</tr>
</tbody>
</table>

The NEQI Programme has set out further Key Quality Indicators which are not covered in this report and can be found in the GI Endoscopy Quality Improvement Guidelines. The KQIs not covered in this report include KQIs that are not easily measurable or where the data in NQAIS-Endoscopy may not be currently reliable.
CHAPTER 3
SUMMARY POINTS
3. Summary Points

1. Details of 105,541 Colonoscopies, Oesophagastroduodenoscopies, and Flexible Sigmoidoscopies performed between July 1st and December 31st of 2018 were captured in NQAIS-Endoscopy.

2. 34 Public and 8 Private hospitals submitted data for every month of Q3 and Q4 2018.

3. There remains a large proportion of Endoscopists performing low numbers of procedures.

4. National Caecal Intubation Rate is now steady at 93%.

5. 67% of Endoscopists are meeting the Comfort Score target of 80% of colonoscopies having a comfort score of a 1 or 2.

6. 13 out of 42 hospitals have recorded meeting the Bowel Preparation minimum target.

7. Duodenal 2nd Part Intubation Rate has continued to improve to 97%.

8. Sedation continues to be administered to patients aged 70 years and over in similar doses as patients aged under 70 years.
42 Hospitals

638 Endoscopists

105,541 Procedures

49,663 Colonoscopies

47,228 OGDs

8,650 FSIGs
CHAPTER 4
KEY RECOMMENDATIONS
4. Key Recommendations

- Hospitals could reduce colonoscopy waiting lists by increasing the number of Flexible Sigmoidoscopies performed where appropriate.
- Endoscopists should endeavour to keep their number of procedures performed at sufficient levels in order to maintain competency levels.
- The practice of deciding a comfort score should be assessed by a clinical third-party present during the procedure, usually an endoscopy nurse, and agreed with the Endoscopist before recording.
- Hospitals should ensure that their Bowel Preparation definitions are aligned with the Gloucester Scale as outlined in the GI Endoscopy QI Guidelines.
- Lower midazolam dose options, such as 1mcg, could be procured in order to facilitate the administration of lower doses when appropriate.
CHAPTER 5
VOLUME OF ENDOSCOPIC PROCEDURES
5. Volume of Endoscopic Procedures

There is evidence that endoscopic proficiency increases with the number of procedures performed. Low numbers of procedures are associated with a greater risk of complications for patients. As such it is recommended that Endoscopists perform higher numbers of procedures in order to maintain their skills at a high level, however low numbers are less concerning for demanding procedures.

It is important to note that:
• Low numbers may be associated with lower skill levels
• Low numbers may also mean that the sample size for Key Quality Indicators (KQIs) is small and the resulting statistics may not be reflective of practice

Endoscopists who are technically proficient may find it easier to maintain adequate skill levels and competency with lower numbers of procedures while others may find it difficult to maintain adequate skill levels with low numbers.

**Key Quality Data**
- Number of Oesophagogastroduodenoscopy (OGD) procedures performed by each Endoscopist
- Number of Flexible Sigmoidoscopy (FSIG) procedures performed by each Endoscopist
- Number of Colonoscopy procedures performed by each Endoscopist

**Key Recommendation:**
- Endoscopists should endeavour to keep the number of procedures they perform appropriately high in order to maintain clinical competence.
- The annual number of procedures performed by each Endoscopist should be reviewed collectively in the endoscopy unit with the designated clinical lead for the service

**TABLE 1: Number of Endoscopists per OGDs performed category**

<table>
<thead>
<tr>
<th>Oesophagoduodenoscopies (OGDs)</th>
<th>&lt;10</th>
<th>11-50</th>
<th>51-100</th>
<th>101-150</th>
<th>&gt;150</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of OGDs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>627</td>
</tr>
<tr>
<td>Number of Endoscopists</td>
<td>112</td>
<td>185</td>
<td>122</td>
<td>77</td>
<td>131</td>
<td>627</td>
</tr>
</tbody>
</table>

**TABLE 2: Number of Endoscopists per colonoscopies performed category**

<table>
<thead>
<tr>
<th>Colonoscopies (COLs)</th>
<th>&lt;10*</th>
<th>11-50</th>
<th>51-100</th>
<th>101-150</th>
<th>&gt;150</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of COLs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td>Number of Endoscopists</td>
<td>106</td>
<td>149</td>
<td>123</td>
<td>85</td>
<td>137</td>
<td>600</td>
</tr>
</tbody>
</table>

*30 of the 106 Endoscopists with less than or equal to 10 colonoscopies performed their final procedure within the first two weeks of July. This may be indicative that approximately 28% of those performing less than 10 colonoscopies could be Trainees who have completed their rotation and are performing procedures at the end of the training year (first week of July).
This graph illustrates the number of Endoscopic procedures performed nationwide per month between 1st July 2018 and the 31st December 2018 split by procedure type. Due to low volume of FSIGs performed they are not included on this graph.

