Colorectal Cancer Screening in Occupational Health Surveillance Exams Is Associated with Decreased Mortality

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INTRODUCTION:

- Colorectal cancer (CRC) is second only to lung cancer in number of cancer deaths in the United States (U.S.)[1] , and screening is recommended for adults aged 45 to 75[2]
- The Building Trades National Medical Screening Program (BTMed) provides free medical screening exams to construction workers formerly employed at Department of Energy (DOE) nuclear weapons research and production sites in a program established by Congress
- Previous studies have indicated that some occupational exposures such as processing leather, basic metal fabrication, plastic and rubber manufacturing, and exposures to wood dusts or asbestos increase the risk for gastrointestinal cancers[3]
- As a result, BTMed has included screening for CRC from its inception - as part of our ongoing program evaluation, this study examined whether continued screening for colorectal cancer is warranted

METHODS:

Study Design

- Since 1998, the BTMed program has offered CRC screening as part its medical screening exams every three years
  - Tests used were: guaiac fecal occult blood test (gFOBT), 1998-2008; high sensitivity (HS)-gFOBT, 2009-2015; and fecal immunochemical test (FIT) since 2015

Analysis

- Data from the National Death Index through December 31, 2021 were used to compute standardized mortality ratios (SMRs) to compare the mortality experience of exam participants to non-participants (former workers who enrolled in the program but did not schedule exams)
- Internal analyses used Poisson regression and Cox regression to evaluation impact of CRC screening participation on CRC mortality

Table 1: CRC Screening Participation by Screening Method

Fecal Occult Blood Test Method	Period of Use	Number of Exams	CRC Participants	Percent Participating	Percent with a Positive Test
gFBOT	1998-2008	15,726	10,732	68.2%	4.9%
HS-gFBOT	2009-2015[1]	12,194	9,590	78.7%	8.6%
FIT	2015-Present	14,874	12,774	85.9%	7.6%
Overall	1998-Present	42,794	33,096	77.3%	7.0%

RESULTS:

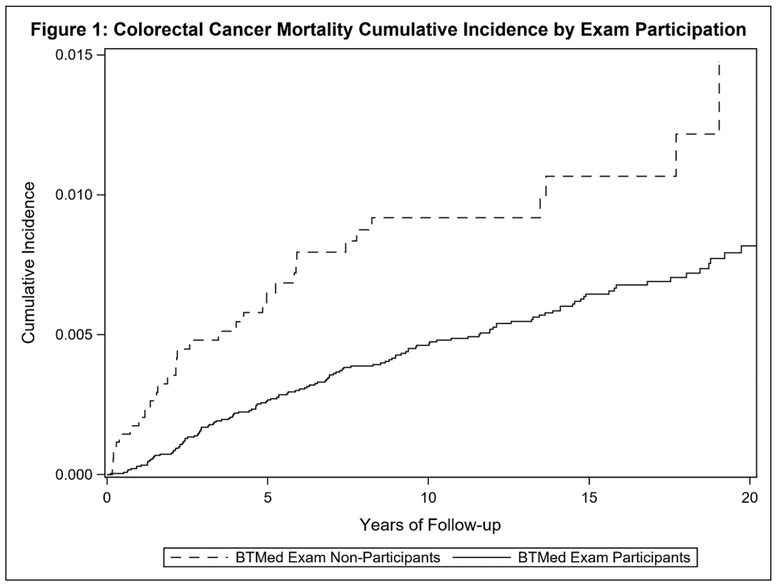
Standardized Mortality Risk-Ratios:

- Those not participating in BTMed exams were found to be at significantly increased mortality risk due to CRC
- Plotting CRC mortality cumulative incidence functions for BTMed exam participants and non-participants demonstrated a significant difference by exam participation status (p=0.0014)
- The age-adjusted Cox proportional hazards model hazard ratio for CRC mortality among exam participants relative to non-participants was 0.50 (95% CI=0.33-0.73)

Multivariate analysis results:

- The multivariate analysis showed that apart from obesity, point estimates for risks are generally comparable to those observed in the published literature
- Impact of CRC screening participation on reducing CRC mortality by type of test was 2% for gFOBT, 12% for HS-FOBT, and 61% for FIT

Figure 1: Colorectal Cancer Mortality Cumulative Incidence by Exam Participation



CONCLUSION:

This study found higher CRC screening participation than in the general population, which we attribute to the protocolized nature of occupational health exams in comparison to the primary care context. The mortality reduction from screening was similar to what is found in the general population. Participation in CRC screening had a significant impact on CRC mortality. Innovation in stool tests have led to greater convenience, participation, and impact, particularly for the FIT test. Occupational health practices should consider including CRC screening.

References:

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3. Oddone E, Modonesi C, Gatta G. Occupational exposures and colorectal cancers: A quantitative overview of epidemiological evidence. World J Gastroenterol. 2014;20(35):12431-12444. doi:10.3748/wjg.v20.i35.12431