Bowel screening – cancer prevention

David S Morrison
Consultant in Public Health Medicine

22nd September 2016
Bowel cancer incidence since 1979

Accessed 16/9/16
Bowel cancer incidence since 1979

men at higher risk

Accessed 16/9/16
Bowel cancer incidence since 1979

Risk increased to 1990s

Accessed 16/9/16
Bowel cancer incidence since 1979

Risk increased in men, only

Accessed 16/9/16
Bowel cancer incidence since 1979

depression increases risk

Accessed 16/9/16
Bowel cancer: survival to 5 years (1997-2007)

- European average: 57%
- Scotland: 54%
- Scandinavia, Belgium, France, Germany: 62%

Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective
### Food, Nutrition, Physical Activity and Cancers of the Colon and the Rectum 2011

<table>
<thead>
<tr>
<th></th>
<th>Decreases Risk</th>
<th>Increases Risk</th>
</tr>
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</table>
| **Convincing** | Physical activity\(^1,2\)  
Foods containing dietary fibre\(^3\) | Red meat\(^4,5\)  
Processed meat\(^4,6\)  
Alcoholic drinks (men)\(^7\)  
Body fatness  
Abdominal fatness  
Adult attained height\(^8\) |
| **Probable** | Garlic  
Milk\(^9\)  
Calcium\(^10\) | Alcoholic drinks (women)\(^7\) |
**FOOD, NUTRITION, PHYSICAL ACTIVITY AND CANCERS OF THE COLON AND THE RECTUM 2011**

<table>
<thead>
<tr>
<th></th>
<th><strong>DECREASES RISK</strong></th>
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<tr>
<td><strong>Convincing</strong></td>
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Bowel screening cuts the risk of cancer

- 15,500 screened and 15,500 not screened
- 417 in screened vs 507 in non-screened
- By removing polyps, cancers don’t develop

NHSGGC bowel screening
NHSGGC bowel screening

52.2% in 2015-16
Bowel screening – cancer prevention

• Strong evidence for preventability of bowel cancers
  – Diet, exercise, obesity, alcohol

• Screening is primary prevention
  – Polypectomy
  – Opportunity for education
  – But uptake is poor
Bowel Screening Update

Screening Department

Calum McGillivray
Bowel Screening Team Leader
Patient Pathway

• National Bowel Screening in Dundee will issue test kits to patients between the ages of 50-74 years of age and will deal with the call and recall associated with this cohort of patients.
• Once the patient returns the kit to National Bowel Screening this will generate the appropriate result letters and trigger the pre-assessment referral pathway should the result be confirmed as positive.
• Positive tests are sent by National Bowel Screening to NHS Boards via SCI-Gateway on a daily basis.
Screening Department Daily Processes

- Screening Department will view these SCI Gateway referrals and ensure that the episode is created on the local bowel screening application.

- The local bowel screening application will produce the appropriate letters advising the patient to contact the Screening Department to allow for the pre-assessment process to commence.
If the patient makes contact and agrees to proceed.

• Commence the Booking Pre-Assessment process by:-
  – Access and update the local bowel screening application
  – Check demographic details of the patient
  – Run through the questions that are detailed on the local bowel screening application.
  – Ask for consent to obtain medical history from GP and a contact phone number taken.
  – Date & Time agreed with patient for telephone pre-assessment based on session dates and times provided by Endoscopy Departments.
Patient makes contact but declines to proceed.

• The Local Bowel Screening Application is updated to reflect this.

• Letters are sent to the Patient & GP confirming removal and the Endoscopy service informed.
Handover

- After Initial pre-assessment stage is completed by the Screening Department:-
  - Provide an individual list to Pre-Assessment Nurses detailing the patients due a pre-assessment the following day.
  - Provide a cumulative list to the Colonoscopy sector staff to allow for workload projections.
  - Responsibility is now handed over to the Endoscopy Service to update the local bowel screening application.
If the patient does not make contact

- Patient will be issued with a reminder letter and non responder letter 14 days apart after initial letter.
- GP Practice will also be advised of non contact.
- Patient will be re-included in the call and recall process by National Bowel Screening in two years time.
Questions
Nurse pre-assessment