The above stacked bar chart shows the number of procedures performed by each hospital that submitted data to NQAIS-Endoscopy in Q3 & Q4 of 2018 across three procedure types: Colonoscopy (purple), Flexible Sigmoidoscopy (grey), and Oesophagogastrroduodenoscopies (blue).
This 100% bar chart presents the information shown in Figure 2 as percentages of the total procedures carried out in that hospital. E.g. Colonoscopies accounted for 40% of the procedures performed in hospital 1.

The data within NQAIS-Endoscopy reflects clinical details from all colonoscopies, OGDs and FSIGs from 42 public and private hospitals for Q3 & Q4 of 2018.

The number of FSIGs being performed varies throughout the country. The higher concentration of FSIGs performed may be in training hospitals. An increase in the utilisation of FSIGs presents an opportunity for hospitals to remove unnecessary colonoscopies, which would in turn have the potential to reduce waiting lists. At present there are no national clinical guidelines outlining a national standard for when a FSIG could be performed. As such, this remains local hospital policy.

Given the similar numbers of OGDs and Colonoscopies, there remains an opportunity to triage OGDs in environments where waiting lists are lengthy.

**RECOMMENDATION**

*Hospitals could reduce waiting lists by increasing the number of Flexible Sigmoidoscopies performed where appropriate*
CHAPTER 6
COLONOSCOPY
6. Colonoscopy

<table>
<thead>
<tr>
<th>Key Quality Indicator</th>
<th>Key Quality Target</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COLONOSCOPY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caecal Intubation (CI) Rate</td>
<td>Minimum: ≥90% Achievable: ≥95%</td>
<td>CI Rate is calculated based on all colonoscopies performed as Endoscopist 1 or Endoscopist 2</td>
</tr>
<tr>
<td>Comfort Score</td>
<td>≥80%</td>
<td>Comfort Score is assigned using the modified Gloucester Scale</td>
</tr>
<tr>
<td>Polyp Detection</td>
<td>≥20%</td>
<td>N/A</td>
</tr>
<tr>
<td>Bowel Preparation</td>
<td>Minimum: ≥90% Achievable: ≥95%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

6.1) Colonoscopy - Caecal Intubation Rate

Caecal Intubation (CI) Rate is one of the main key quality indicators for colonoscopy. CI rates are affected by a number of factors including age, sex, low BMI, bowel cleansing, sedation, diverticular disease and general health status.

**Key Quality Indicator:**

- Number of colonoscopies where the terminal ileum / caecum / anastomosis has been reached expressed as a % of total colonoscopies 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)

An Endoscopists CI Rate is calculated based on the number of times the caecum was intubated as Endoscopist 1 or Endoscopist 2 as a percentage of the total number of colonoscopies performed as Endoscopist 1 or Endoscopist 2 combined.

**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).
FIGURE 4: Colonoscopy - Endoscopists by Case Amount and CI Rate (01/07/2018 - 31/12/2018)

This graph excludes 2 data points below the 50% on the Y axis, both of which are less than 3 procedures with 0% CI Rate, in order to focus in on the upper half of the graph.

The chart above shows the Caecal Intubation rate for each Endoscopist per month between July 2018 and December 2018 in relation to the amount of colonoscopies performed as Endoscopist 1 or 2 against the minimum target (90%) and the achievable target (95%).

FIGURE 5: Colonoscopy - Percentage and Number of Endoscopists by CI Rate Category (E1 or E2)

This pie chart shows the number and percentage of Endoscopists meeting minimum and achievable targets nationwide for Q3 & Q4 of 2018.
70% of Endoscopists performing colonoscopies had achieved the minimum target CI Rate of ≥90% in Q3 & Q4 of 2018, this a slight increase in comparison to 69% for the same period of 2017.

