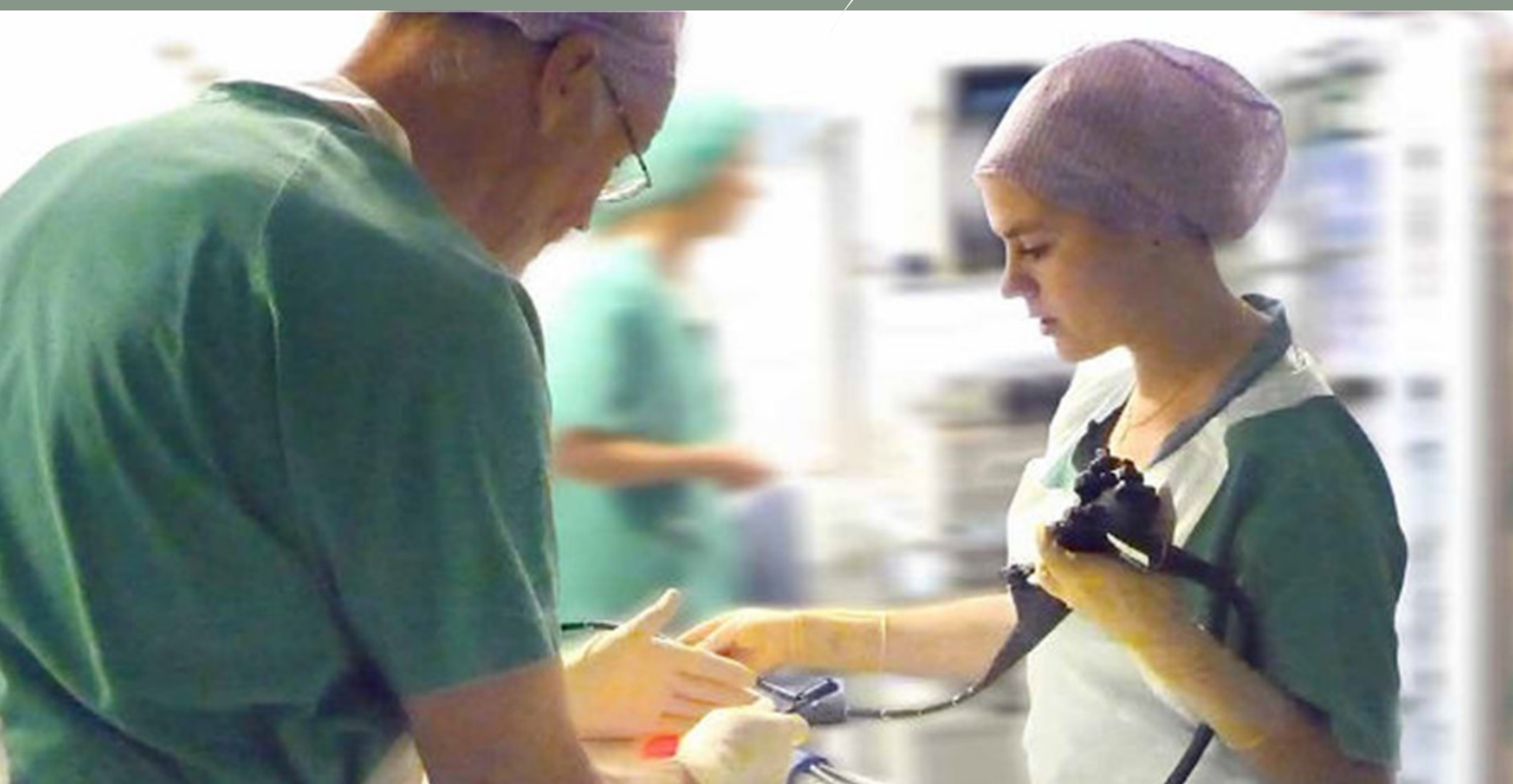


# GI Endoscopy National QI Programme 2017 Annual Data Report



CONJOINT BOARD IN IRELAND  
of the  
*Royal College of Physicians and Royal College of Surgeons*

## Authors

Prof Steve Patchett (Chair)	Consultant Gastroenterologist, Beaumont Hospital, Dublin
Mr Fiachra Cooke	Consultant Colorectal Surgeon, University Hospital Waterford
Dr Glen Doherty	Consultant Gastroenterologist, St. Vincent's University Hospital
Ms Ann Hanly	Consultant Surgeon, St. Vincent's University Hospital
Ms Sharon Hough	Advanced Nurse Practitioner, St. James's Hospital
Dr Jan Leyden	Consultant Gastroenterologist, Mater Misericordiae
Ms Debbie McNamara	Consultant Surgeon, Beaumont Hospital, Dublin, Irish Representative Association of Coloproctology of Great Britain and Ireland
Dr Subhasish Sengupta	Consultant Gastroenterologist, Lourdes Hospital, Drogheda
Dr Maeve Skelly	Consultant Gastroenterologist, University Hospital Limerick
Ms Sarah Treleaven	Programme Manager, RCPI
Mr Philip Ryan	Quality Analyst, RCPI
Mr Conor Canavan	Project Executive, RCPI



# Hospitals Contributing to 2016 Dataset

Bantry General Hospital	Beaumont Hospital, Dublin	Blackrock Clinic
Bon Secours Hospital Dublin	Bon Secours Hospital Galway	Cavan General Hospital
Connolly Hospital Blanchardstown	Cork University Hospital	Galway Clinic
Letterkenny University Hospital	Louth County Hospital	Mallow General Hospital
Mater Misericordiae University Hospital	Mater Private Hospital, Dublin	Mercy University Hospital
Midland Regional Hospital, Tullamore	Mid-Western Regional Hospital, Ennis	Mid-Western Regional Hospital, Nenagh
Our Lady of Lourdes Hospital, Drogheda	Roscommon University Hospital	Sligo University Hospital
South Infirmary Victoria University Hospital	South Tipperary General Hospital	St. James' Hospital Dublin
St. John's Hospital, Limerick	St. Luke's General Hospital, Kilkenny	St. Michael's Hospital, Dun Laoghaire
St. Vincent's University Hospital, Dublin	Tallaght Hospital Dublin	University Hospital Galway
University Hospital Kerry	University Hospital Limerick	University Hospital Waterford
Wexford General Hospital		

## Contents

■ Introduction to Analysis	3
■ Summary Points	5
■ Volume of Procedures	7
■ Oesophagogastroduodenoscopy (OGD)	
♦ Successful Intubation	11
♦ Duodenal Second Part Intubation	12
■ Colonoscopy	
♦ Caecal Intubation	15
♦ Comfort Score	21
♦ Bowel Prep	24
♦ Polyp Detection	27
■ Sedatives	
♦ OGD Midazolam	30
♦ Colonoscopy Midazolam	34
♦ Fentanyl	37

## Foreword

The Conjoint Board of the Royal College of Physicians of Ireland (RCPI) and the Royal College of Surgeons in Ireland (RCSI) launched the National Quality Improvement Programme in GI Endoscopy (EQI Programme) in October 2011 in collaboration with the National Cancer Control Programme. As of 2014, this programme has been undertaken with funding support from the HSE Quality Improvement Division.

The spirit of the programme is to be encouraging and supportive of the participants' endoscopy units in collecting and uploading their data and conducting QI activities.

Since 2011, the EQI Programme has developed Quality Improvement Guidelines and released the first phase of targets, as well as developed and released an IT system through which data can be collected, analysed and reported.

This report is the first annual report on the national anonymised aggregate data contained within the reporting tool. It gives a picture of the state of quality in endoscopy in Ireland and should be used to influence decisions regarding the future of the endoscopy service.

The Working Group, on the whole, is encouraged by what the report shows about the state of quality of endoscopy procedures performed in Ireland. This is the first such report regarding quality indicators in endoscopy and should be used as a baseline by which future improvements in endoscopy quality can be measured.

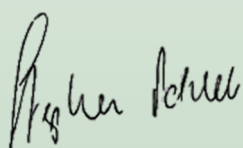
It should also be used to inform health policies surrounding the endoscopy service in Ireland. While the Working Group



acknowledges that this report shows that there are areas for improvement, particularly within colonoscopy, we cannot be sure whether these deficiencies are a result of performance or data collection issues. The Working Group acknowledges that, while some hospitals have been collecting data for a number of years, others are quite new to the electronic recording and reporting of endoscopy information.

Over the next year, the Working Group will continue to communicate with their colleagues surrounding the importance of proper data collection for the accuracy of these statistics. Through these efforts, we would expect that these endoscopy units will provide more mature, complete data as they continue to become familiar with the QI data collection process and thereby achieve improvements. As has been the experience of the EQI to date.

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



Prof Steve Patchett  
Chair of the EQI Programme Working Group

34  
Hospitals

590  
Endoscopists

157,  
505  
Procedures

## Introduction to Analysis

The information presented in this report is based on data collected pertaining to Quality Improvement activities performed by GI Endoscopy Departments across Ireland.

## Data Collection

As is standard practice, staff from GI Endoscopy units nationwide record data regarding clinical details for each procedure performed on an Endoscopy Reporting System (ERS). The data regarding these procedures was recorded in each of the 34 Hospitals participating in the National GI Endoscopy QI Programme. These 34 units include all public hospitals that had an ERS at the time and five private hospitals, and provide the entire data population for 2015/2016. This period follows the academic year (01 July 2015 to 30 June 2016) in order to ensure the data collected coincides with annual training cycle. The programme believes it is most useful and coherent to provide statistics on a single cohort of endoscopists as much as possible. The anonymised data was then uploaded to the central National Quality Assurance Information System for Endoscopy (NQAIS - Endoscopy) for reporting and analysis by trained staff quarterly.

Data for this report was collected, for both oesophagogastrroduodenoscopy (OGD), screening and symptomatic colonoscopy (COL) procedures, across Key Quality Indicators (KQIs) such as Intubation Rates, Comfort Scores, Bowel Preparation, and Polyp Detection Rates.

No patient identifiable information is collected within NQAIS-Endoscopy. Hospital identifiable data in the national dataset is anonymised. When reading the report, the same hospital identifier has been used throughout (e.g. Hospital 1 refers to the same hospital throughout).



## **Data Analysis**

An audit of OGD and COL volumes nationally was undertaken in October 2016. This was done to ascertain the percentage of cases captured within NQAIS-Endoscopy versus cases for which the QI Programme has no data. Per the GI Endoscopy QI Programme Working Group's opinion, once the percentage of data reached 70%, analysis of the data contained within NQAIS- Endoscopy commenced. An extract of anonymised aggregate national data was then created. The anonymous national data extracted from NQAIS was then analysed by the GI Endoscopy QI (EQI) Programme's Technical Analyst, in conjunction with the National GI Endoscopy Quality Improvement Working Group.

This data was compared against Targets for KQIs as set out in the National GI Endoscopy QI Guidelines, available at: <https://www.rcpi.ie/quality-improvement-programmes/gastrointestinal-endoscopy>.

All Targets are on a per endoscopist basis. The analysis contained within this report reflects this wherever possible. For many KQIs, statistics based upon all cases performed within specific hospitals are also presented. National performance is also provided for the majority of KQIs.

All analysis based upon the performance of endoscopists against targets considered all cases performed as Endoscopist 1 or Endoscopist 2 assigned to each endoscopist in the ERS. The anonymised information illustrated in this report is reflective of the data submitted to NQAIS- Endoscopy.

## **Approval Process**

This report has been drafted by the Working Group of the GI Endoscopy QI programme and then approved by the Specialty Quality Improvement Programme Steering Committee and the Conjoint Board of RCPI and RCSI.



## Summary Points

- Details of 157, 505 OGDs and colonoscopies completed in Ireland in the 2015/2016 academic year were captured in NQAIS.
- 590 endoscopists are active in Ireland and have details of their cases contained in NQAIS.
- Quality of NQAIS Data is high and improved over the 2015/2016 time period in some Key Quality Areas.
- The use of reversal agents is very infrequent for both OGD and colonoscopy patients.
- While the national caecal intubation rate is high (92%), fewer endoscopists are meeting the 90% target than expected.
- Evidence suggests that those who perform higher volumes of procedures are more likely to meet the caecal intubation rate target, in alignment with international evidence.
- The national polyp detection rate, across both symptomatic and screening colonoscopies is above target at 27%.
- 83% of colonoscopies are performed with no or mild discomfort. Hospital averages vary.
- Data indicates that endoscopists tend to give the same midazolam dosage regardless of patient age despite recommendations





# Volume of Endoscopic Procedures

## Volume of 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. However performing a large number of endoscopy procedures alone is not sufficient proof of competency. Low numbers are likely to be (but not always) associated with poor performance. Low numbers mean the sample size for key performance indicators (KPIs) is low and the confidence intervals around the observed performance will be wide.

It is recommended that the annual number of procedures performed by each endoscopist is documented to ensure that the sample size for other quality indicators (Section 4 and Section 5) is sufficient.

### Key Quality Data:

- Number of OGD procedures performed by each endoscopist
- Number of Flexible Sigmoidoscopy procedures performed by each endoscopist
- Number of Colonoscopy procedures performed by each endoscopist

### Key Recommendation:

Endoscopists should endeavour to keep their number of procedures high in order to keep their skills at proficient levels.