Julie Huntly
Acting Lead Nurse
Surgical Specialties- RAH
Background

- Set up with nurse endoscopists carrying out bowel screening pre-assessment
- Extended to trained nurses within endoscopy units
- Current pre-assessments calls carried out across GG & C- capacity required approx 50-60 slots per week
- Requirement to pre-assess patients within 14 days from date of referral
Role of Assessment

- Patients with positive result have often had no interaction with a healthcare professional
- 1st engagement is with pre-assessment nurse
- Empathy, reassurance, explanation- as well as assessment
- Fitness to proceed to colonoscopy
- Understanding of colonoscopy
- Agreement to attend for colonoscopy or opt out
Standards/Protocols

• 14 days from date of referral to pre-assessment
• 31 days from date of referral to colonoscopy - aim for 21 days from date of pre-assessment
• Patients ideally dated within 24 hours of pre-assessment
• Diabetic protocol
• Anti-coagulant protocol - different practices across GG & C
• Pre-assessment Policy
Challenges

- Patients unfit at time of pre-assessment- minimise ‘parked’ patients
- Further advice required from other specialty/surgeon
- Capacity for pre-assessment- improved
- Capacity to offer colonoscopy within 21 days from date of pre-assessment
- Patient requires admission pre/post procedures
- Liaison with local sites- communication since sector split - availability of contact details
- Maintaining up to date policies and keeping staff up to date
Further consideration

- Criteria for requirement for face to face assessment
- Guidance on inpatient admission for bowel prep or post procedure stay
- Availability of bowel screening telephone assessment on portal
- Pre assessment split by sectors?
- Pre assessment focus group?
Colonoscopy

Iain Gorman
Clinical Service Manager
Colonoscopy Scheduling

Scheduling Process
• Each sector has identified Screening colonoscopy lists. The split is roughly, 3 in Clyde, 6.5 North and 6.5 South.

• 16 per week or 45 per week (37 week year).

• NHS GGC target is 21 days from POA.

• Patients should be given 2 offers and removed if they do not accept but this not always routine.

• Sectors are able to use each others capacity provided it is loaded on the BoSS system. However, local sector capacity issues should be managed locally.

• Ad Hoc BS and diagnostic capacity pulled from the same resource.
Colonoscopy Scheduling

Standards

• 7.5 – The time between NHS Boards being notified of the positive screening test result and the date

• 8.1 – Screening undertaken in unit taking part in GRS

• 8.2 – Colonoscopist carrying out procedure can evidence 90% completion, 35% ADR and 6 minute withdrawal time.

• If the procedure is not carried out the pt is repeated or offered CT within 14 days.
Performance and Audit

Paul Burton, Information Manager
Dr David Morrison, Consultant in Public Health Medicine
Programme Performance & Audit

Paul Burton– Information Manager
Overview

• To describe our reporting requirements
• To describe where and how data are gathered to produce them
• To give you feedback on bowel screening performance
Data Submissions

• Data are submitted to Information & Statistics Division (ISD) twice per year every May and November
• Standard minimum dataset (demographics, investigations, outcomes)
• Set coding with validation rules
• 14 day window for completion and submission of dataset
• Each submission rolls reporting period forward six months
• Most recent submission: invitations between 1st November 2013 and 31st October 2015
Key Performance Indicators

- Developed to monitor and evaluate the impact of the bowel screening programme
- The Healthcare Improvement Scotland (HIS) standard and bowel screening programme target for uptake is 60%.
- The Quality Improvement Scotland (QIS) standard for colonoscopy completion rate is 90%.

Public Health Screening Annual Report

- Uptake by SIMD, HSCP, Ethnicity, Learning Difficulties
- Positivity by SIMD, HSCP
- Trend analysis
- Cancer Detection, Interval Cancers

Local audit

- Developing suite of local indicators for governance
- Completion, complication and adenoma detection rate by endoscopist
Data Sources

• Bowel Screening IT System
• TELEPATH
• ECASE
• SMR01
• National Records Scotland

Potential Data Sources

• UNISOFT
• Multi-Disciplinary Team (MDT) System
• eCRIS
Bowel Screening IT System

Holds primarily administrative data:
- FOBT kits sent & returned
- Daily import from SCI Gateway positive referrals
- Lab screening test results obtained
- Outcome letters sent
- Pre-colonoscopy assessments offered
- Assessments completed
- Colonoscopies scheduled
- Colonoscopies attended
- Colonoscopy outcomes
- Further investigations