Figure 4 shows that those performing higher numbers procedures are reaching the CI Rate target more regularly. This information supports the international evidence that suggests Endoscopists who perform greater number of procedures are able to maintain competencies more easily than those with low levels of procedures. Inversely, low volumes of procedures can result in difficulty in maintaining competencies and are therefore associated failure to achieve KQI targets.

Figure 5 illustrates that a steadily growing number of Endoscopists are meeting their CI Rate minimum target. This figure now stands at 70%, up 1% from the same time period in 2017. As data regarding the Trainee status of Endoscopists is not currently extracted from, or available in all Endoscopy Reporting Systems, we are currently unable to delve further into the breakdown of those Endoscopists who are not achieving the minimum CI Rate target.

**FIGURE 6: Caecal Intubation Rate by Hospital (01/07/2018 - 31/12/2018)**

The chart above shows the Caecal Intubation Rate for each hospital between July 2018 and December 2018 in relation to the number of colonoscopies performed per unit against the minimum target (90%) and the achievable target (95%).
Figure 6 shows each hospital represented by a blue dot. The Y-axis in this instance represents the CI Rate achieved by the hospitals and the X-axis shows the number of colonoscopies performed between Q3 and Q4 2018.

35 out of 42 hospitals achieved the minimum target of ≥90% during Q3 & Q4 of 2018. This represents 83% of hospitals, in comparison to 33 out of 39 for the previous year (85%). 11 (26%) hospitals had exceeded the achievable target of ≥95%.

**Note on Funnel Plots:**

To facilitate more intuitive and visually effective presentation of the data, the NEQI Programme uses Funnel Plots. Due to distribution of data points, the confidence intervals shown in the graphs do not always encompass the 99.7% or 95% of data points. Although not providing the same statistical analysis as funnel plots with a normal distribution, the programme is confident that the additional information provides further context which is beneficial when interpreting the data. As such, these funnel plots essentially act as scatter plots providing further information on the average.

**Figure 7: Percentage of Endoscopists per Hospital by Hospital CI Rate Category (01/07/2018 - 31/12/2018)**

This 100% bar chart shows the percentage of Endoscopists who have performed a colonoscopy in Q3 & Q4 of 2018, in each hospital by their Hospital CI Rate Category. This CI Rate Category is determined by procedures performed in each hospital exclusive of the procedures performed by the same endoscopist in other units. E.g 90% of Endoscopists in Hospital 3 have a CI Rate of over 90% for procedures performed in Hospital 3 only.
### TABLE 3: Hospital CI Rates for Q3 & Q4 of 2017 and 2018

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</table>

This table shows the CI Rate per Hospital for Q3 and Q4 of 2018, as per Figure 6, in comparison to the CI Rates for Q3 & Q4 of 2017.

**Nationally, over 93% of colonoscopies performed reach the terminal ileum, caecum or anastomosis.**

Figure 7 shows the percentage of Endoscopists per hospital by their Hospital CI Rate. It is the opinion of the Working Group that the fluctuation in percentages of Endoscopists with low CI Rates could be reflective of both those units which are providing training and units who are new to the NEQI Programme. Further details on this can be found in section 1 of this report.
As a result of current data collection limitations, we remain unable to further analyse the breakdown of the cohort of Endoscopists who are performing very low numbers of procedures from NQAIS-Endoscopy. From the national data we can see that 28% of the Endoscopists performing 10 or less colonoscopies, performed their last procedure within two weeks of July 2018. This may indicate that a proportion of this cohort are Trainees who stopped performing procedures after this date. This information is available locally however and units are encouraged to analyse their own data in this regard.

It should be noted that hospital data will undergo a maturing process once they commence submitting data to NQAIS-Endoscopy. This can be due to the unit involved becoming familiar with the data recording processes and uploading techniques and implementing quality improvement locally. As such, hospitals who have only recently joined the QI Programme might be expected to have lower numbers meeting the KQI targets while their data undergoes a maturing process.

**RECOMMENDATION**

*Endoscopists should endeavour to keep the number of procedures performed at sufficient levels in order to maintain their Caecal Intubation Rate at the minimum and achievable targets*

**Focus: Endoscopists with between 50 and 100 Colonoscopies**

Given that the cohort performing the lowest numbers of procedures may be partly explained by factors such as the training calendar etc, it may be informative to look at those performing a low but consistent number of procedures. In this case we will look at Endoscopists performing between 50 and 100 colonoscopies and compare their CI Rate categories to those who have performed over 100 procedures.