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

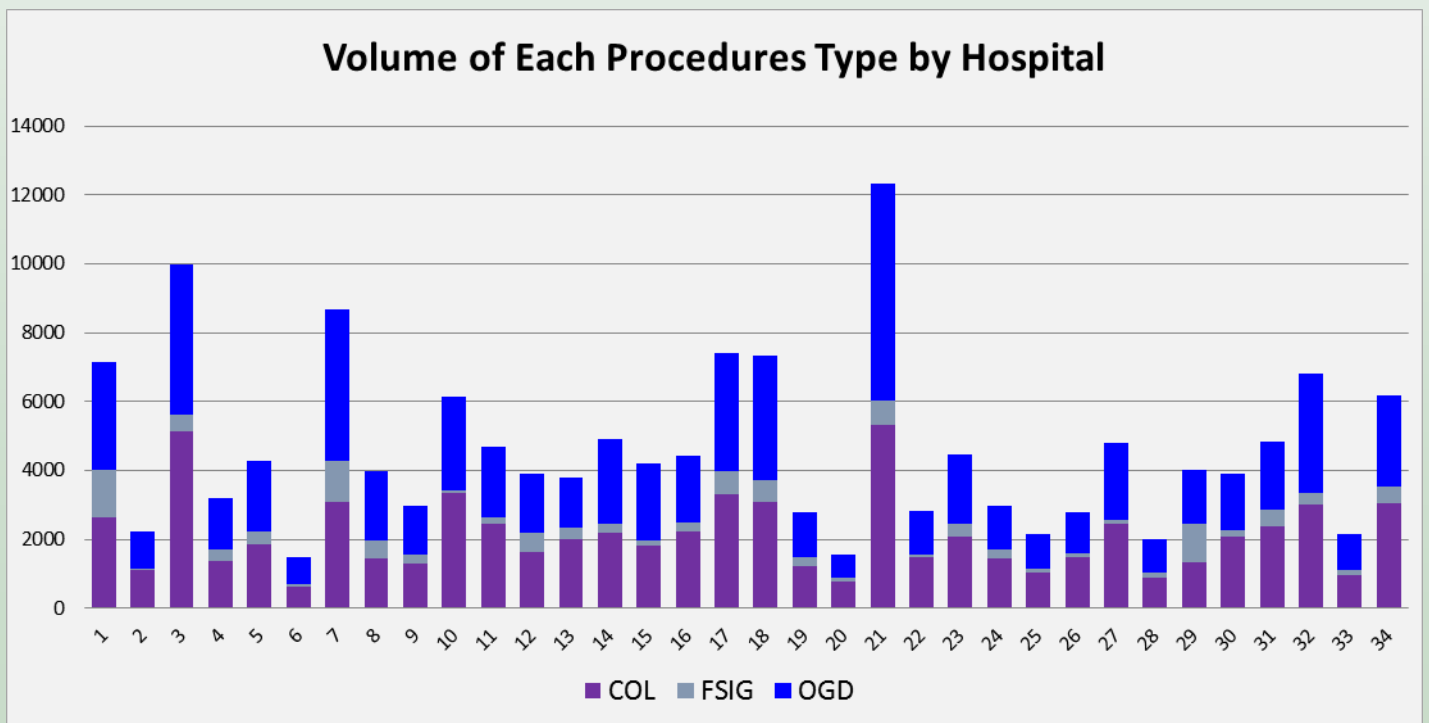
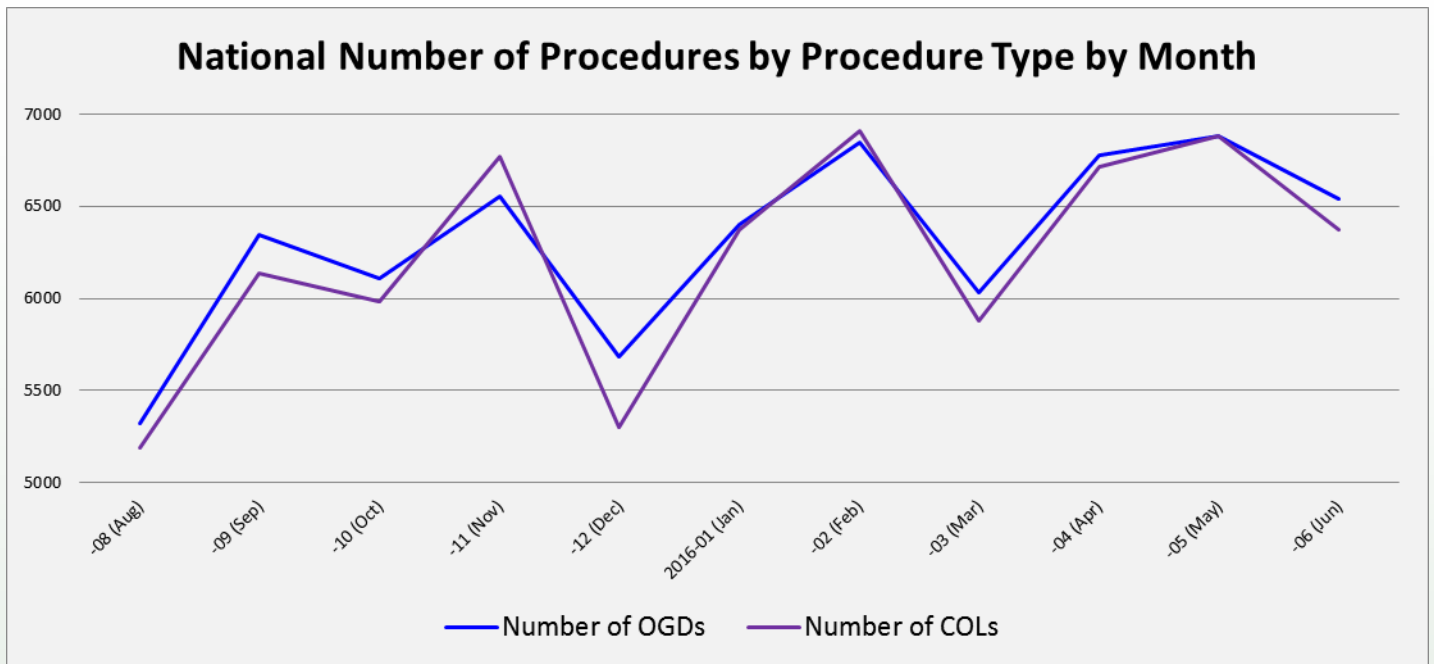
Total 2016 Volume of Cases in NQAIS-Endoscopy	
OGD	72901
Colonoscopy	71737
Flexible Sigmoidoscopy	12866
Total	157504

Colonoscopy						
Number of Cases	<10	11-50	51-100	101-150	>150	Total
Number of Endoscopists	65	148	95	61	168	537

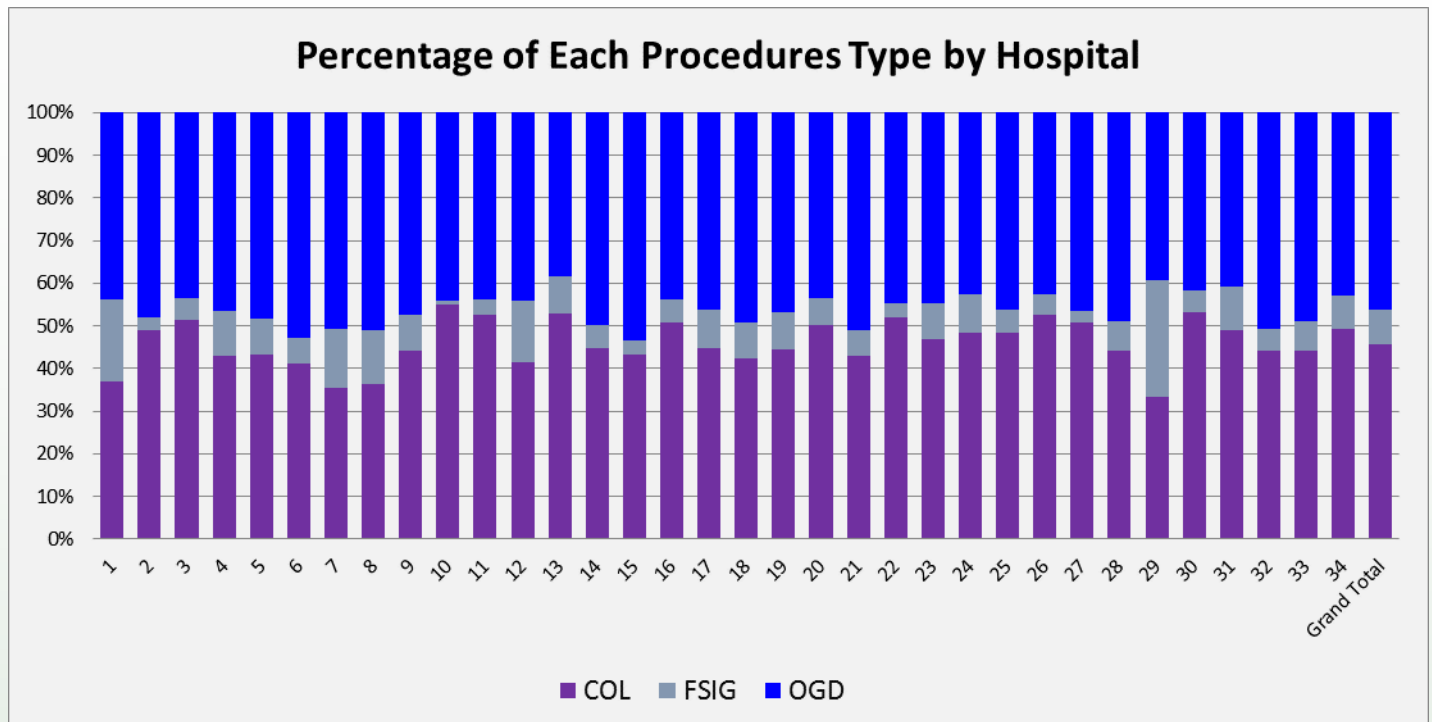
Oesophagogastrroduodenoscopy (OGD)						
Number of Cases	<10	11-50	51-100	101-150	>150	Total
Number of Endoscopists	91	139	103	49	179	569



## Volume of Procedures



## Volume of Procedures



The data within NQAIS-Endoscopy reflects clinical details from all colonoscopies, OGDs and flexible sigmoidoscopies from 34 public and private hospitals for 2016. This data reflects more than 70% of these procedures performed nationally.

Approximately the same number of OGDs and colonoscopies were performed. This represents an opportunity to improve the triaging of OGD patients in particular in an environment in which waiting lists are lengthy. Many hospitals perform very few flexible sigmoidoscopies, which again likely impacts on colonoscopy waiting lists.

Those who perform less than ten procedures annually represent 16% of all colonoscopists and 12% of those who perform OGDs.

Approximately the same volume of OGDs and colonoscopies are performed annually in Ireland.



# Oesophagogastroduodenoscopy (OGD) Key Quality Areas

## OGD - Successful Intubation

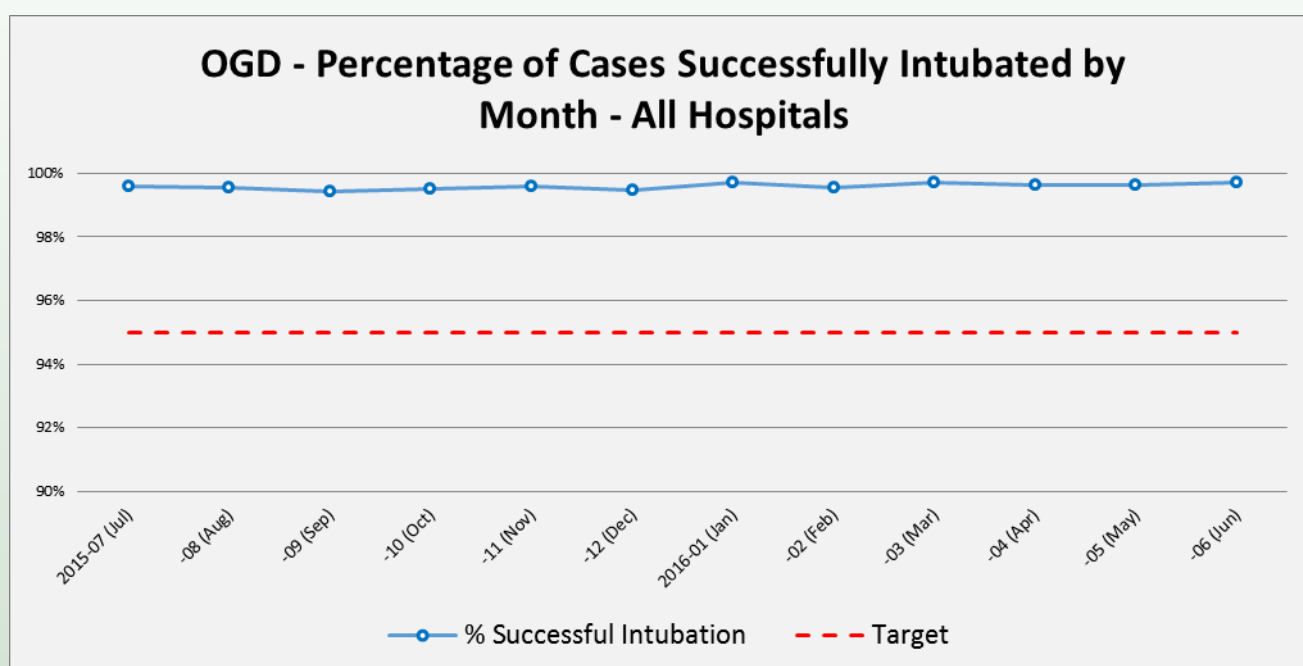
An oesophago-gastro-duodenoscopy (OGD) necessitates successful intubation into the oesophagus.

### Key Quality Data:

Number of successful intubations expressed as a percentage of all cases recorded as being intended to be OGDs

### Key Quality Target:

Successful Intubation percentage of  $\geq 95\%$  of all OGD cases per endoscopist



Nationally, we are well above target consistently for OGD oesophageal successful intubation.

Overall, the data quality and national performance for this particular key quality area is good and well above target. Of the 567 endoscopists performing OGDs, 98% met this target. Of the 2%, or 10 endoscopists, who did not meet the target, low volumes of procedures contributed significantly to their statistics. Data entry by these endoscopists may influence their statistics.



**92%**  
2015/2016 National  
Average

## OGD - Duodenal Second Part Intubation Rate

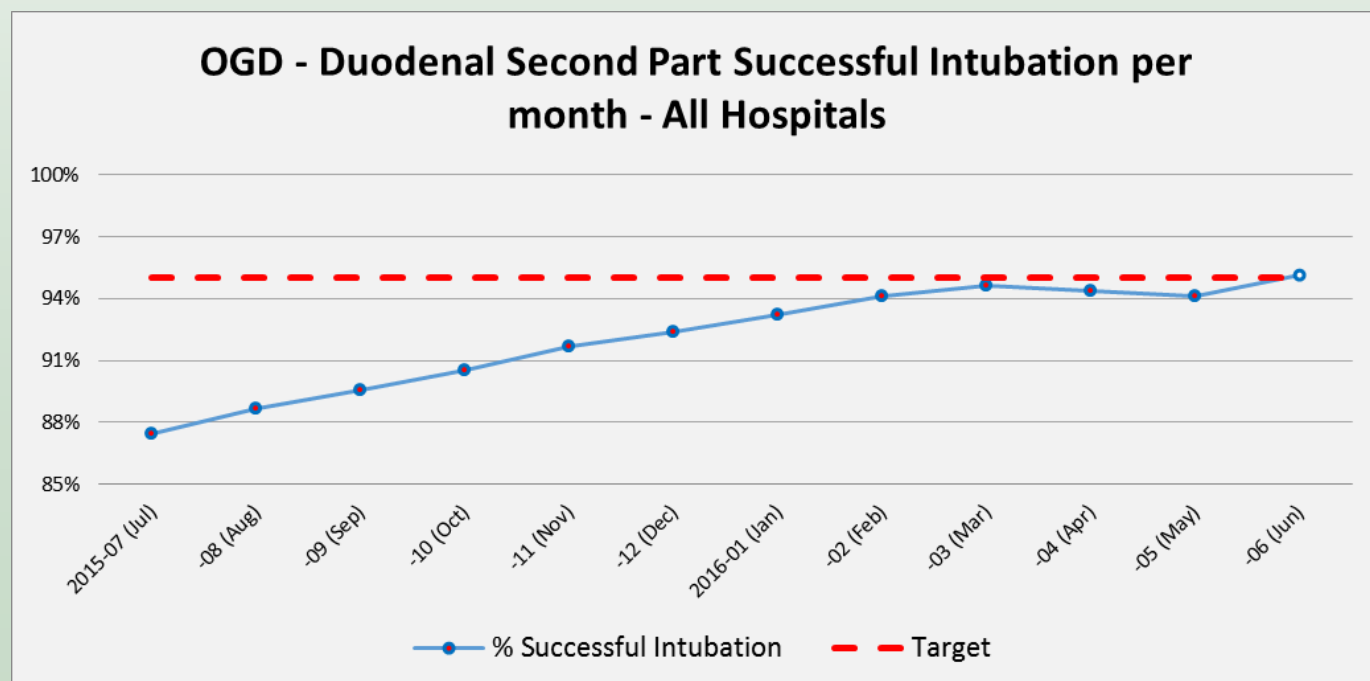
The endoscope should be passed through the pylorus to examine the first and second parts of the duodenum. It is an important quality measure of the completeness of the procedure.

