Supplementary methods S1

The linear predictor LP is the sum of the intercept and the individual values of the independent variables weighted by the corresponding regression coefficients $b$ that can be derived from Supplementary Table 2:

$$LP = \text{intercept} + b_{\text{male}} \times \text{male} + b_{\text{age}} \times \text{age} + b_{\text{age squared}} \times \text{age}^2 + b_{\text{age cubed}} \times \text{age}^3 + b_{\text{screening}} \times \text{screening} + b_{\text{FOBT}} \times \text{FOBT} + b_{\text{complete}} \times \text{complete} + b_{\text{sedation}} \times \text{sedation}$$

where:

- Male = 1 if the patient is male and male = 0 otherwise,
- Age, age$^2$, and age$^3$ are the numeric values in years,
- Screening = 1 in case of a screening colonoscopy and screening = 0 otherwise,
- FOBT = 1 in case of a positive FOBT and FOBT = 0 otherwise,
- Complete = 1 if the colonoscopy was complete and complete = 0 otherwise,
- Sedation = 1 if the colonoscopy was performed under intravenous sedation, and sedation = 0 otherwise.

The linear predictor can be used to calculate the outcome probability $P$:

$$P = 1 / \left[ \exp(-LP) + 1 \right].$$

Since the number of colonoscopies needed to detect a given lesion was defined as the reciprocal $1/P$ of the probability, its point estimate can be given as:

$$\text{Number of colonoscopies} = \exp(-LP) + 1.$$ 

For example, the linear predictor for advanced neoplasia in a man aged 50 who receives a complete diagnostic colonoscopy to investigate the reason of a positive FOBT under sedation is:

$$LP = -9.9206 + 0.6590 \times 1 + 0.2598 \times 50 - 0.00291 \times 50^2 + 0.000012 \times 50^3 + 0.9608 \times 1 + 0.1253 \times 0$$

$$- 0.8151 \times 1 + 0.0253 \times 1 =$$

$$-1.8756$$

This translates to a predicted probability of 13.3% and number of colonoscopies of 7.5.