**Figure 8: Colonoscopy - Percentage and Number of Endoscopists by CI Rate Category (E1 or E2) Between 50 & 100 Performed Colonoscopies**

This pie chart shows the number and percentage of Endoscopists who have performed between 50 and 100 colonoscopies that are meeting minimum and achievable targets nationwide during Q3 and Q4 of 2018.
This pie chart shows the number and percentage of Endoscopists who have performed more than 100 colonoscopies that are meeting minimum and achievable targets nationwide during Q3 & Q4 of 2018.

Figures 8 and 9 reveal that 64% of Endoscopists who have performed between 50 and 100 colonoscopies are meeting the minimum CI Rate target in comparison to 79% of Endoscopists who have performed more than 100 colonoscopies. This further suggests that there is a correlation between performing higher numbers of procedures and ability to meet Key Quality Targets.

6.2) Colonoscopy - Comfort Score

Patient comfort during a colonoscopy is central to the NEQI programme. The Programme proposes using the modified Gloucester Scale as shown below in order to measure Comfort Score.

### Gloucester Scale

1 - No discomfort - resting comfortably throughout.
2 - Minimal - One or two episodes of mild discomfort, well tolerated.
3 - Mild - More than two episodes of discomfort, adequately tolerated.
4 - Moderate - Significant discomfort, experienced several times during the procedure.
5 - Severe - Extreme discomfort, experience frequently during the procedure.
Comfort Score is calculated by expressing the number of colonoscopies performed with a Comfort Score of 1 or 2 as a percentage of the total number of colonoscopies performed by an Endoscopist (as Endoscopist 1 or Endoscopist 2). Data is also presented based on a combined Comfort Score for all procedures performed within each hospital. Comfort Score should be provided by an Endoscopy nurse at the procedure and agreed with the Endoscopist before submission to the ERS. In cases where there is a difference of opinion regarding the score, an additional healthcare professional present will be consulted.

**Key Quality Indicator:**
- Percentage of colonoscopies with a comfort score of a 1 or 2 per Endoscopist

**Key Quality Target:**
- 80% of colonoscopy cases should have a comfort score of a 1 or 2

**RECOMMENDATION**

The NEQI Working Group recommends that recording practices are standardised to use the modified Gloucester Scale.

**Figure 10: Colonoscopy - Percentage and Number of Endoscopists Above and Below Comfort Score Target**

This pie chart shows the number of Endoscopists meeting the Comfort Score target nationwide. In order to meet this target an Endoscopist must have recorded a score of 1 or 2 (using the Modified Gloucester Scale 1-5) for at least 80% of the colonoscopies they performed that year for Q3 & Q4 2018.
87% of colonoscopies are performed with no discomfort, this is the same percentage of cases as was recorded for the corresponding period in 2017. 1% of all cases were performed with severe discomfort.

Overall the data for comfort scores appears to be mature and consistent. The percentage of Endoscopists meeting the Comfort Score target is 67%, a 2% increase when compared to the corresponding period of 2017.

87% of colonoscopies are performed nationally with no or minimal discomfort
The chart above shows the percentage of colonoscopies in each unit receiving a comfort score of a 1 or 2 between July 2018 and December 2018. This is shown on the Y-axis with the X-axis showing the number of colonoscopies performed. The funnel plot shows this KQI against the national average (grey dotted line) and QI Target (red dotted line) of ≥80%.

The dataset for this report reflects a similar pattern to previous years with many of the units who did not achieve the target being the same in both years. Five out of seven hospitals who did not achieve a Comfort Score of 1 or 2 in ≥80% colonoscopies, did not achieve it in the corresponding period of 2017.

The recording of this KQI is open to subjectivity, and it is therefore possible that variation in recording practices exists between units.

**RECOMMENDATION**

The practice of deciding a Comfort Score should be assessed by a third party, usually an endoscopy nurse, and agreed with the Endoscopist before recording in ERS.
6.3) Colonoscopy – Polyp Detection Rate

Internationally accepted guidelines on colonoscopy performance indicators recommend monitoring direct or proxy markers of detection of suspicious lesions including polyps, adenomas or withdrawal times. As a result of 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.