### Key Quality Data:

Number of cases in which Duodenal 2nd part intubation was achieved expressed as a % of total OGD cases per endoscopist

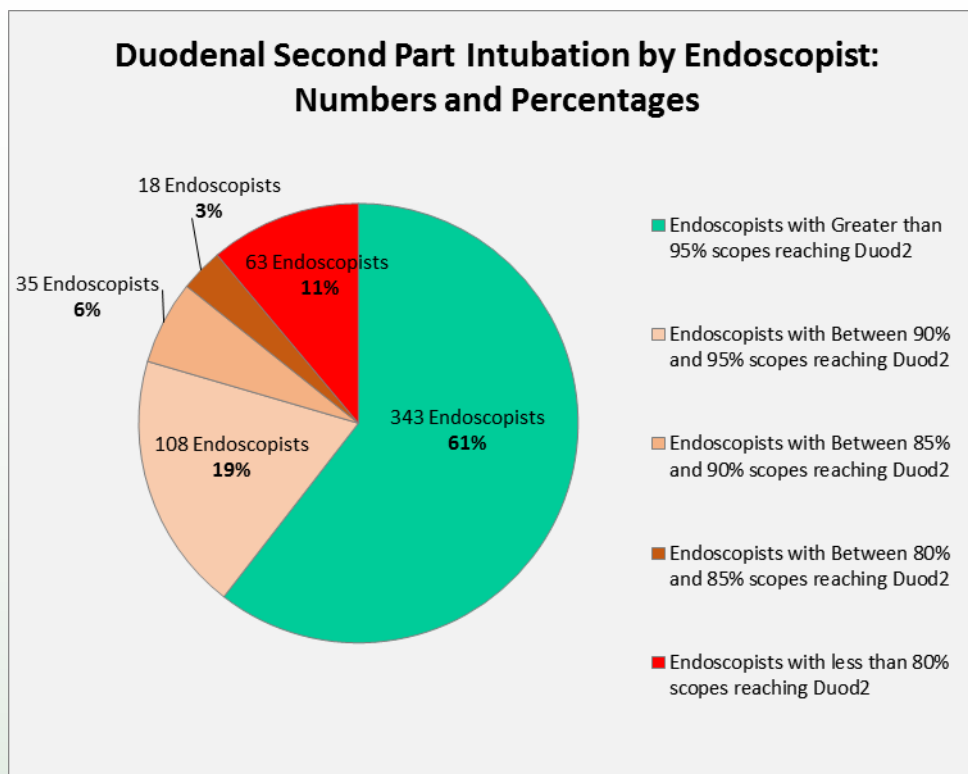
**Key Quality Target:** Intubation of Duodenum Second Part in > 95% of cases

Improvements in the quality of the data recorded resulted in a steady increase in the Duodenal Second Part Intubation Rate. Nationally, we met the target in June 2016, the last month of analysis.





## OGD - Duodenal Second Part Intubation Rate



Over the course of the data collection year, the Duodenal Second Part Intubation rate improved due to improvements to IT systems and efforts to inform hospitals and endoscopists regarding recording this information via the ERS. The Working Group believes that this is a result of improved data recording practices recording practices of endoscopists rather than a change in practice.

This Key Quality Area highlights the importance of training endoscopists on how to use the ERS in their hospital properly in order to gather accurate data. This is a particularly important consideration for hospitals planning their annual induction for new NCHDs every academic year.

Overall, 61% of endoscopists met this target for the year. The Working Group believes that this number may very well increase in the next round of data analysis as a result of the improvements in data collection.

# Colonoscopy Key Quality Areas

## Colonoscopy — Caecal Intubation Rate

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

Adjusted completion rates (for factors such as bowel prep or obstruction) are open to diverse interpretation and it is recommended to use unadjusted rates for the standard.

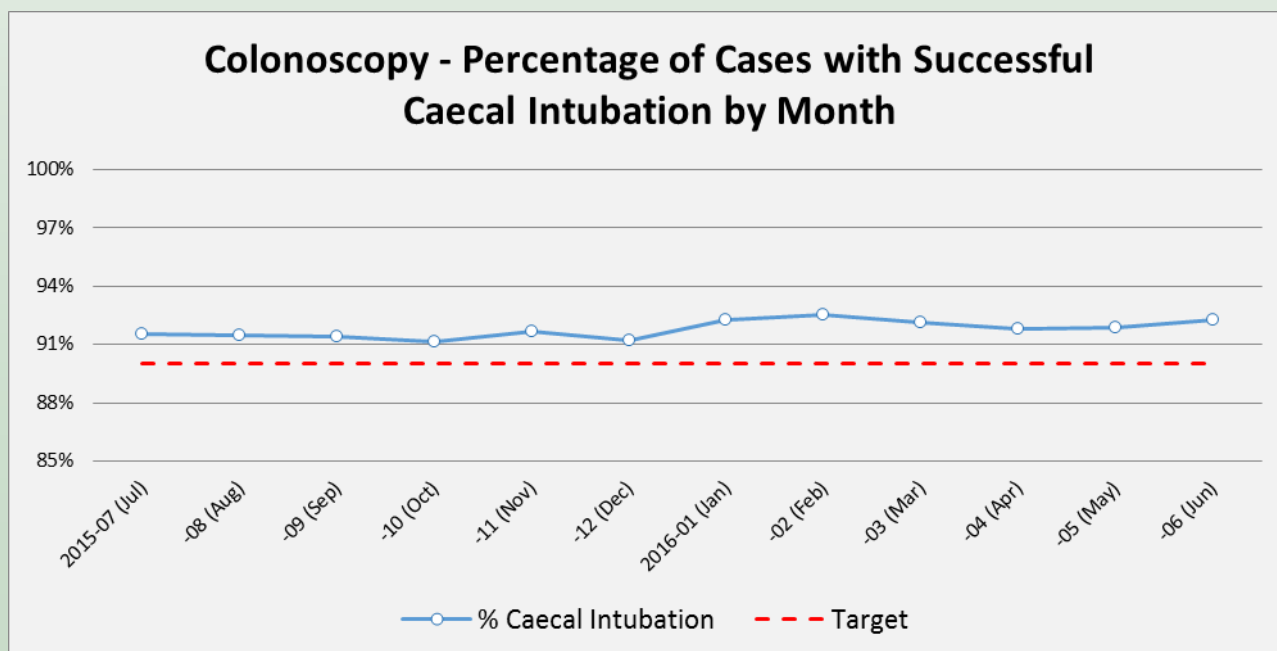
Photographic evidence of caecal intubation should always be obtained. It is strongly recommended that hospitals regularly audit that photographs are obtained. They should also audit the images for quality and that they indicate that the anatomical point recorded was indeed reached.

### Key Quality Data:

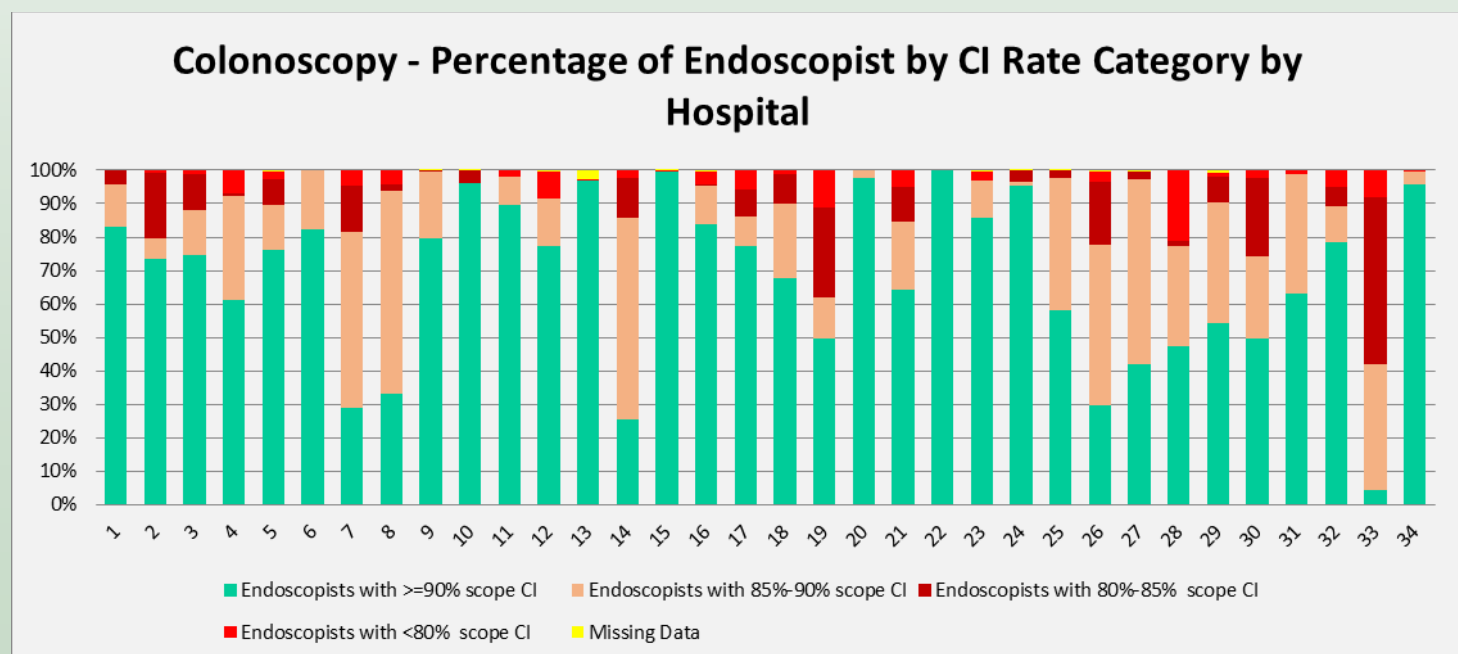
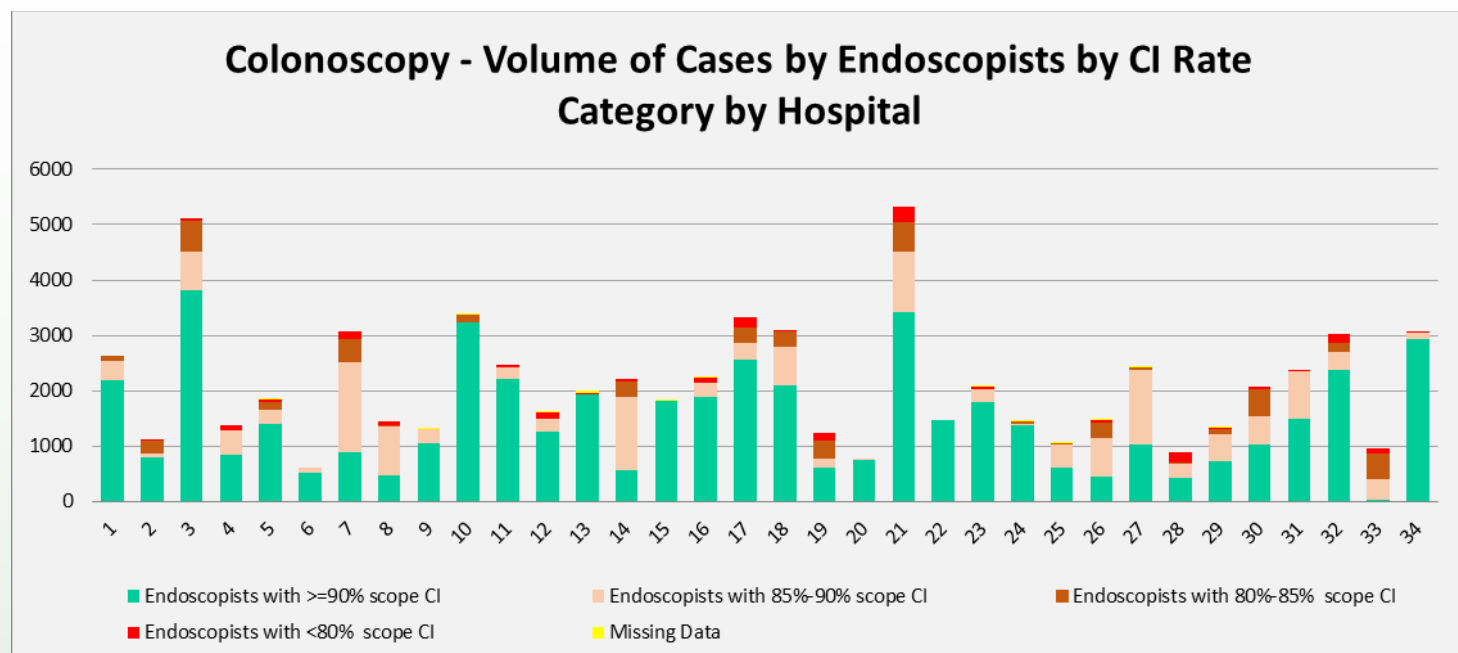
Number of colonoscopies where the terminal ileum / caecum / anastomosis has been reached expressed as a % of total colonoscopies per endoscopist

### Key Quality Target:

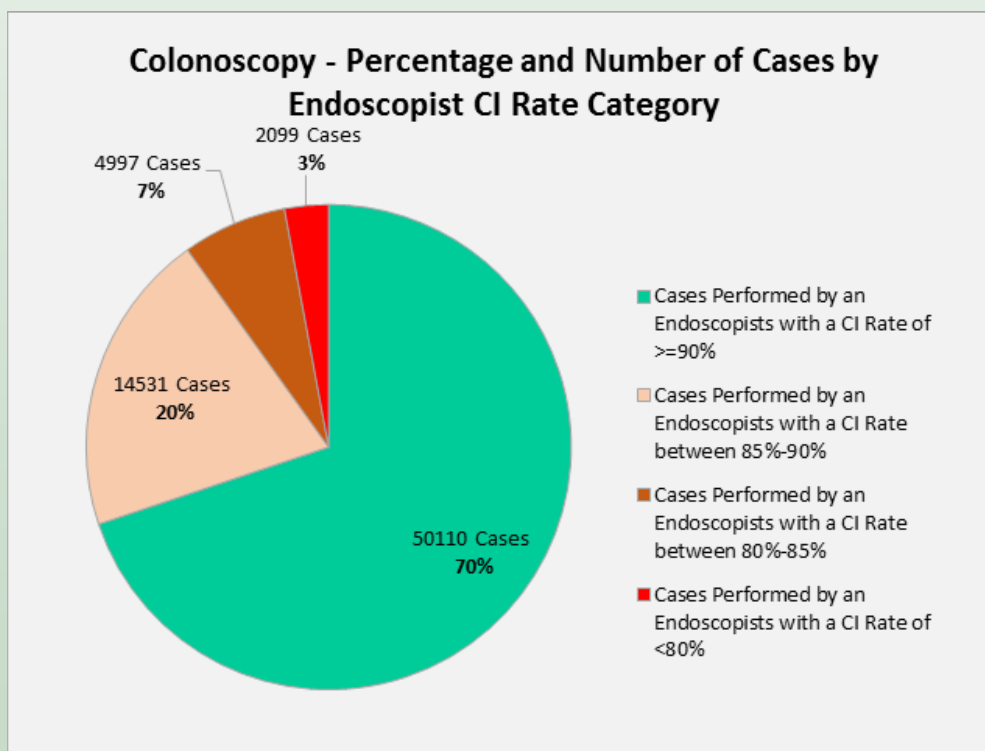
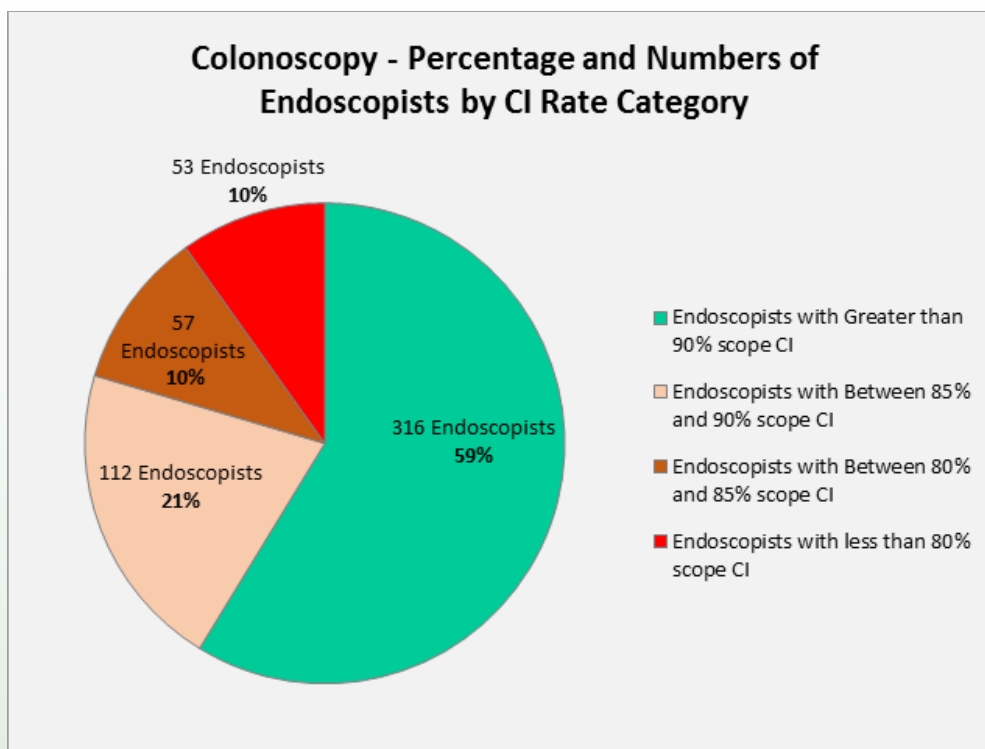
90% of colonoscopy cases should reach the terminal ileum/caecum or anastomosis