BOXI
- Data replicated overnight in Business Objects Universe (BOXI)
- Reports can be set up for service level information, data quality checks
- Data readily extracted to spreadsheets for linkage and analysis
TELEPATH

• Primary pathology database system
• An ‘off-the-shelf’ system with very limited reporting capabilities
• Adenomas detail extracted upon request and sent as spreadsheet
• TELEPATH will hold staging data but these are recorded as free text and need human intervention to parse them into the individual values required for the minimum dataset
• Adenoma detection can only be captured if ‘P’ codes recorded in pathology reports
• Linkage of bowel screening IT application data with (pathology) adenoma data can identify colonoscopies with no polyps recorded
ECase

- Electronic Cancer Audit system
- Reliable staging data (T/N/M and Dukes) and ICD-10 cancer site code
- No automated data extraction has been set up
- Cancer audit facilitator runs SQL query to produce a reporting dataset sent as spreadsheet
- Cancer detection rate limited by how advanced cancer audit’s case ascertainment has been at point of data extraction
**UNISOFT**

- An ‘off the shelf’ system used for recording endoscopy results
- Information about the procedure itself (including withdrawal time)
- Findings prior to histology including number of polyps, size of polyps
- Bowel screening coordinators currently transcribe from UNISOFT reports
- Transcribing errors from UNISOFT reports and duplication of effort
- Automation could improve this process and is being appraised

**MDT**

- Polyp cancer status is checked manually using list generated where polyps and cancer have been recorded
- Polyp cancer to be collected at MDT, process to be agreed

**eCRIS**

- Further investigations are not captured fully on bowel screening IT system
KPI 1 Overall uptake of screening - percentage of people with a final outright screening test result, out of those invited

Programme target 60%
KPI 2 Overall uptake of screening by Scottish Index of Multiple Deprivation (SIMD) 2012 Scotland level population-weighted quintile - percentage of people with a final outright screening test result for which a valid postcode is available, out of those invited

<table>
<thead>
<tr>
<th>Sex</th>
<th>SIMD</th>
<th>Greater Glasgow and Clyde</th>
<th>Scotland</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 least deprived</td>
<td>61.5</td>
<td>62.9</td>
</tr>
<tr>
<td>Males</td>
<td>4</td>
<td>56.9</td>
<td>59.6</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>51.7</td>
<td>55.3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>47.5</td>
<td>49.6</td>
</tr>
<tr>
<td></td>
<td>1 most deprived</td>
<td>42.0</td>
<td>43.0</td>
</tr>
<tr>
<td></td>
<td>5 least deprived</td>
<td>68.8</td>
<td>69.9</td>
</tr>
<tr>
<td>Females</td>
<td>4</td>
<td>64.3</td>
<td>66.6</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>58.1</td>
<td>61.7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>53.5</td>
<td>55.2</td>
</tr>
<tr>
<td></td>
<td>1 most deprived</td>
<td>46.0</td>
<td>47.1</td>
</tr>
<tr>
<td></td>
<td>5 least deprived</td>
<td>65.2</td>
<td>66.5</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>60.7</td>
<td>63.1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>55.0</td>
<td>58.6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>50.6</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td>1 most deprived</td>
<td>44.0</td>
<td>45.1</td>
</tr>
</tbody>
</table>
KPI 3 Positive screening test result rate - percentage of people with a positive test result, out of those with a final outright screening test result.

<table>
<thead>
<tr>
<th>Region</th>
<th>Positive Test Result Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayrshire and Arran</td>
<td>1.8</td>
</tr>
<tr>
<td>Borders</td>
<td>2.1</td>
</tr>
<tr>
<td>Dumfries and Galloway</td>
<td>2.4</td>
</tr>
<tr>
<td>Fife</td>
<td>2.7</td>
</tr>
<tr>
<td>Forth Valley</td>
<td>2.1</td>
</tr>
<tr>
<td>Grampian</td>
<td>2.7</td>
</tr>
<tr>
<td>Greater Glasgow and Clyde</td>
<td>2.4</td>
</tr>
<tr>
<td>Highland</td>
<td>2.1</td>
</tr>
<tr>
<td>Lanarkshire</td>
<td>1.5</td>
</tr>
<tr>
<td>Lothian</td>
<td>2.7</td>
</tr>
<tr>
<td>Orkney</td>
<td>1.5</td>
</tr>
<tr>
<td>Shetland</td>
<td>1.8</td>
</tr>
<tr>
<td>Tayside</td>
<td>2.1</td>
</tr>
<tr>
<td>Western Isles</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Number of people with a completed screening test result
KPI 4 Time from screening test referral date to date colonoscopy performed - percentage of people where the time between the screening test referral date