**Key Quality Indicator:**
- Colonoscopies with polyps detected expressed as a percentage of total colonoscopies per Endoscopist

**Key Quality Target:**
- 20% of all colonoscopies have a polyp(s) detected

*The national Polyp Detection rate is 32.5%, up 1% from 31.5% for Q3 & Q4 of 2017, this national rate encompasses all colonoscopies performed during this reporting period*

![Figure 13: Colonoscopy - Percentage and Number of Cases Where Polyp(s) Was Detected](image)

*The above pie chart illustrates the percentage and number of colonoscopies nationwide where a polyp was detected for Q3 & Q4 of 2018.*
Figure 14: Colonoscopy - Percentage and Number of Endoscopists Above and Below Polyp Detection Target

This pie chart shows the number of Endoscopists nationwide meeting the Polyp Detection Rate target of \( \geq 20\% \) for Q3 & Q4 of 2018.

Figure 15: Polyp Detection Rate by Hospital (01/07/2018 - 31/12/2018)

The Funnel Plot above shows the Polyp Detection rate for each hospital against the QI target of \( \geq 20\% \) of colonoscopies with at least one polyp detected. The Polyp Detection Rate is shown on the Y-Axis, with the number of colonoscopies performed in the unit on the X-Axis.
The increase in national Polyp Detection rate correlates with the higher number of hospitals meeting the target for this KQI.

One more hospital met the target for this KQI in Q3 & Q4 of 2018 than in the corresponding period for 2017.

Although most units are above target for this KQI we can still see wide variation between unit’s Polyp Detection rates. It is the Working Groups opinion that this may reflect the difference between screening and non-screening centres, public and private units, as well as population differences.

The chart above shows the Polyp Detection rate for each Endoscopist between July 2018 and December 2018 in relation to the amount of colonoscopies performed against the minimum target of 20%. This KQI is calculated using cases performed as Endoscopist 1 or Endoscopist 2.

Figure 16 suggests than on an individual Endoscopist basis, there is a relationship between the number of colonoscopies performed and an Endoscopists Polyp Detection Rate. This reflects a similar pattern shown in Figure 4 with Caecal Intubation Rates (page 24).
6.4) Colonoscopy – Bowel Preparation

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, as defined below, scores as a % of all colonoscopies

Key Quality Target:

- **Minimum**: Bowel preparation described as excellent or adequate in ≥90% of colonoscopies
- **Achievable**: Bowel preparation described as excellent or adequate in ≥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

**Complete despite poor prep**
Solid or semi-solid debris that cannot be cleared effectively but which still permits intubation to caecum

**Failed due to poor prep**
Solid debris that cannot be cleared effectively and prevents intubation to caecum.

Note on scoring system: The main differentiating factor between Excellent or Adequate and the other definitions should be whether it was possible to complete the procedure satisfactorily or not.

RECOMMENDATION

*Hospitals should ensure that their Bowel Preparation definitions are aligned with the definitions as outlined in the GI Endoscopy QI Guidelines*

Bowel Preparation statistics have largely remained static, with 88% of cases receiving a bowel preparation score of Excellent or Adequate both this year and 88.6% in 2017. 62% of hospitals (29/42) did not meet the Bowel Preparation minimum target in Q3 & Q4 of 2018. This is an increase from 51% (20/39) during the same period of 2017. All 20 Hospitals who did not meet the Bowel Preparation target in Q3 & Q4 of 2017 did not meet the target in 2018.
The above pie chart illustrates the number of colonoscopies that received a Bowel Preparation score of Excellent or Adequate nationwide for Q3 & Q4 of 2018.

The Funnel Plot above shows the Bowel Preparation rate for each hospital in Q3 & Q4 of 2018 against the minimum target of ≥90% of colonoscopies with bowel preparation as Excellent or Adequate, and the achievable target of ≥95%. The Bowel Preparation Rate is shown on the Y-Axis, with the number of colonoscopies performed in the unit on the X-Axis.
CHAPTER 7
OGD
7. Oesophagogastrroduodenoscopy (OGD)

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<td><strong>OESOPHAGOGASTRODUODENOSCOPIES</strong></td>
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</tr>
<tr>
<td>Retroflexion</td>
<td>≥95%</td>
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7.1) OGD – Duodenal Second Part Intubation

Duodenal Second Part (Duo2) Intubation is an important quality measure of the completeness of a procedure. In order to complete this measure, the endoscope should be passed through the pylorus to examine the first and second parts of the duodenum.