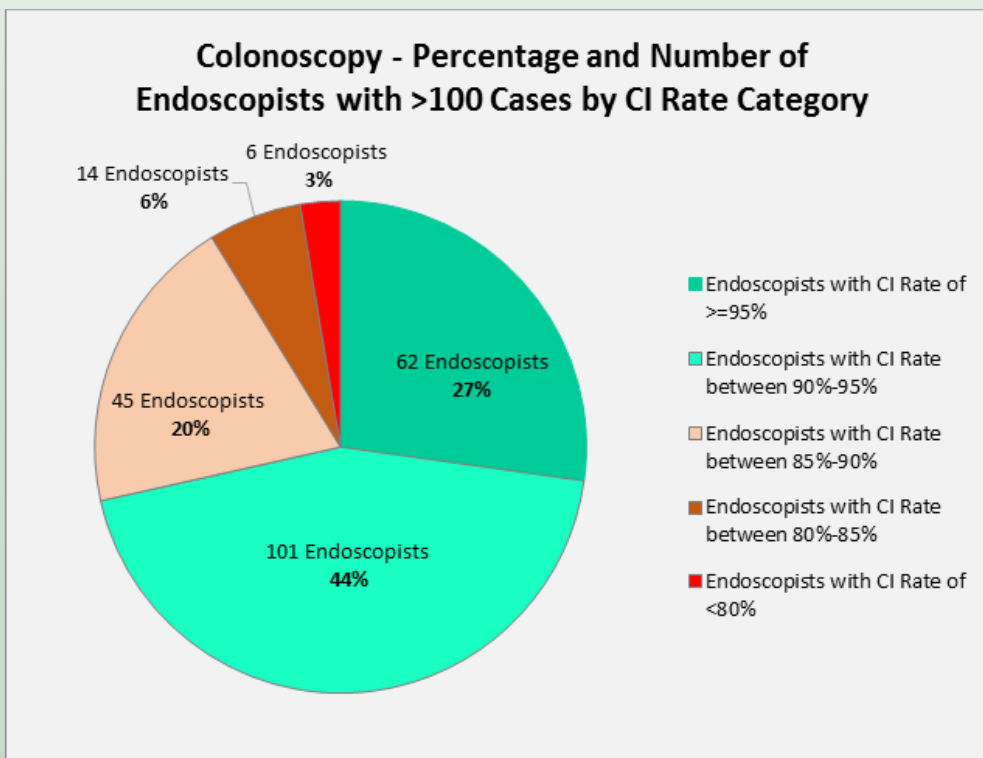
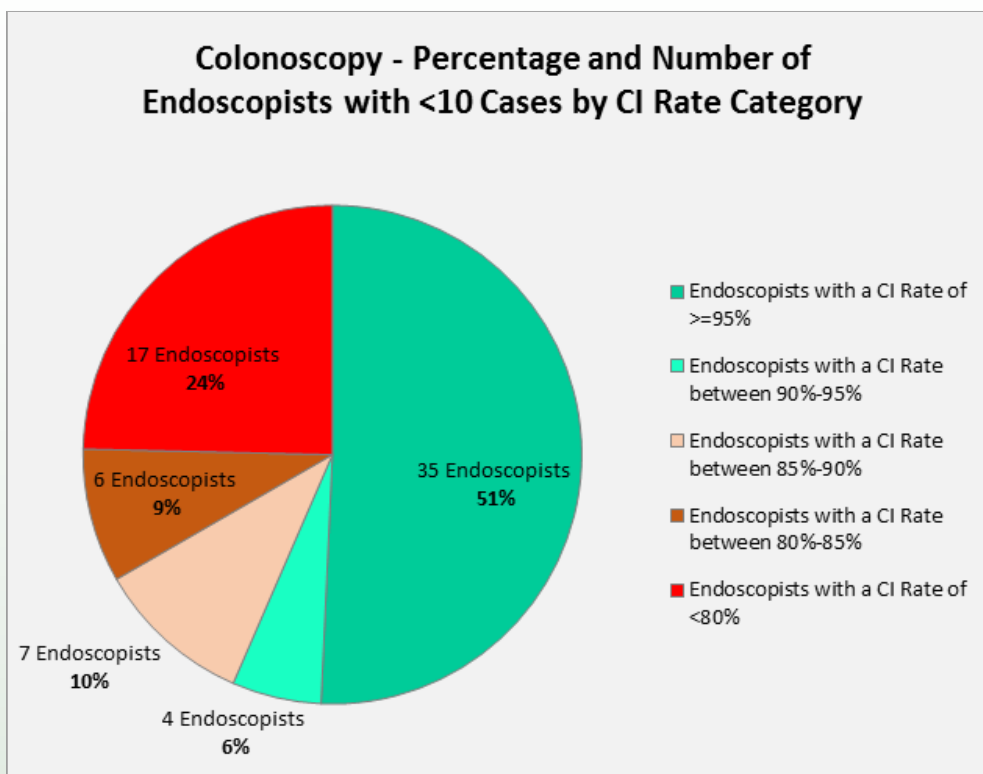
## Colonoscopy — Caecal Intubation Rate



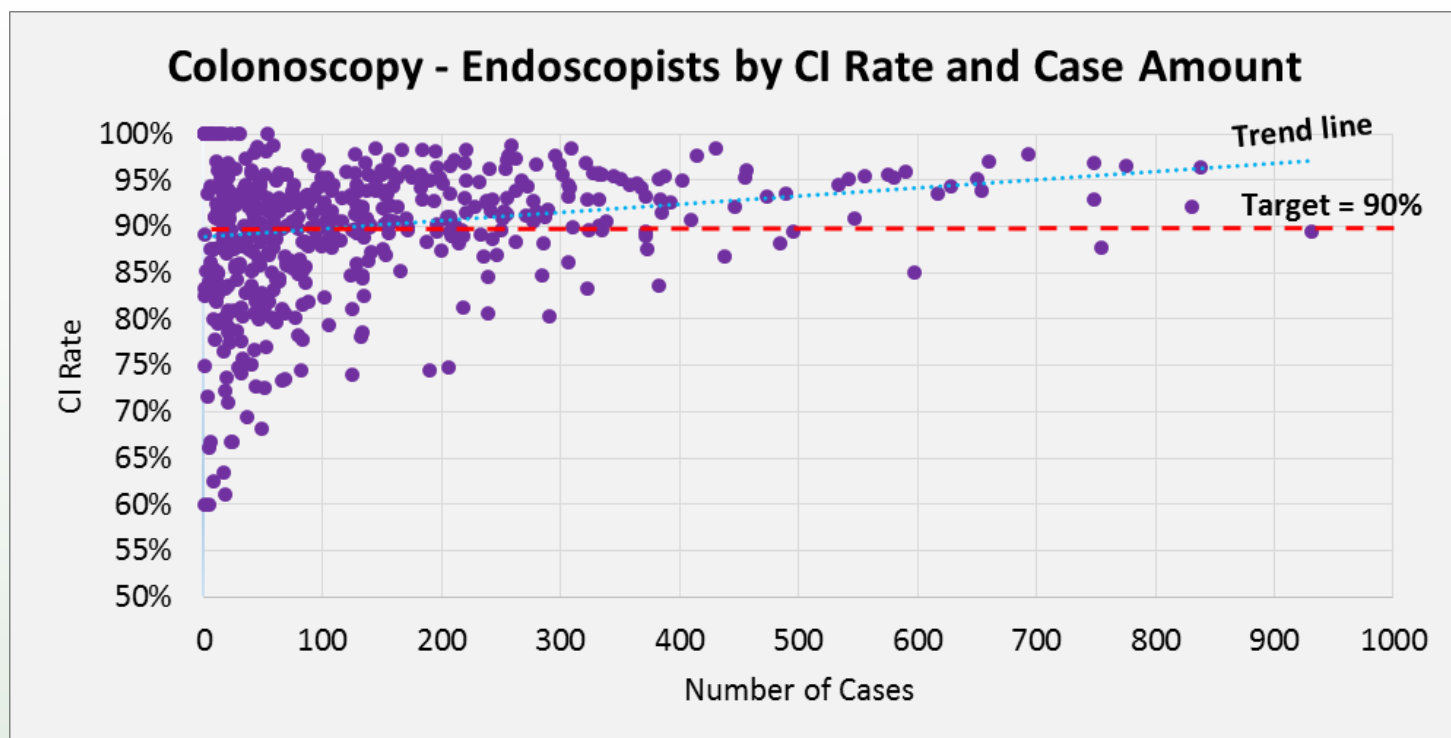
## Colonoscopy — Caecal Intubation Rate



## Colonoscopy — Caecal Intubation Rate



## Colonoscopy — Caecal Intubation Rate



Nationally, over 90% of colonoscopy cases reach the terminal ileum, caecum or anastomosis.

Endoscopists who perform greater volumes of colonoscopies are more likely to meet the target. 70% of all colonoscopy cases are performed by endoscopists who meet the target.

**92%**  
2015/2016  
National Caecal  
Intubation  
Rate

**59%**  
Endoscopists  
Meeting Target



## Colonoscopy—Caecal Intubation Rate

Caecal Intubation Rates are a key indicator of colonoscopy completeness and procedure quality. Nationally, we meet the target in that there 92% of all colonoscopies are recorded as being “complete” and reaching the caecum, anastomosis or terminal ileum. This rate remains fairly constant throughout the year.

There is international evidence to support that those endoscopists who perform greater volumes of colonoscopies are able to maintain their skills more easily than those with lower procedure volumes. This data analysis provides more evidence to this. We can see that cohort of endoscopists who perform ten colonoscopies or fewer annually show higher rates of missing the target of 90% caecal intubation. We also see that the cohort of endoscopists who perform 100 cases or more annually have 71% meeting the target, versus the national 59%.

Though the Working Group was interested in finding that there were still endoscopists performing over 100 cases annually who were not meeting the 90% target.

In the hospital performance analysis, we see that some hospitals have very few endoscopists who meet the target while others have all or nearly all of their endoscopists meeting the target. It should be noted that the analysis does not take into consideration the number of endoscopists within each hospital, as they are anonymised.

In the future, the EQI Programme intends on measuring and setting targets for the number of photographs taken as part of colonoscopy.

## Colonoscopy— Comfort Scores

While the principle indicator for assessing competence in colonoscopy is caecal intubation rate, patient comfort during endoscopy is also considered to be another measure of endoscopy performance quality. Comfort is a key recommendation and central to any patient centred QI programme in GI Endoscopy. It is therefore proposed to measure a comfort score for each procedure using the modified Gloucester Scale below.

### Key Quality Data:

Median comfort level score per endoscopist

### Key Recommendation:

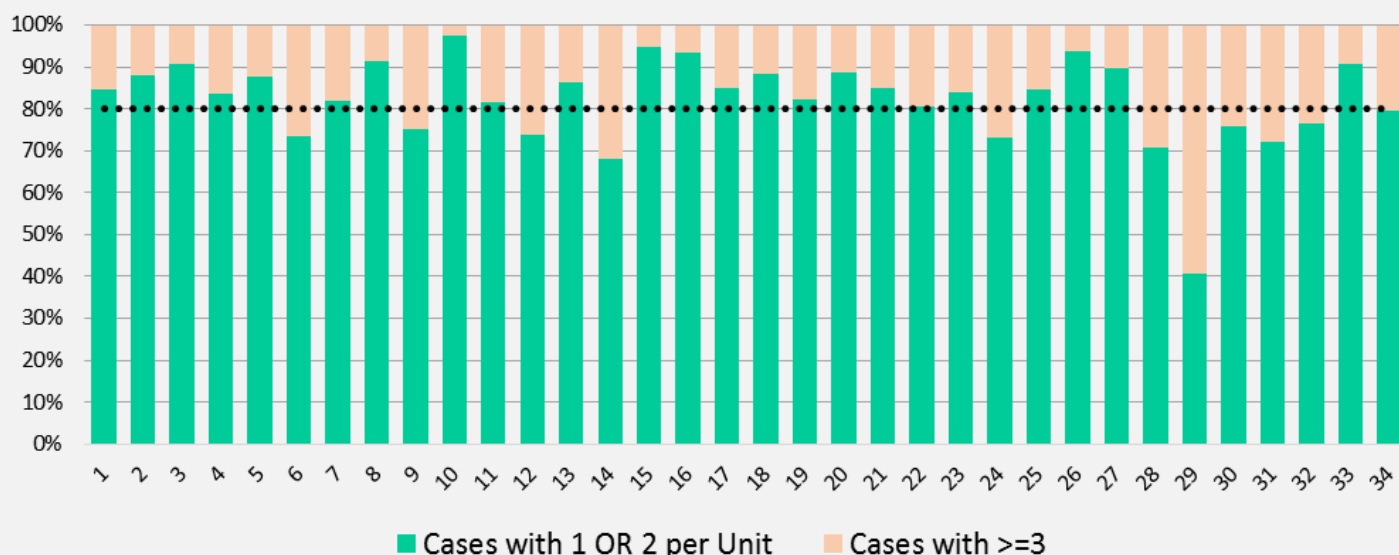
Use the modified Gloucester scale

Comfort scores should be assessed by a third party who will usually be an endoscopy nurse and agreed with the endoscopist before recording

### Key Quality Target:

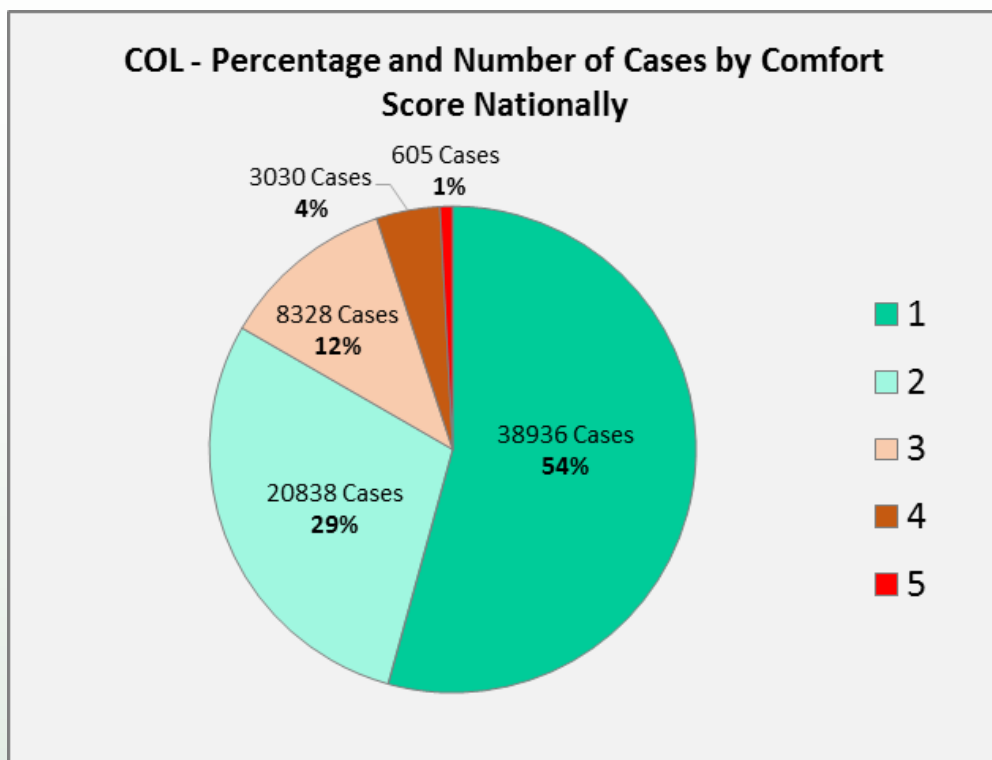
80% of colonoscopy cases should have a comfort score of a 1 or 2

**Colonoscopy - Percentage of Cases by Hospital by Comfort Score**



## Colonoscopy— Comfort Scores

**83%**  
Colonoscopies  
Performed with  
No or Mild  
Discomfort



54% of colonoscopies are performed with no discomfort. Less than 1% of all cases are performed with severe discomfort. However, the majority of endoscopists are not meeting the 80% target.

