**Background**

Post colonoscopy colorectal cancer (PCCRC) rates are widely used as a quality indicator of a colonoscopy service.

**PCCRC** = A COLORECTAL CANCER DIAGNOSED AFTER A REPORTED NEGATIVE COLONOSCOPY (ie. a false negative colonoscopy/ missed cancer)

**BUT**
- Rates vary according to the definition of PCCRC used
- Rates vary according to the calculation methodology used

**Previous methodology**

- A paper by Morris in Gut 2015 demonstrated the variation in reported PCCRC rates by calculating it using different published methodologies
  1. Used same raw data for every calculation: 297,956 patients diagnosed with CRC between 2001-2010 in England (NHS), using data from the National Cancer Data Repository.

**New Method for calculating PCCRC – Morris 2015**

- Counted number of false negative colonoscopies in the 36 months prior to diagnosis....
- Changed denominator from number of cancers to number of colonoscopies
- Creates a false negative rate per colonoscopy, for those destined to develop a cancer within 3 years.
- More relevant to those who have a colonoscopy, rather than those who have a cancer.

**Denominator = true positive colonoscopies+ false negative colonoscopies**

- Where multiple colonoscopies were done, only the first true positive and false negative were counted.

**With new method, PCCRC rate increased to 8.6% at 3 years follow up (2001-2007), higher than any other method, despite same data set.**

However when calculated year by year using new method, PCCRC rates were decreasing over time (10.2% in 2001 to 7.3% in 2007) despite the total number of colonoscopies increasing.

**Method: at Imperial college healthcare NHS trust**

- All patients diagnosed with CR cancer between October 2014-2015 were identified using the Somerset cancer database.
- Colonoscopy and CT virtual colonoscopy results in the 3 years preceding the diagnosis were reviewed.
- GPs were contacted by fax, to detect any investigations done outwith Imperial Trust (23 responded).
- Where patients had multiple colonoscopies, only one could be false negative/true positive.
- PCCRC rates calculated as per Morris 2015 methodology.

**Results**

- 272 patients were initially identified.
- 99 were excluded (lack of data, duplications, non-CR cancer (ie. anal cancer), tumour recurrences).
- 173 patients were included for analysis.
- 103 had been diagnosed by colonoscopy
- 70 had been diagnosed by CT.

In this cohort:
- 115 colonoscopies and 72 CT virtual colonoscopy scans were performed (or CT abdomen if this was the diagnostic test).

**Results from 115 colonoscopies**

- 28 were done within the Bowel Cancer Screening Programme:
  1. False negative colonoscopies = 0
  2. 75 were done for symptoms:
     1. False negative colonoscopies = 3
     2. 12 were done for surveillance:
        1. False negative colonoscopies = 2

The overall PCCRC was 4.3%.

**Conclusions**

- Imperial’s PCCRC rate of 4.3% over one year (2014-2015) compared favourably to the estimated National PCCRC rate of 7.3% in 2007 (8.6% between 2001-2007) using the Morris method.
- Imperial NHS Trust is performing in line with predictions of improved colonoscopy pick-up rates.
- This study adds to literature regarding methodology for calculating PCCRC rate, and suggests that it be further refined to provide a clear calculation standard.

**References**