**Key Quality Indicator:**

- Number of cases in which Duodenal Second Part Intubation was achieved expressed as a % of total OGD cases per Endoscopist

**Key Quality Target:**

- Intubation of Duodenum Second Part in ≥95% of cases

*FIGURE 19: OGD - National Duodenal Second Part Intubation Rate per Quarter*
*Year on Year from Q3 2015 to Q4 2018*

This line graph shows the national percentage of cases in which Duo2 intubation was completed over time up to December 31st 2018, by quarter.

The consistent increase in national Duodenal Second Part (Duo2) Intubation Rates over the past 4 years may suggest a maturing of QI data for this KQI. Given the nature of Duo2 Intubation, and the correlation with retroflexion, the disparity between units who are significantly outside the national average could suggest a data entry or Endoscopy Recording System (ERS) issue. The NEQI Working Group has noted that the field to indicate completion is not mandatory in all ERSs, possibly contributing to units being below target.
**Figure 20: OGD - Percentage and Number of Endoscopists by Duodenal Second Part Intubation Rate Category**

This pie chart illustrates the number and percentage of Endoscopists by Duo2 Intubation Rate category based on procedures performed as E1 or E2 between July and December 2018. E.g. 505 (80%) of Endoscopists had a Duo 2 Intubation Rate greater than or equal to 95%.

**Figure 21: Duodenal Second Part Intubation Rate by Hospital (01/07/2018 - 31/12/2018)**

This funnel plot shows the Duo2 Intubation Rate per hospital in comparison to the national average (grey dotted line) and the target set out in the QI guidelines of ≥95% of OGDs with Duodenal Second Part Intubation for Q3 and Q4 of 2018.
7.2) OGD – Retroflexion

Retroflexion, also known as the J manoeuvre, allows for a full view and inspection of the cardia and fundus of the stomach. It is an important quality measure of the completeness of the procedure.

**Key Quality Indicator:**

- Number of cases in which retroflexion was performed expressed as a percentage of all OGD cases per endoscopist

**Key Quality Target:**

- Retroflexion (J manoeuvre) in stomach to visualise fundus in ≥ 95% of cases

Similar to Duo2 Intubation, it is possible that the variation shown between some unit’s retroflexion rates could be due to data entry discrepancies. The NEQI Working Group recommend that units review their current ERSs to ensure this field is mandatory.

**Figure 22: Retroflexion Rate by Hospital (01/07/2018 - 31/12/2018)**

This funnel plot shows the Retroflexion Rate per hospital in comparison to the national average (grey dotted line) and the target set out in the QI guidelines of ≥95% of OGDs with Retroflexion marked as complete for Q3 & Q4 of 2018.
8. Sedatives

Many patients tolerate upper endoscopy with only topical anaesthesia of the oropharynx, however some patients may need sedation. Likewise, colonoscopy can be an uncomfortable experience but this discomfort can be reduced by careful patient preparation and sedation. Sedation improves patient tolerance of endoscopy, however excessive sedation is considered to be an important contributor to cardio-respiratory complications following endoscopy in high risk or elderly patients. Unlike the other KQIs in this report, sedation KQIs are based on median numbers rather than averages.

**Key Quality Indicator:**

Sedative type and quantity used for
- Sedation dose administered to patients under 70 years of age, as a median figure per Endoscopist
- Sedation dose administered to patients aged 70 years and over expressed as a median figure per Endoscopist

**Key Quality Target:**

Midazolam:
- Median of ≤5mg for patients under 70 years of age
- Median of ≤3mg for patients 70 years of age and over

Fentanyl:
- Median of ≤100mcg for patients of all ages

**Key Recommendations:**

- Sedatives should be used to achieve conscious sedation; where the patient displays purposeful response to verbal stimulation.
- The median level of sedation for older patients (≥ 70 years of age) should be approximately half that of patients under that age.
- The use of reversal agents should be minimised. Its use should require that the case be reviewed in line with local hospital policy.

For cases in which a patient has multiple endoscopy procedures in one visit, the following recording practices should be employed:

1. Procedure A’s record should have what type of sedation +/- analgesia was administered at the time of Procedure A.
2. Procedure B’s record should have the type of sedation +/- analgesia given for Procedure A AND in addition to what was administered for Procedure B.