The data analysis shows that nearly half of 239 endoscopists not meeting the target are above 70% (105 endoscopists) but do not quite achieve 80%.

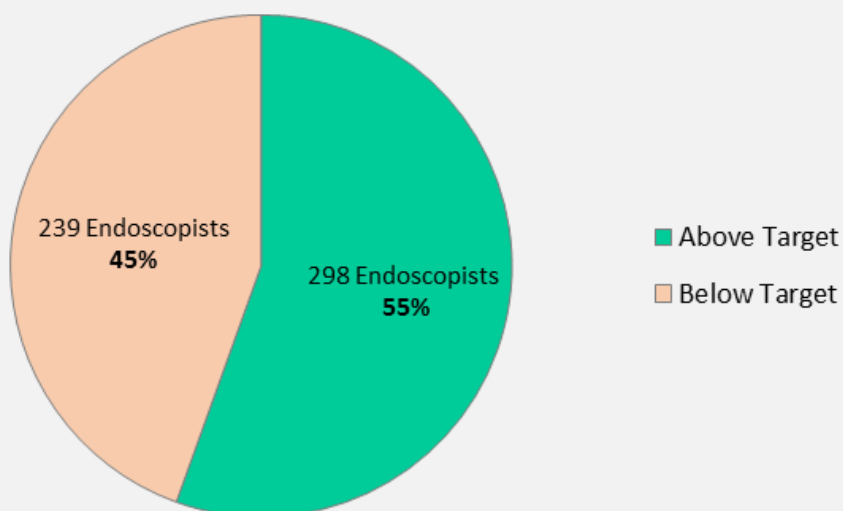
In the future, the Programme will focus on ensuring the consistency of the comfort score reported figures, which should be determined by the endoscopy nurse in the procedure room at the time of the procedure.

A large majority of colonoscopies are performed nationally with no or minimal discomfort. The cohort of endoscopists who meet the target (55% meet target) perform the majority of colonoscopies (65% of cases).

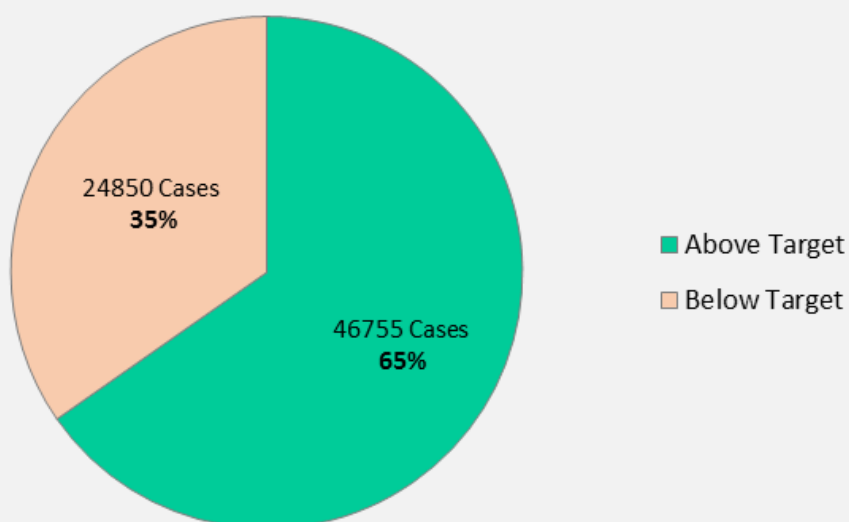
There is large variation between the performance of hospitals against this target.

## Colonoscopy— Comfort Scores

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



**Colonoscopy - Percentage and Number of Cases Performed by Endoscopists Above and Below Comfort Score Target**



## Colonoscopy—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 Data:

Record the bowel preparation for each colonoscopy. Express the total number of colonoscopies with Adequate and Excellent scores as a % of all colonoscopies

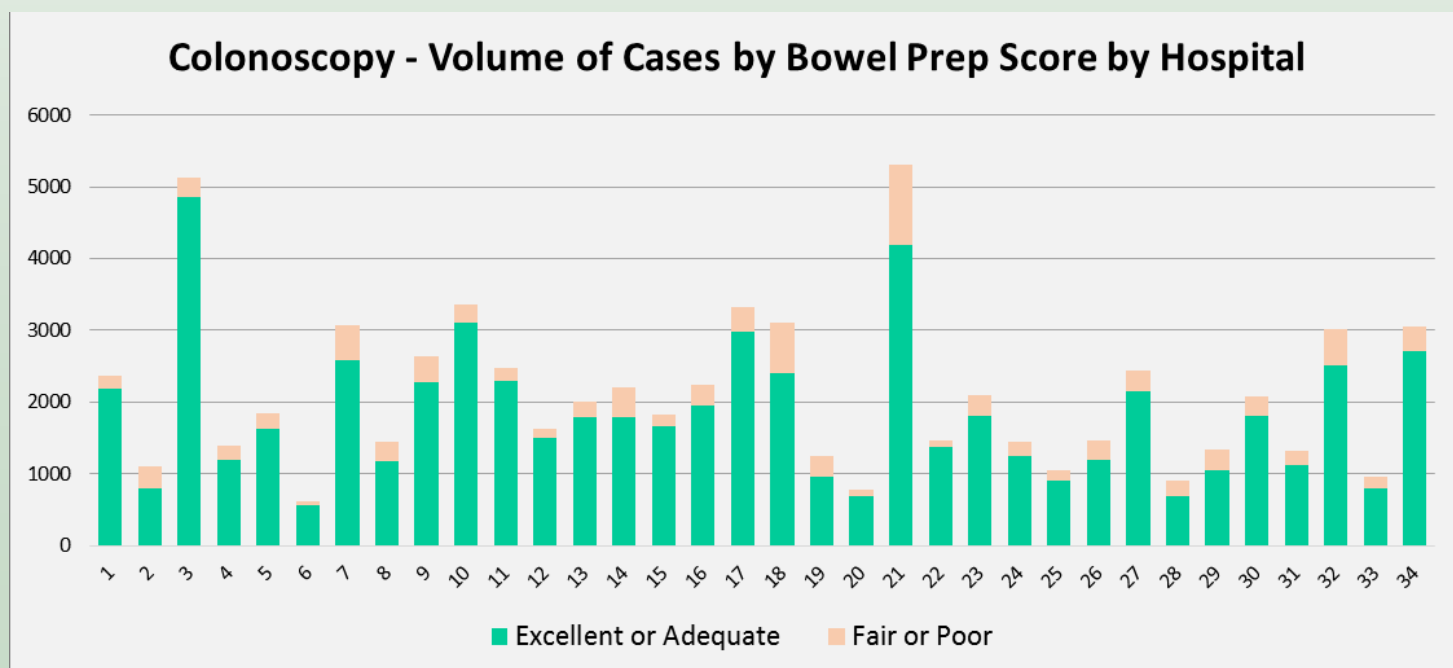
### Key Recommendation:

Use the above scale to record the quality of bowel preparation for each procedure.

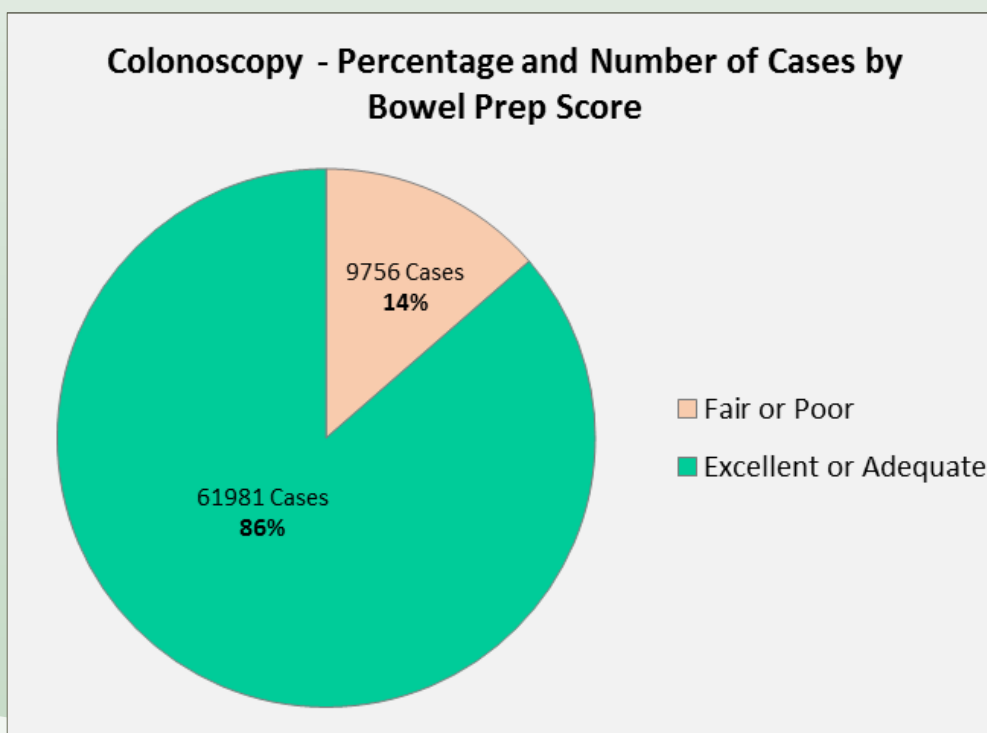
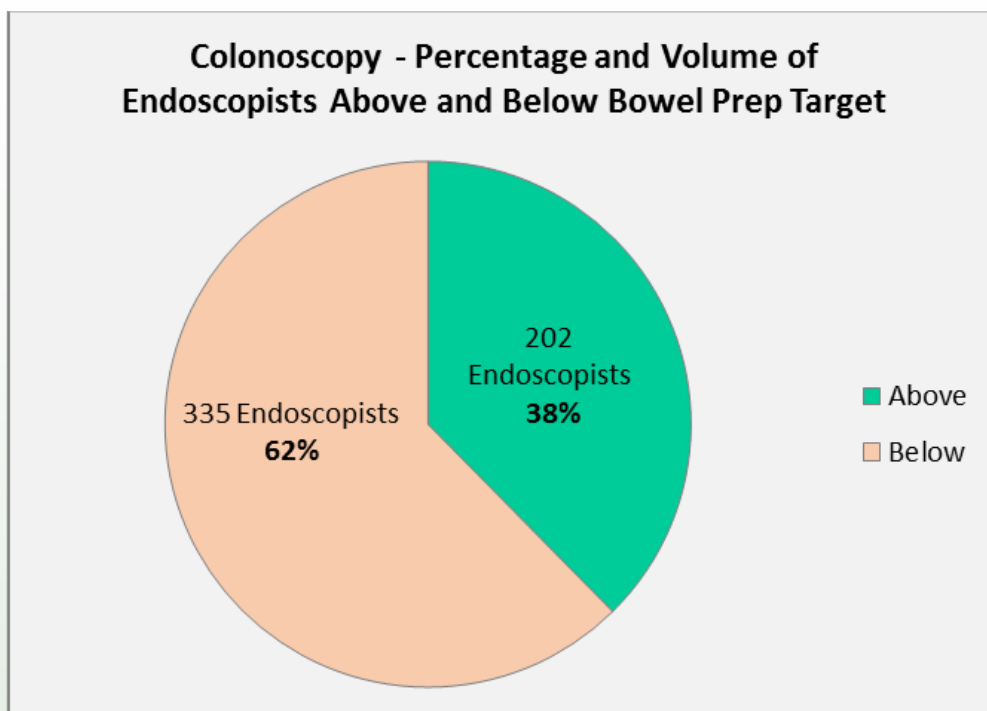
It is recommended that there should be colonic cleansing protocols in place and the effectiveness of these should be monitored continuously by the endoscopy user group.