- 0% to 4 weeks
- 4> to 8 weeks
- more than 8 weeks
KPI 6 Colonoscopy completion rate - percentage of people having a completed colonoscopy, out of those who had a colonoscopy performed
KPI 7 Percentage of colonoscopic complications - percentage of people requiring admission for complications arising directly from the colonoscopy, out of those who had a colonoscopy performed.

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayrshire and Arran</td>
<td>0.0%</td>
</tr>
<tr>
<td>Borders</td>
<td>0.3%</td>
</tr>
<tr>
<td>Dumfries and Galloway</td>
<td>0.6%</td>
</tr>
<tr>
<td>Fife</td>
<td>0.9%</td>
</tr>
<tr>
<td>Grampian</td>
<td>1.2%</td>
</tr>
<tr>
<td>Greater Glasgow and Clyde</td>
<td>1.5%</td>
</tr>
<tr>
<td>Highland</td>
<td>0.3%</td>
</tr>
<tr>
<td>Lanarkshire*</td>
<td>0.0%</td>
</tr>
<tr>
<td>Lothian</td>
<td>0.6%</td>
</tr>
<tr>
<td>Orkney</td>
<td>0.0%</td>
</tr>
<tr>
<td>Shetland</td>
<td>0.0%</td>
</tr>
<tr>
<td>Tayside</td>
<td>0.9%</td>
</tr>
<tr>
<td>Western Isles</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Number of people who have had a colonoscopy performed
KPI 18 Percentage of polyp cancers - percentage of people with polyp cancer, out of those with colorectal cancer
KPI 21 Positive Predictive Value of current screening test for colorectal cancer - percentage of people with a colorectal cancer, out of those with a positive screening test result and a colonoscopy performed.
Conclusions

• Multiple data sources are required to report on bowel screening performance
• Duplication of data entry needs to be minimised
• Main limitation is poor uptake, especially in men from more deprived areas
• Other performance measures are good (completion, complications, etc)
Pathology Update

Dr Fraser Duthie
Consultant Histopathologist
QEUH
Predicted Range of Disease

Hyperplastic polyps
Tubular Adenomas
Villous Adenomas
Adenocarcinoma

Inflammatory bowel disease
Predicted Range of Disease

Hyperplastic polyps
Tubular Adenomas
Villous Adenomas
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- Hyperplastic polyps
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Inflammatory bowel disease
Initial Challenges

Laboratory Staffing

Transport mechanisms

Feedback of reports

Unusual findings
Initial Challenges

Laboratory Staffing – pan GGC subspecialist reporting system
→ larger gastrointestinal pathology team at QEUH. Fully staffed (since Sept 16)

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Transport mechanisms – transport of specimens to central lab is now the norm

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Unusual findings
Initial Challenges

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   → larger gastrointestinal pathology team at QEUH. Fully staffed (since Sept 16)

Transport mechanisms – transport of specimens to central lab is now the norm

Feedback of reports – Clinical Portal
   - list of malignant specimens → cancer trackers
   - Monthly data extracts to audit office,
   - Internal coding audit to ensure data codes have been entered

Unusual findings
Initial Challenges

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Transport mechanisms – transport of specimens to central lab is now the norm

Feedback of reports – Clinical Portal
- Monthly data extracts to audit office,
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Unusual findings – “black box” discussions and presentations to colleagues
Flat Adenoma

- Lacks polypoid architecture
- Still has classical dysplasia in glandular epithelium
Serrated Adenoma

“Serrated” architecture like a hyperplastic polyp

Surface epithelial dysplasia
Serrated Adenoma

“Serrated” architecture like a hyperplastic polyp

Surface epithelial dysplasia
Sessile Serrated Adenoma

“Serrated” architecture with “flask-like” widening of deep aspect of glands

Lacks traditional epithelial dysplasia

Similar risk as traditional adenomas?
Sessile Serrated Adenoma

“Serrated” architecture with “flask-like” widening of deep aspect of glands

Lacks traditional epithelial dysplasia

Similar risk as traditional adenomas

Pragmatically, should be >= 10mm
Displacement of glands

Atypical glands in mucosa = dysplasia

Extension into submucosa = cancer

BUT torsion displaces mucosal elements into submucosa
Displacement of glands

Atypical glands in mucosa = dysplasia

Extension into submucosa = cancer

BUT torsion displaces mucosal elements into submucosa
Polyp cancers – further treatment?

