Summary of model inputs and assumptions

Supplemental Table 6 summarizes the methods, inputs, and assumptions employed by the CRC-AIM.

Supplemental Table 6. Summary of CRC-AIM model components

Category	Component	Method	Source
Model structure	Model structure	Microsimulation model	
Population characteristics	Other-cause mortality	2017 U.S. life table	Arias and Xu [27]
Natural history	Adenoma generation, growth, and transition to preclinical cancer	Calibrated to published literature data.	Corley et al.[28], Pickhardt et al.[29], Imperiale et al.[30], Lieberman et al.[31], Church[32]
	Adenoma location	Six locations (rectum, sigmoid, descending, transverse, ascending, cecum).	9 autopsy studies[10-18] as derived in Rutter et al.[8]
	CRC incidence	Calibrated to SEER 1975-1979 incidence.	SEER[33]
	Symptomatic detection (stage at diagnosis)	A multinomial distribution derived from SEER 1975-1979 data.	SEER[33]
	Symptomatic detection (size at diagnosis)	A gamma distribution conditional on the stage at diagnosis, derived from SEER 2010-2015 data.	SEER[33]
	CRC survival	Parametric linear regression model derived from cause-specific survival from SEER 2000-2003. A 7% reduction in hazard, estimated using the 5-year cause-specific relative survival between periods 2000-2003 and 2010-2019 from SEER, is applied to cases diagnosed post 2000.	SEER[33]
Screening analyses	CRC incidence	An incidence rate ratio of 1.19 is applied to the baseline risk of generating adenomas.	Siegel et al.[34], Knudsen et al.[35]
	Cohort of interest	Average-risk 40-year-old individuals in the U.S. (1980 birth cohort) who are previously unscreened for colorectal cancer and free of diagnosed colorectal cancer.	Knudsen et al.[35]
	Screening start age	45	
	Screening end age	75	
	Stage shift	Stage at screening detection is resampled from the stage at clinical diagnosis distribution and	

		limited to no worse than the stage at symptomatic diagnosis.	
	Modalities	Colonoscopies every 10 years, annual FIT, and triennial mt-sDNA.	
	Screening performance (sensitivity and specificity)	Varies by screening modality. Sensitivity is based on the cancer or the size of adenoma (1 to < 6 mm, 6 to < 10 mm, and ≥ 10 mm).	Knudsen et al.[35]
	Adherence to all screening modalities and follow-up colonoscopies	100%	Assumption based on Knudsen et al.[35]
	Reach	The reach of colonoscopy linearly increases from rectum (100%) to cecum (95%).	Knudsen et al. [35]
	Screening complications	No complications assumed for stool tests. For colonoscopy with polypectomy, age-specific risks of serious gastrointestinal events, other gastrointestinal events, and cardiovascular events are included.	Knudsen et al.[35]
	False-positive test management	Resume screening with original modality 10 years after the false-positive test.	Knudsen et al.[35]
	Surveillance with colonoscopies	Surveillance intervals are based on two most recent colonoscopy findings.	Knudsen et al.[35]
	Surveillance end age	85	Knudsen et al.[35]

Abbreviations: CRC, colorectal cancer; CRC-AIM, Colorectal Cancer-Adenoma Incidence and Mortality model; FIT, fecal immunochemical test; mt-sDNA, multi-target stool DNA; SEER, Surveillance, Epidemiology, and End Results.