### Key Quality Target:

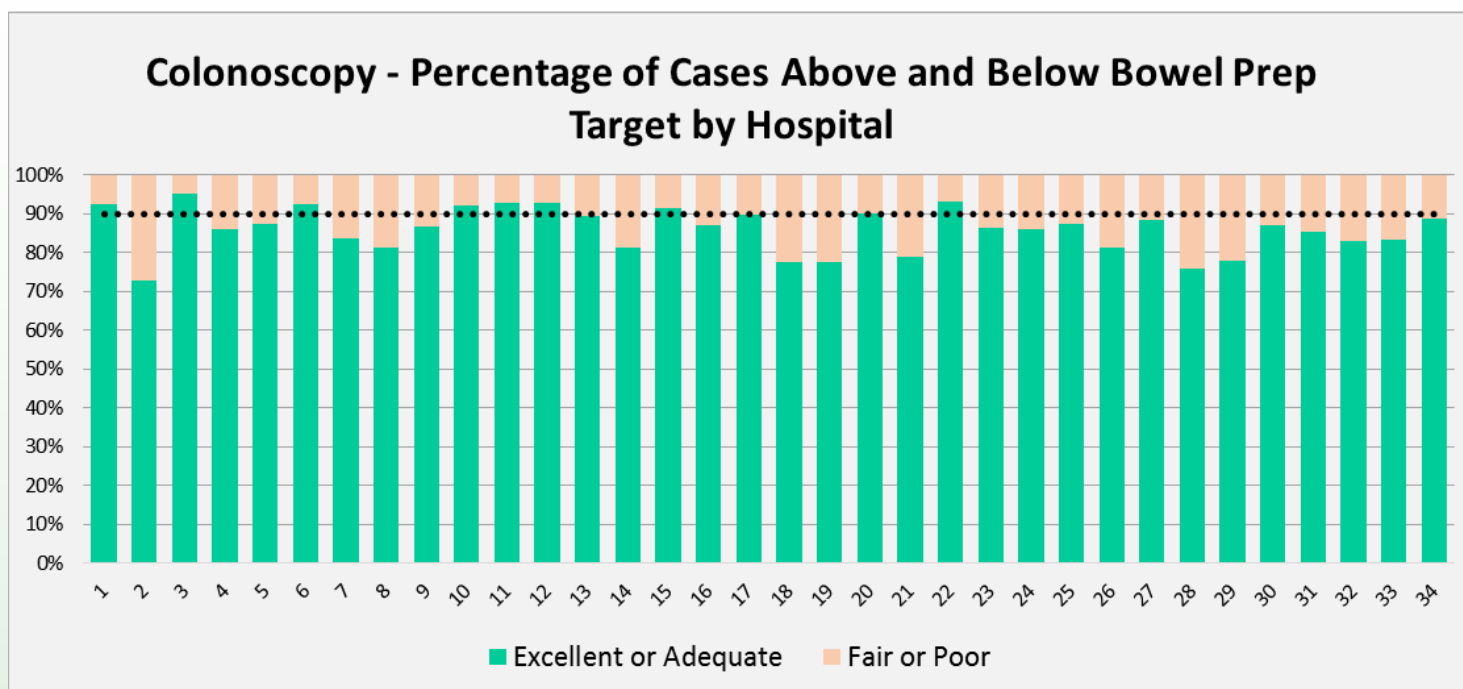
Bowel preparation described as excellent or adequate in > 90%



## Colonoscopy—Bowel Preparation Score continued



## Colonoscopy—Bowel Preparation Score



Overall nationally, we did not meet the 90% target for 2015/2016, with 86% of cases with excellent or adequate bowel prep scores.

### 9 Hospitals Met the Bowel Prep Target

Nationally we did not meet the bowel prep target. Nine of 34 hospitals met the 90% target. Of these nine hospitals, four are private hospitals. While many hospitals did not meet the target, many are close to doing so. Eighteen hospitals of the remaining 25 are between 80% and 90% for this target. The Working Group is of the opinion that an investigation as to the preparations used by these nine hospitals should be undertaken to help understand what methods are correlated with better bowel prep scores in differing patient cohorts.



## Colonoscopy— Polyp Detection Rate

There is good evidence of varying rates of detection of high-risk lesions and of missed lesions in back to back colonoscopy studies. Internationally accepted guidelines on performance indicators of colonoscopy recommend monitoring direct or proxy markers of detection of suspicious lesions including polyps, adenomas or withdrawal times. As a result of the difficulty of linking endoscopy reporting systems with histology, at this time, the QI Programme measures Polyp Detection Rates rather than measuring direct adenoma detection rates.

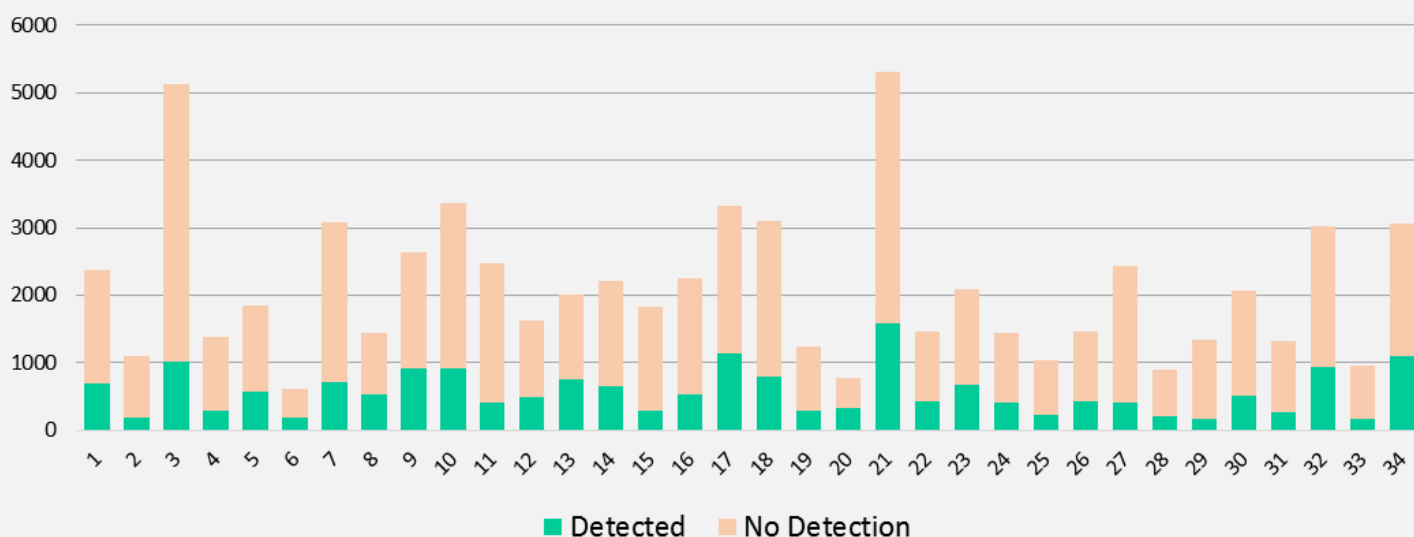
### Key Quality Data:

- Colonoscopies with polyps detected expressed as a % of total colonoscopies per endoscopist

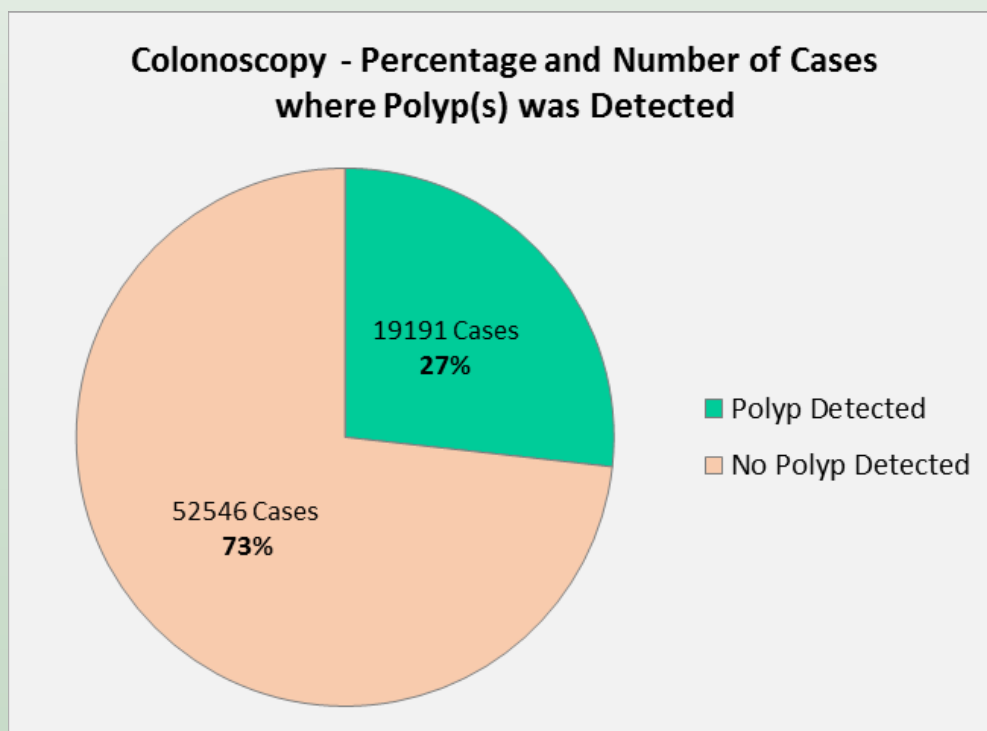
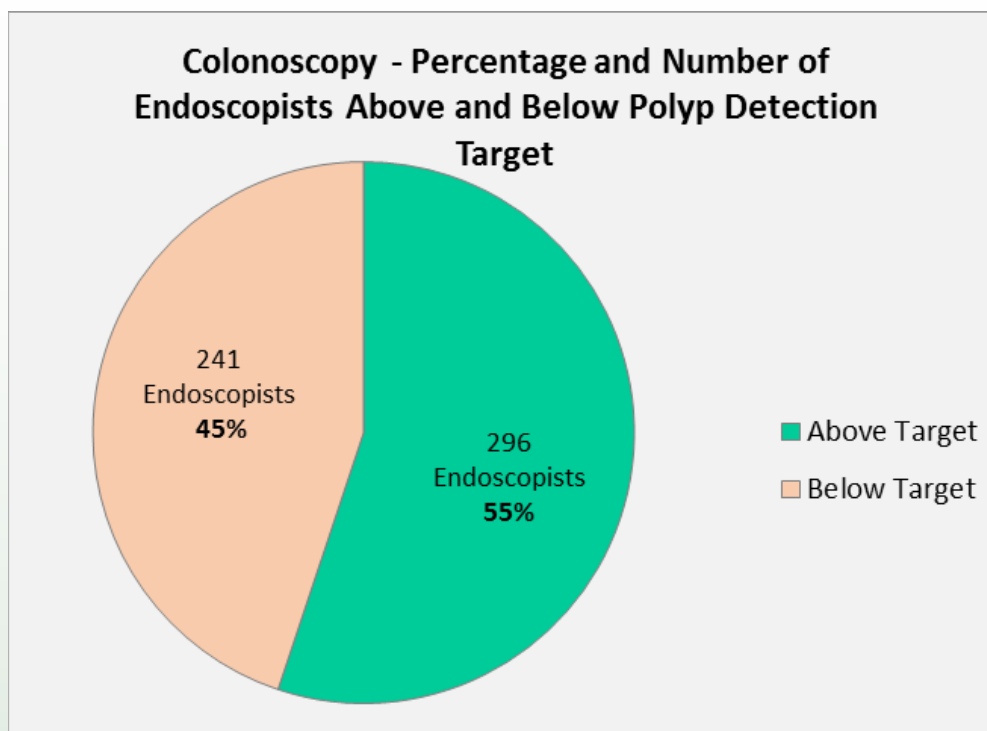
### Key Quality Target:

20% of all colonoscopies have a polyp(s) detected

**Colonoscopy - Volume of Cases where Polyp(s) was Detected by Hospital**



## Colonoscopy — Polyp Detection Rate



## Colonoscopy — Polyp Detection Rate

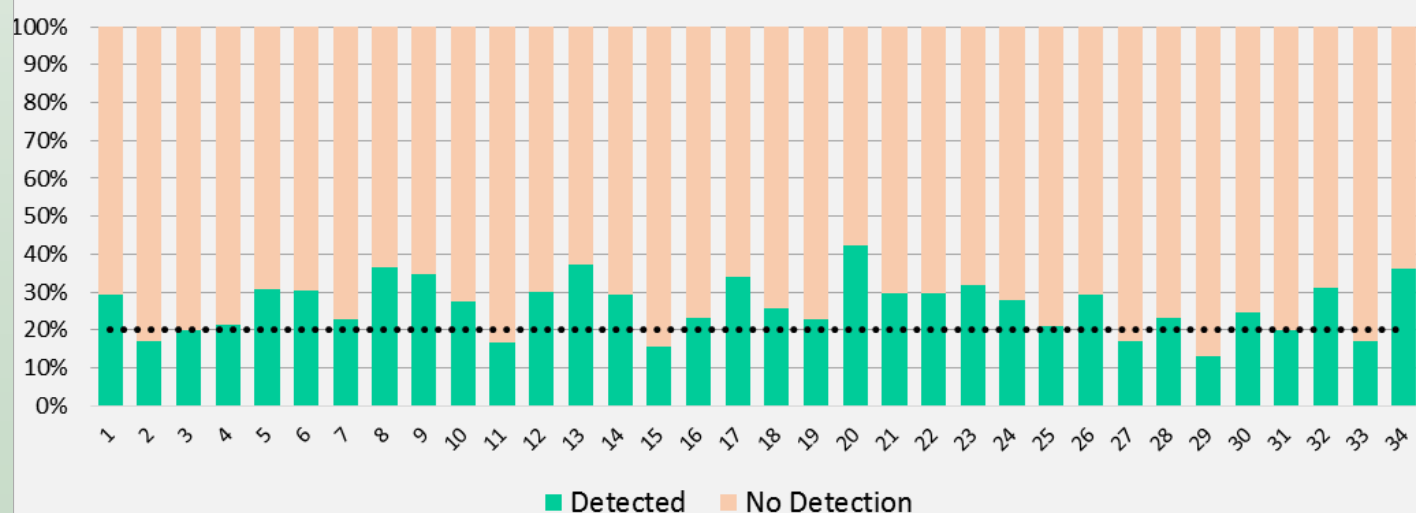
The national polyp detection rate is 27%, above the 20% target.

The national polyp detection rate is well above the target set. 27 hospitals met this target. 11 hospitals were had one or more polyps detected, excised or retrieved in over 30% of their cases.

However, only 55% of endoscopists met the target. This is similar to statistics seen caecal intubation rate, as this cohort of endoscopists performed the majority of colonoscopies nationally. Of those who did not meet the target, 4 were above 15%

**19,167**  
Cases with at least one  
polyp detected

**Colonoscopy - Percentage of Cases where Polyp(s) was Detected by Hospital**



## Sedatives

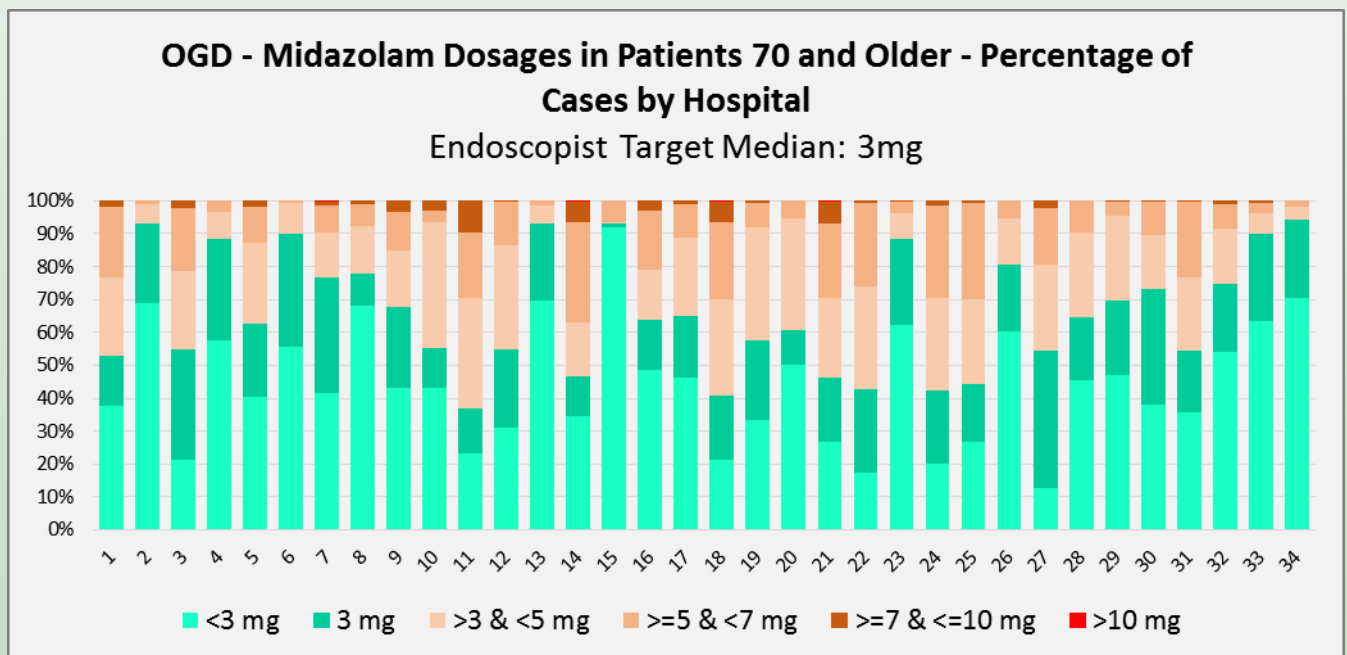
Many patients tolerate upper endoscopy with only topical anesthesia of the oropharynx, however some patients may need sedation. Likewise, colonoscopy can be an uncomfortable experience but this discomfort can be reduced by careful patient preparation and sedation. Sedation improves patient tolerance of endoscopy however, excessive sedation is considered to be an important contributor to cardio-respiratory complications following endoscopy in high risk patients or elderly patients.