64% of colonoscopies with patients aged 70 years and over are performed using the recommended dose
8.1) Sedatives – Midazolam (Colonoscopy)

The 2018 Q3 & Q4 data shows similar sedation trends to previous years whereby 86% of patients under 70 years of age are generally receiving the target median dose of midazolam (≤5mg). However, a more substantial proportion of patients over 70 years of age, 36%, are receiving doses exceeding the target median for their age category (≤3 mg).

Given the larger number of procedures exceeding the target sedation dose, this report will focus specifically on the sedation doses in relation to patients over 70 years of age, in addition to sedation doses in both age categories combined.

Sedatives for Patients Over 70 Years of Age

When procedures performed on patients under 70 years of age are removed from the dataset, we see similar results to the combined data. This would further support the idea that the majority of cases which have not achieved their target are performed on patients aged 70 years and over.

It appears that many Endoscopists may be giving the same dose of midazolam to all patients irrespective of patient age. This continues to present an opportunity to improve practice.

Figure 23: Colonoscopy - Midazolam Doses in Patients aged 70 and Older - Number and Percentage of Cases

The above pie chart shows the midazolam doses administered to patients aged 70 and older for colonoscopies performed nationwide during Q3 & Q4 of 2018. E.g. 64% of colonoscopies in patients aged 70 years and older were performed using ≤3mg of Midazolam.
Figure 24: Colonoscopy - Midazolam Doses - Endoscopists above and Below Target Median of ≤3mg (Over 70s)

This pie chart shows the number and percentage of Endoscopists who are meeting the target median quantity of Midazolam (≤3mg) in colonoscopies where the patient was 70 years of age or older for Q3 & Q4 of 2018.

61% of Endoscopists are meeting the midazolam dose median target for cases where the patient was 70 years of age or older.

Figure 25: Colonoscopy - Midazolam Doses in Patients aged 70 and Older - Percentage of Cases per Hospital - Target Median ≤3mg

This 100% bar chart shows the percentage of colonoscopies performed with patients 70 years of age or older by midazolam doses category for each hospital that submitted data in Q3 & Q4 of 2018. Just under 80% of colonoscopies in Hospital 1 used ≤3mg of Midazolam in colonoscopies where the patient was 70 years of age or older.
Figure 26: Colonoscopies - Percentage of Colonoscopies per Hospital for Patients Aged 70 years of age or older where ≤3mg Midazolam Target is met (01/07/2018 - 31/12/2018)

This Funnel Plot illustrates the percentage of colonoscopies for patients 70 years of age or older that have been performed using the target median dose of ≤3mg of midazolam. E.g. 66% of colonoscopies for patients 70 years of age and older received the recommended dose in hospital 12. As a result this hospital falls just above the grey national average line (63%).

RECOMMENDATION

Lower midazolam doses options, such as 1mg, could be procured in order to facilitate the administration of lower doses when desired.
Sedatives Combined

By combining both age categories, each unit can get a picture of the overall sedation doses being used in their endoscopy units. Nationally, the average percentage of colonoscopies performed using the recommended dose of midazolam is 71%. Figure 27 highlights the wide variation in doses of midazolam being administered, ranging from approximately 50% receiving target doses to almost 100%.

This Funnel Plot shows the percentage of colonoscopies performed per hospital that are performing their respective sedation targets (01/07/2018 - 31/12/2018).

71% of all colonoscopies are performed using the recommended midazolam dose.
8.2) Sedatives – Midazolam (OGD)

In Oesophagastroduodenoscopies (OGD), we see a much higher number of Endoscopists meeting target for procedures in both over and under 70 years of age categories. As shown in Figure 28, 71% of Endoscopists performing OGDs are meeting the target median midazolam dose in patients over the age of 70.

![Figure 28: OGD - Midazolam Doses - Endoscopists Above and Below Target Median of ≤3mg (Over 70 years of age)](chart)

This pie chart shows the number and percentage of Endoscopists who are meeting Midazolam target administered during OGDs where the patient was aged 70 years of age or older (median dose of ≤3mg) for Q3 & Q4 of 2018.