Vascular invasion clearly associated with high risk of metastases

Incomplete excision needs further follow up
Polyp cancers – further treatment?

New RCPath / NBCSP guidelines recommend malignant polyps reported by two pathologists, because of treatment implications and risk of overcalling displaced high grade dysplasia.
Polyp cancers – further treatment?

BUT in Scotland this has been addressed since inception of BSCP - ALL completely excised polyp cancers are reviewed by at least two members of Scottish BSP quality assurance panel.
Future changes in practice?

Clearance or completeness of excision?
- dysplasia at margin may not represent residual dysplasia. Phraseology now changed in English & Welsh proforma

Vascular invasion – most centres assess venous invasion by Elastica H&E, but may be role for assessment of lymphatic invasion

Pathology component of Scottish polyp cancer study
Conclusions

Reporting of Screening specimens now well established

Different spectrum of disorders from symptomatic patients

Sessile serrated polyp has same risk as adenoma

Distinction between high grade dysplasia and invasive carcinoma may be subjective, but all subject to central review

Future research may change management of early cancers
Surveillance After Bowel Screening Colonoscopy

Jack Winter
Consultant Gastroenterologist
North Glasgow
Adenoma Detection

Bowel Screening Programme NHSGGC
2013-15

5525 screening colonoscopies
2293 adenomas detected

41.5% of all colonoscopies (>35%)
SURVEILLANCE FOLLOWING ADENOMA REMOVAL

Baseline colonoscopy

Low risk
1-2 adenomas AND both small (<1 cm)

Intermediate risk
3-4 small adenomas OR at least one ≥ 1 cm

High risk
≥5 small adenomas OR ≥3 at least one ≥1 cm

A

No surveillance
Take part in next screening cycle

B

3 yr
Findings at follow up
1 negative exam → B
2 consecutive negative exams → Cease follow-up*
Low or intermediate risk adenomas → B
High risk adenomas → C

C
1 yr
Findings at follow up
Negative, low or intermediate risk adenomas → B
High risk adenomas → C

*Other considerations
Age, comorbidity, family history, accuracy and completeness of examination

Atkin WS and Saunders BP. Gut 2002; 51 (suppl 5):V6-9
Special Situations

(1) Piecemeal Removal of Large Serrated Lesions

(2) Sessile Serrated Adenomas
Special Situation – Piecemeal Removal of large sessile polyps

Screening Colonoscopy November 2015
Special Situation – Piecemeal Removal of large sessile polyps

Follow Up – April 2016
Special Situation – Serrated Adenomas
Serrated Adenoma

- Histologically similar to hyperplastic polyps
- Flat
- Usually right side of the colon

- Remove any hyperplastic appearing lesion proximal to sigmoid colon
- Survey as per adenoma, even if histology states “hyperplastic polyp”
Surveillance Issues

• Timeliness of repeats

• Patients with long delays in 1 and 3 year colonoscopies may miss screening rounds

• Surveillance timeliness an auditable outcome?
QFIT screening for bowel cancer

David S Morrison
Consultant in Public Health Medicine

22nd September 2016
You Want Me To Do What?
What is QFIT?

- **Quantitative** Faecal Immunochemical Testing
- Both Hb and calprotectin measured
- Different cut-offs can be chosen
  - At FHb and/or FC 200 µg/g, PPV 19%, NPV 100%
  - At FHb and/or FC undetectable, no CRC

Why change to QFIT?

• Single sample, simple stick, higher compliance
• Better specificity than FOBt
• Fewer colonoscopies
Progress at September 2016

- Aim to introduce QFIT in 2017
- Commissioning research on information materials
- Health Inequalities Impact Assessment ongoing