### Key Quality Data:

Sedative type and quantity used for patients under 70 years of age, and 70 years and over expressed as a median figure per Endoscopist

### Key Recommendations:

Sedative should be used to achieve conscious sedation; where the patient displays purposeful response to verbal stimulation.



## Sedatives

The median level of sedation for older patients ( $\geq 70$  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 case be reviewed.

### Key Quality Targets:

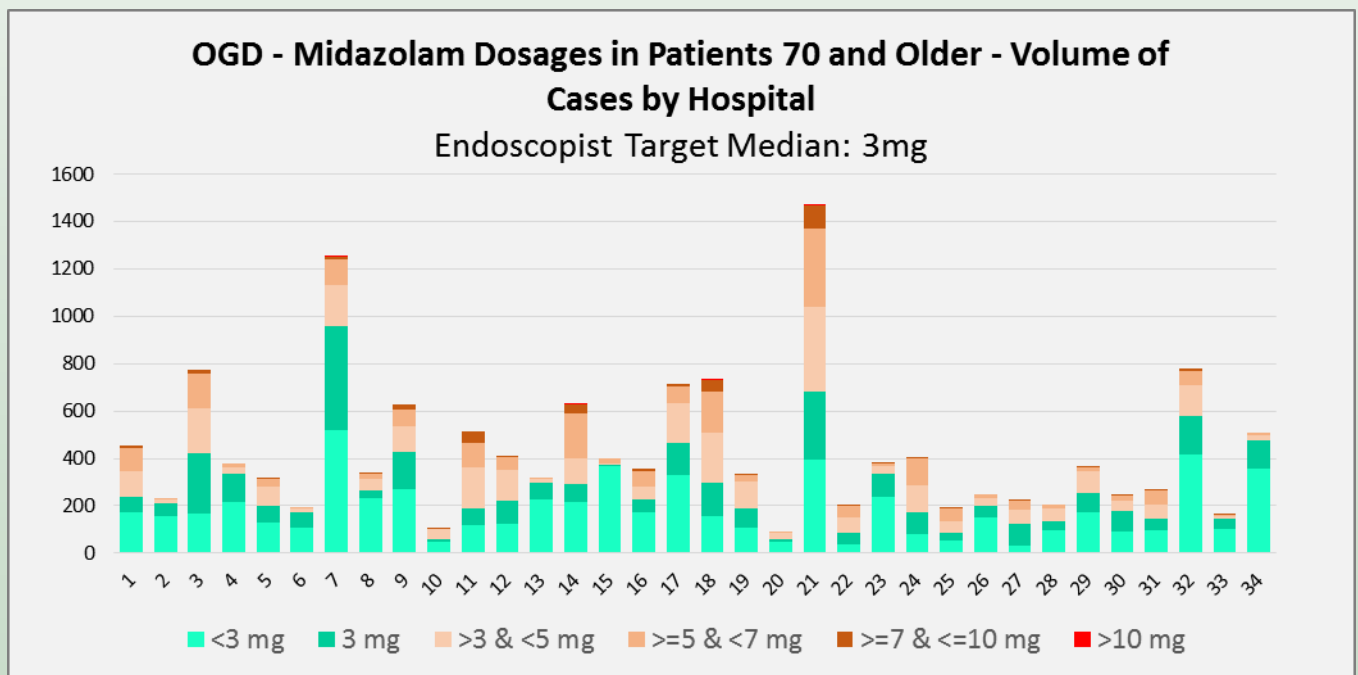
Median quantity of Midazolam:

$\leq 5$ mg for patients below 70 years of age

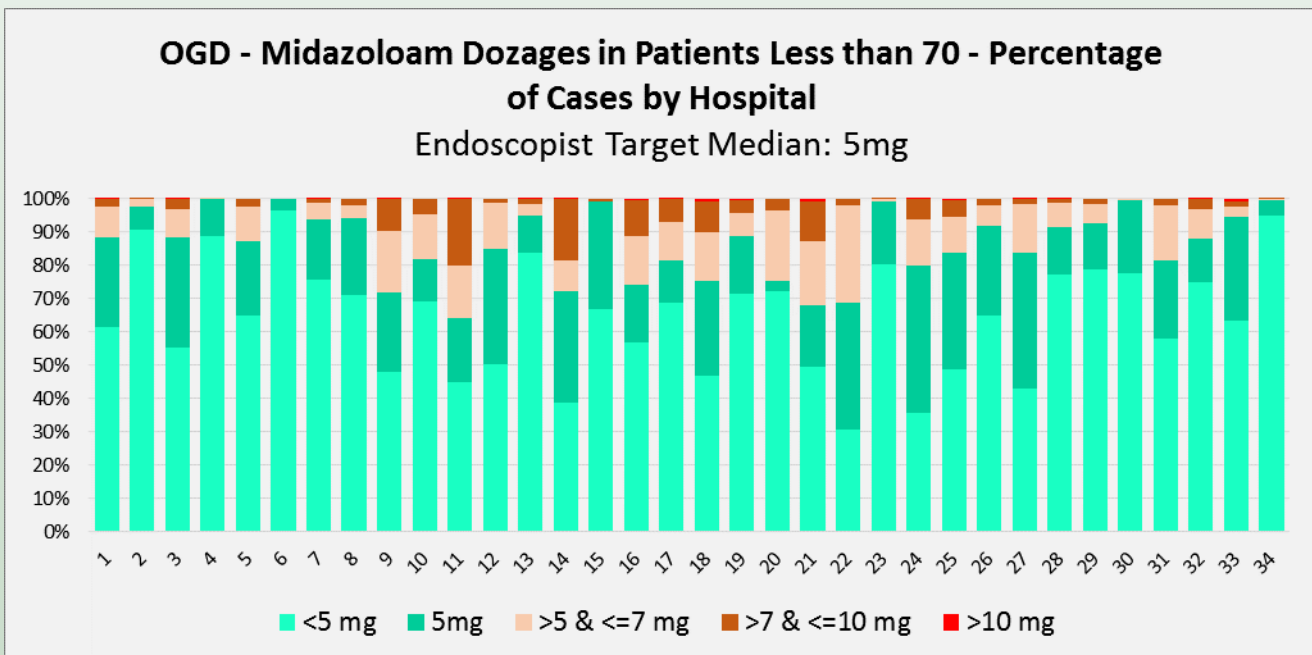
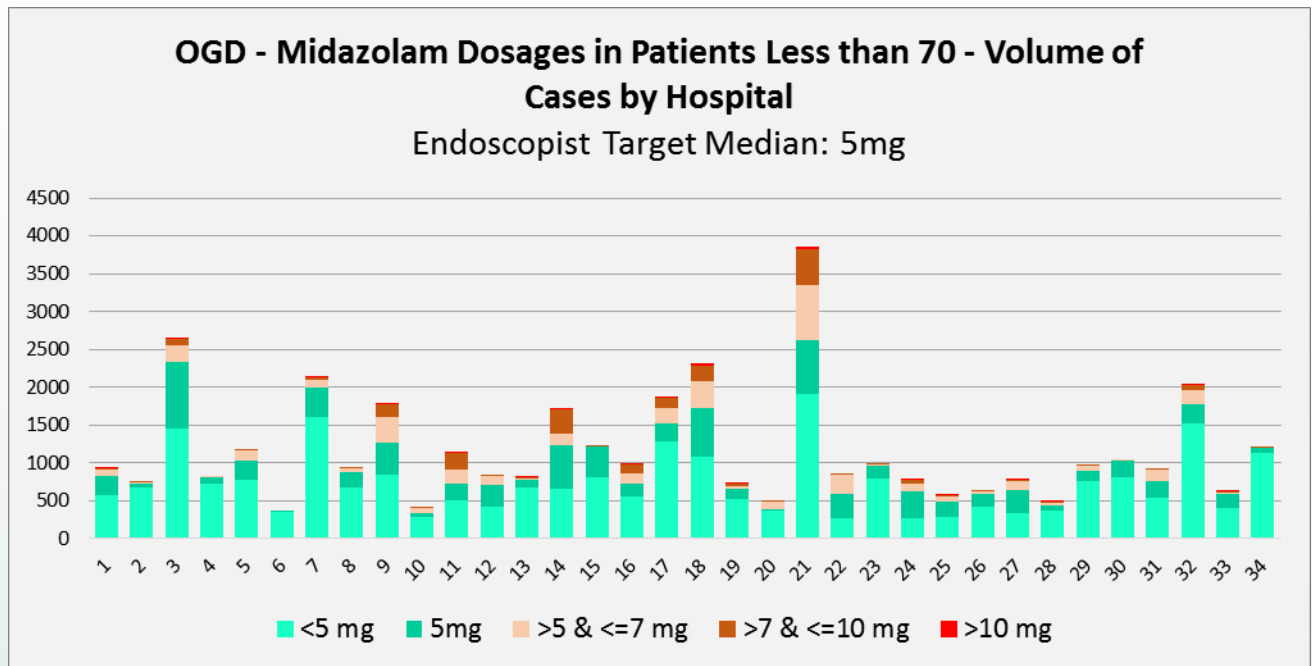
$\leq 3$ mg for patients 70 years of age and above