71% of Endoscopists are meeting OGD sedation target for patients aged 70 years and over.
8.3) Sedatives – Fentanyl

TABLE 4: Number and Percentage of Cases by Fentanyl Use and Dose

<table>
<thead>
<tr>
<th>Dose (mcg)</th>
<th>Colonoscopy</th>
<th></th>
<th>OGD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Cases</td>
<td>% of Cases</td>
<td># of Cases</td>
<td>% of Cases</td>
</tr>
<tr>
<td>No Fentanyl Used</td>
<td>12811</td>
<td>26.35%</td>
<td>32771</td>
<td>69.82%</td>
</tr>
<tr>
<td>25 or 50</td>
<td>23145</td>
<td>47.61%</td>
<td>11936</td>
<td>25.43%</td>
</tr>
<tr>
<td>75 or 100</td>
<td>12556</td>
<td>25.83%</td>
<td>2197</td>
<td>4.68%</td>
</tr>
<tr>
<td>125 or 150</td>
<td>52</td>
<td>0.11%</td>
<td>13</td>
<td>0.03%</td>
</tr>
<tr>
<td>175 or 200</td>
<td>18</td>
<td>0.04%</td>
<td>2</td>
<td>0.00%</td>
</tr>
<tr>
<td>&gt;200</td>
<td>27</td>
<td>0.06%</td>
<td>15</td>
<td>0.03%</td>
</tr>
<tr>
<td>Unreliable Data</td>
<td>2</td>
<td>0.00%</td>
<td>1</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td><strong>48611</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>46935</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Of procedures performed using Fentanyl, the vast majority, 99.72% for colonoscopies and 99.78% for OGDs, used the recommended Fentanyl dose of ≤100 mcg.
9. KQI Summary

One of the main indicators of quality in GI Endoscopy is the number of Endoscopists who are meeting the targets as set out in the GI Endoscopy Quality Improvement Guidelines. With this 4th National Data Report representing a mature dataset in NQAIS-Endoscopy, it can be informative to track the number of Endoscopists meeting the targets over the same time period in previous years.

Figure 29 shows the progression of four KQIs over the last four years. The percentage of Endoscopists meeting the target for three of the four KQIs has increased each year since 2015.

Overall, we can see that although the statistics in most areas have progressed positively over the past three years, others have remained relatively static. With the analysis now in its 4th cycle, some of these early increases can be attributed to the process of data maturation and an increased awareness of the importance of data collection on site.

This bar chart shows the percentage of Endoscopists meeting the target for 4 KQIs over Q3 & Q4 of 2018 in comparison to the corresponding two quarters of previous years. E.g. 67% of Endoscopists met the Comfort Score Target in Q3 & Q4 of 2018 compared to 65% in Q3 & Q4 of 2017.
CHAPTER 10
CONCLUSION
10. Conclusion

The 4th National Data Report highlights continuous improvement through the number of Endoscopists meeting targets across a range of Key Quality Indicators. This increase is smaller than previous years and may reflect a maturing of the data set. Similarly, the national averages for each KQI are at a high level and are either maintaining or increasing marginally when compared to the corresponding time period for previous years.

This report is the first six-month report produced by the NEQI Programme. As such, the figures should not be directly compared to previous reports as we would expect certain practices to improve across the training year as Trainees gain experience.

The NEQI Programme has marked a milestone this year with 100% participation of public hospitals, and an increasing number of private hospitals, now uploading data to NQAIS-Endoscopy. It is envisioned that this is the last National Data Report that does not encompass all public hospital data.

With this national data set now covering such a large proportion of the Endoscopic procedures performed in Ireland, and with data continuing to mature, it is essential that this data is fully utilised. The data in this report is intended to act as a quality assurance and improvement resource for hospitals and Hospital Groups. Any significant under performance should be confirmed using local hospital data and must be managed locally and escalated, as appropriate, in line with the relevant HSE or hospital policies.

Certain themes have emerged consistently from the past four reports;
- A high number of Endoscopists are performing low numbers of procedures and,
- Similar amounts of sedation are being administered to patients regardless of age

Tremendous work has been done over past few years by everyone participating in the NEQI Programme. These efforts are reflected in the progress of each KQI set out by the Programme and improvements achieved locally. The NEQI Working Group encourages participants to further utilise the available data to drive quality improvement in their units and in any areas of underperformance identified.

Over the next year, further efforts are required to upgrade the NEQI Programme’s IT infrastructure. In the short to medium term this means an upgrade to a more intuitive, user friendly and efficient NQAIS-Endoscopy system.

In the long term this means working towards creating integrated national systems with the ability for more in depth analysis of gastrointestinal endoscopy performance and outcomes.

The NEQI Programme Working Group would like to thank all Clinical Leads, Local Operational Managers, and participants for their work to date.