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# Adenoma Detection Rate and Colorectal Cancer Risk in Fecal Immunochemical Test Screening Programs

## An Observational Cohort Study

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### Visual Abstract. ADR in FIT Screening Programs.

The adenoma detection rate (ADR) is defined as the proportion of screening colonoscopies in which at least 1 adenoma is detected. This study investigated the association between the ADR and the risk for colorectal cancer after colonoscopy that was prompted by a positive result on a fecal immunochemical test.

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## Abstract

### Background:

Colorectal cancer (CRC) screening programs based on fecal immunochemical tests (FITs) represent the standard of care for population-

based interventions. Their benefit depends on the identification of neoplasia at colonoscopy after FIT positivity. Colonoscopy quality measured by adenoma detection rate (ADR) may affect screening program effectiveness.

### **Objective:**

To examine the association between ADR and postcolonoscopy CRC (PCCRC) risk in a FIT-based screening program.

### **Design:**

Retrospective population-based cohort study.

### **Setting:**

Fecal immunochemical test–based CRC screening program between 2003 and 2021 in northeastern Italy.

### **Patients:**

All patients with a positive FIT result who had a colonoscopy were included.

### **Measurements:**

The regional cancer registry supplied information on any PCCRC diagnosed between 6 months and 10 years after colonoscopy. Endoscopists' ADR was categorized into 5 groups (20% to 39.9%, 40% to 44.9%, 45% to 49.9%, 50% to 54.9%, and 55% to 70%). To examine the association of ADR with PCCRC incidence risk, Cox regression models were fitted to estimate hazard ratios (HRs) and 95% CIs.

### **Results:**

Of the 110 109 initial colonoscopies, 49 626 colonoscopies done by 113 endoscopists between 2012 and 2017 were included. After 328 778 person-years follow-up, 277 cases of PCCRC were diagnosed. Mean ADR was 48.3% (range, 23% and 70%). Incidence rates of PCCRC from lowest to highest ADR group were 13.13, 10.61, 7.60, 6.01, and 5.78 per 10 000 person-years. There was a significant inverse association between ADR and PCCRC incidence risk, with a 2.35-fold risk increase (95% CI, 1.63 to 3.38) in the lowest group compared with the highest. The adjusted HR for PCCRC associated with 1% increase in ADR was 0.96 (CI, 0.95 to 0.98).

### **Limitation:**

Adenoma detection rate is partly determined by FIT positivity cutoff; exact values may vary in different settings.

### **Conclusion:**

In a FIT-based screening program, ADR is inversely associated with PCCRC incidence risk, mandating appropriate colonoscopy quality monitoring in this setting. Increasing endoscopists' ADR may significantly reduce PCCRC risk.

### **Primary Funding Source:**

None.

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