$\leq 100$  mcg Fentanyl

**201**  
Instances of Reversal  
Agent Usage

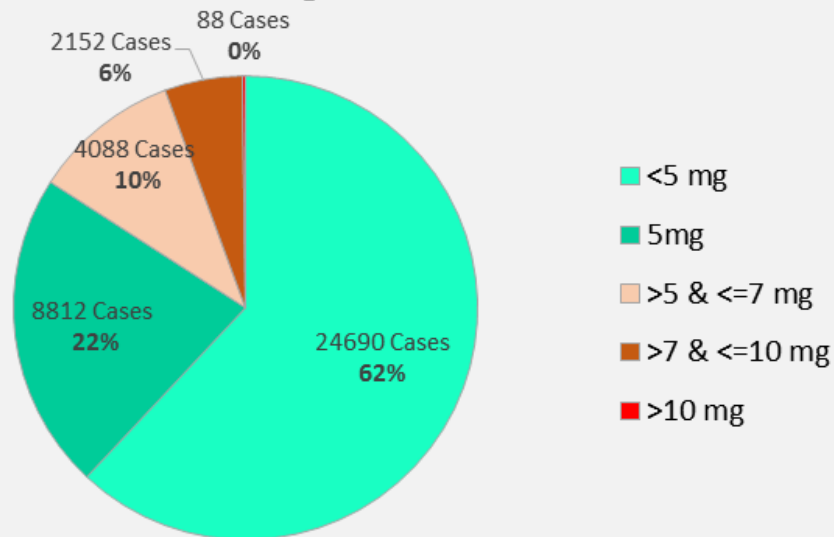


## Sedatives—Midazolam OGD

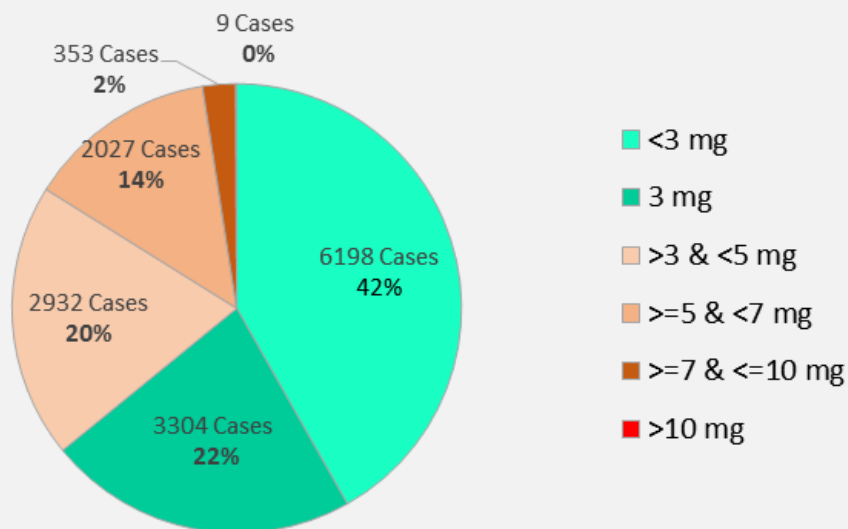


## Sedatives—Midazolam OGD

**OGD - Number and Percentage of Cases by Midazolam Dosage in Patients Less than 70**

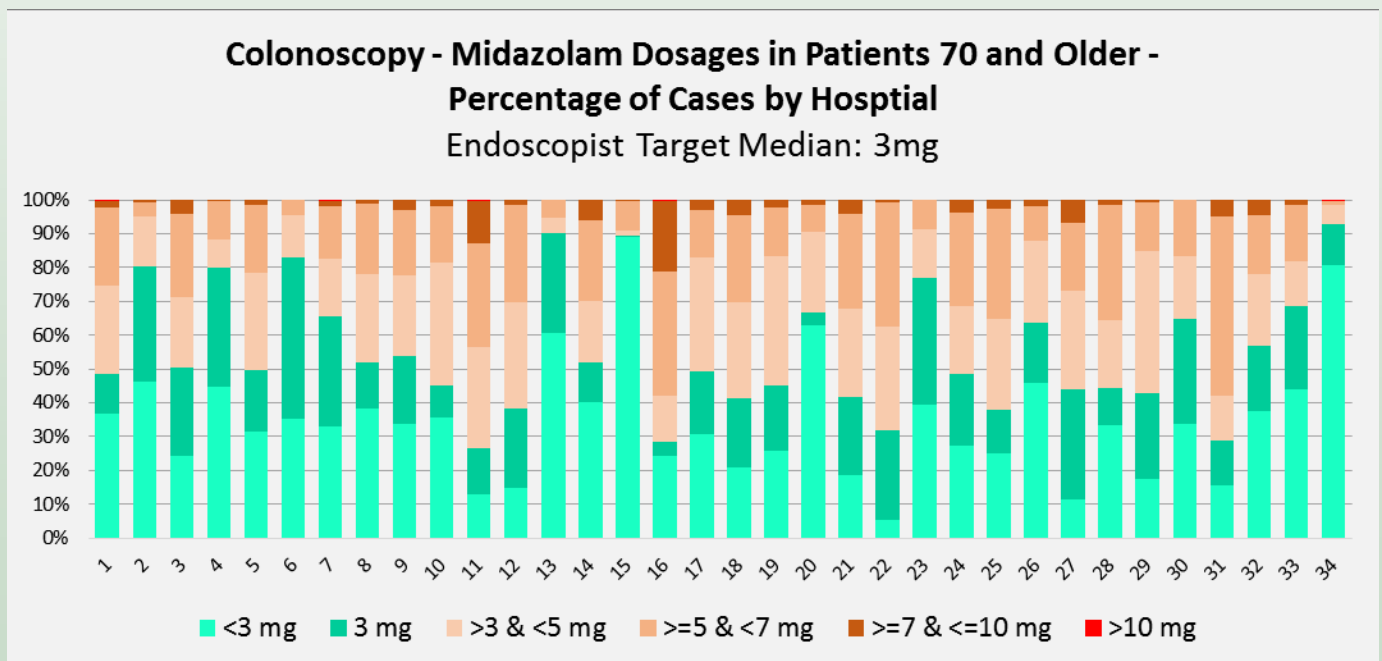
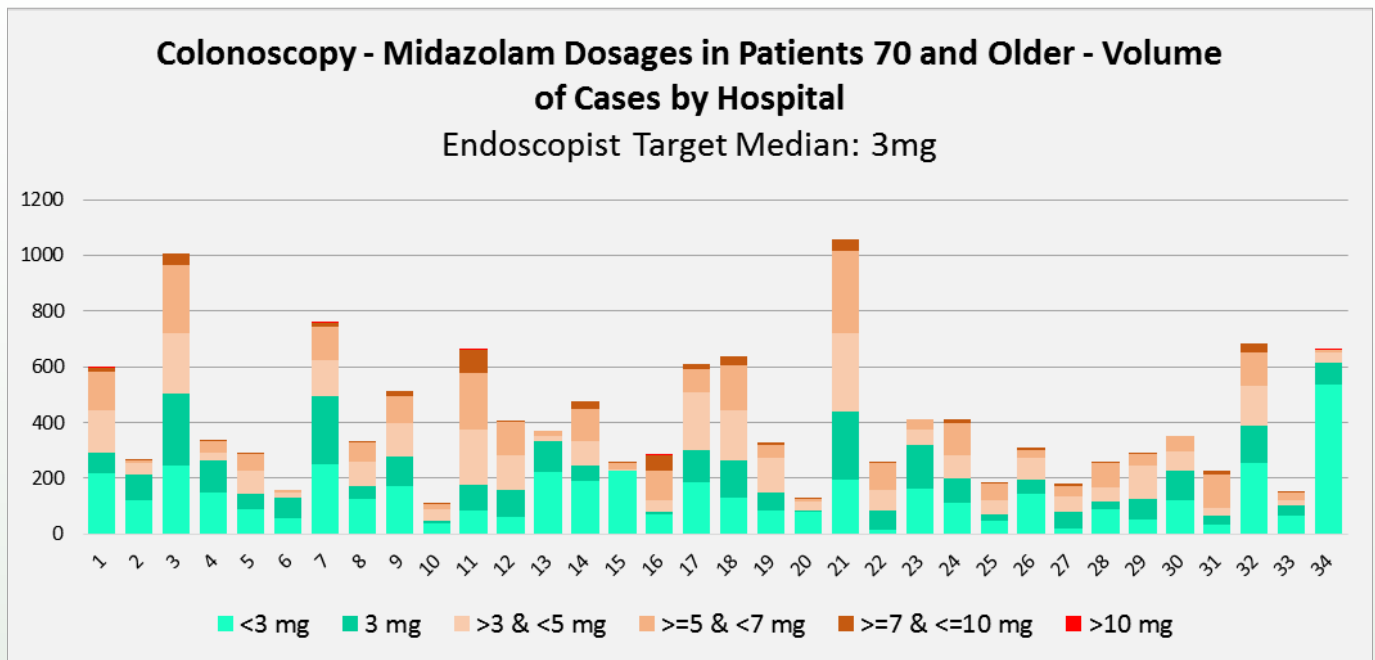


**OGD - Number and Percentage of Cases by Midazolam Dosage in Patients 70 and Older**

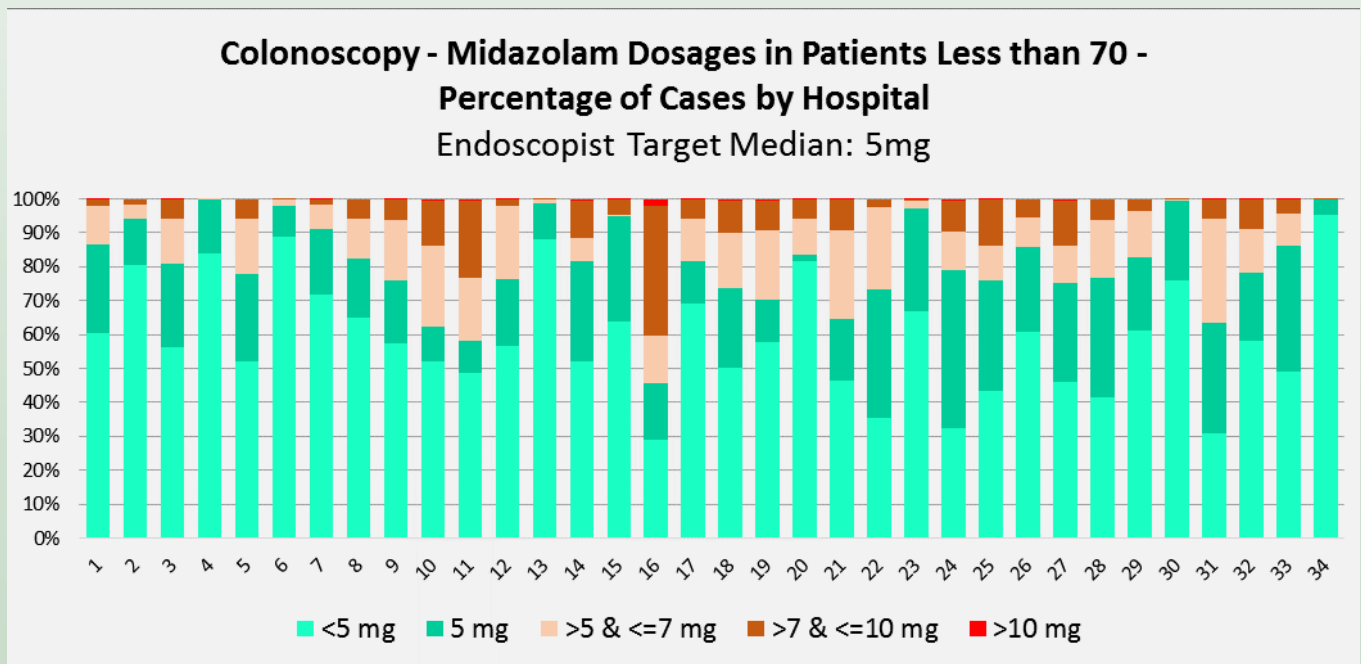
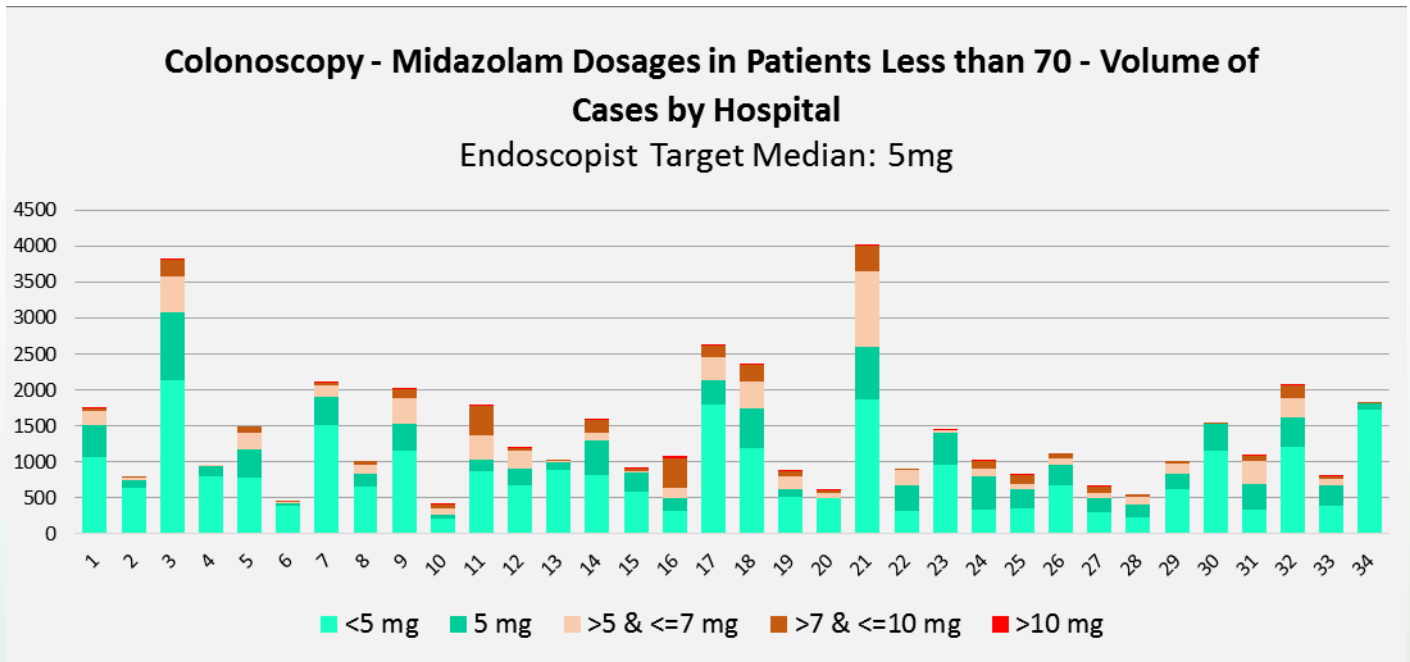




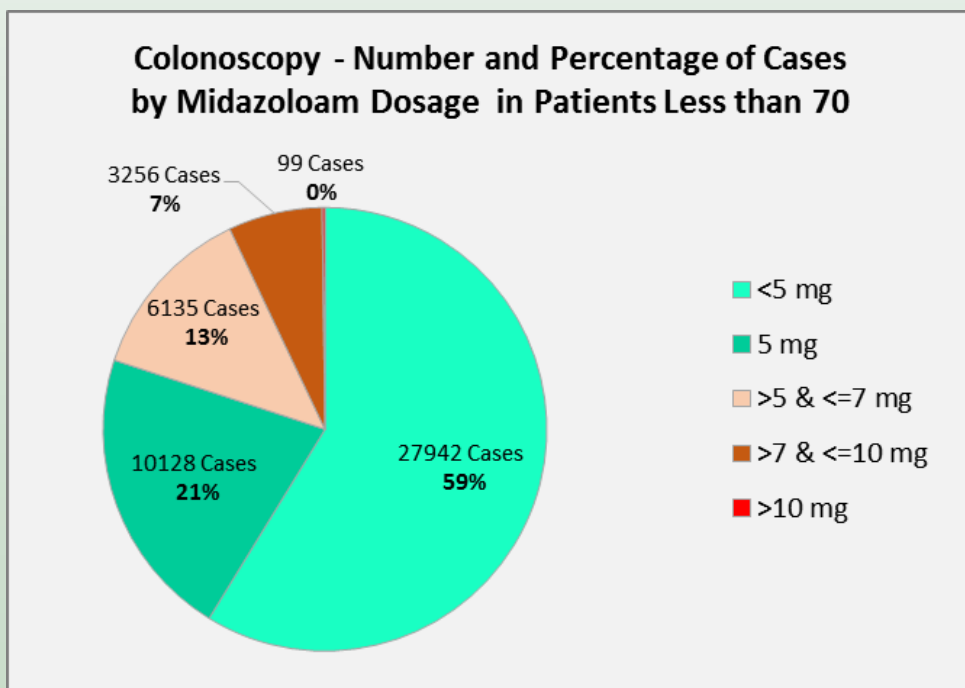
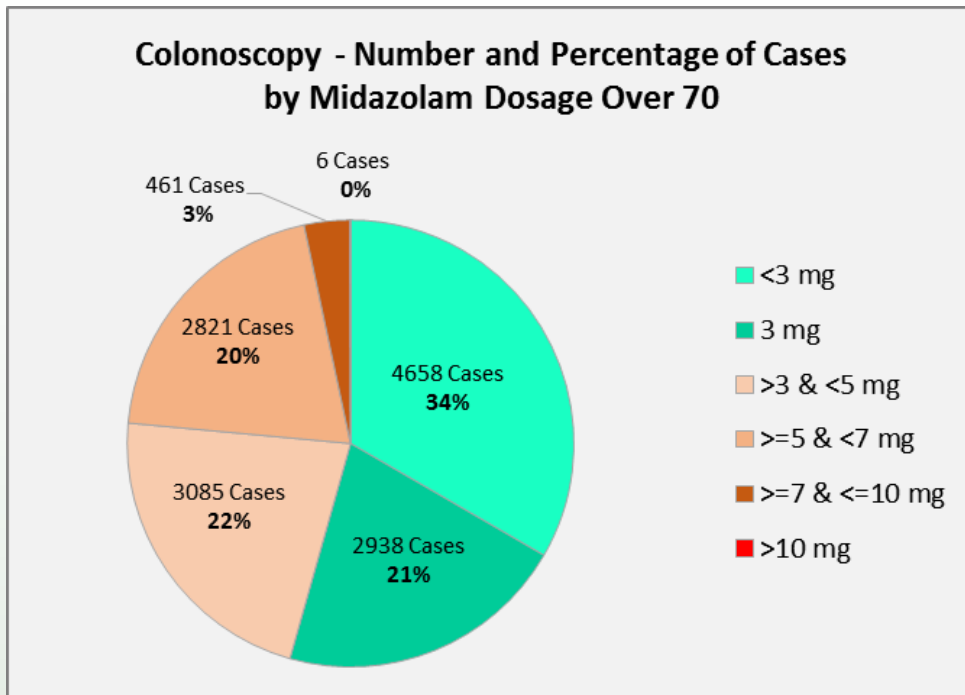
## Sedatives—Midazolam Colonoscopy



## Sedatives—Midazolam Colonoscopy



## Sedatives—Midazolam Colonoscopy



## Sedatives—Fentanyl

### Number and Percentage of Cases by Fentanyl Use and Dosage

	OGD		Colonoscopy	
Dosage (mcg)	Number of Cases	% of Cases	Number of Cases	% of Cases
No Fentanyl Used	59,790	82.0%	27,446	38.3%
0-25	2,572	3.5%	3,291	4.6%
26-50	8,202	11.3%	23,797	33.2%
51-75	823	1.1%	5,458	7.6%
76-100	1,463	2.0%	11,602	16.2%
101-200	48	0.1%	136	0.2%
>200	3	0.0%	7	0.0%



## Sedatives—Midazolam

Overall for patients less than 70 years who have an OGD 84% of patients has the recommended dosage of 5mg midazolam or less.

For those under 70 years having a colonoscopy, 80% receive 5mg or less of midazolam.

For OGD patients over 70 years, 64% received 3mg midazolam or less.

For those over 70 years who had a colonoscopy, 55% received 3 mg or less.

Reversal agents were rarely used. Nationally, there were 80 OGD patients and 121 colonoscopy patients who received a reversal agent. This represents 0.01% of all cases.

There is some substantial variation across hospitals with some giving more sedation than others. It appears that many endoscopists may be giving the same dose to midazolam to all patients irrespective of patient age. This presents an opportunity to improve practice. OGD patients are more likely than colonoscopy patients to receive the advised dosage or less.

## Sedatives—Fentanyl

A large percentage of patients do not receive Fentanyl when having an OGD. Its use is more common among those having a colonoscopy. Of those who do receive Fentanyl, the vast majority receive the recommended dosage or less. Less than 0.3% of all patients receive more than 100 mcg.

