WEO

The voice of world endoscopy

Evaluation of New Tests Working Group: Modeling and Use of Surrogate Endpoints

Uri Ladabaum, M.D., M.S.
Professor of Medicine; Director, GI Cancer Prevention Program
Stanford University School of Medicine

The challenge posed by Graeme Young: Surrogate markers in modeling?

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Early-stage proxies / surrogates for:

- Long-term effectiveness?
  - (Number needed to scope to detect 1 AN?)

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  - (Number needed to scope to detect 1 AN?)
- Programmatic cost-effectiveness?
  - (Cost to detect 1 AN?)

Calculating possible Round 1 surrogate markers

Prevalence as in Imperiale*	CRC	APL	NAA	Normal	Total cohort
	65	758	2,896	6,281	10,000

* Imperiale *et al*, NEJM 2014; 370:1287

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n						NNS/CRC,APL
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n	**48**	**182**	232	251	9,287	NNS/CRC,APL **3.1**
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Cost	FIT + Colo Tx			FIT + Colo Dx	FIT	Cost/CRC,APL **$3,800**

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A simple calculator in Excel for Round 1 proxies

Test	Sens CRC	Sens APL	Sens NAA	Spec = 1- FP in normal	Interval	Test cost	Colo Dx	Colo Tx
FIT	*0.74*	*0.24*	*0.08*	*0.96*	1	*$18*	*$740*	*$1,083*

Prevalence	CRC	APL	NAA	Normal	Total cohort
as in Imperiale*	65	758	2,896	6,281	10,000

	CRC	APL	NAA	Normal	No scope	NNS for 1 CRC/APL	Cost for 1 CRC/APL
Detected/to colo	48	182	232	251	9,287	**3.1**	
Cost	$52,958	$200,294	$255,080	$190,440	$167,167		**$3,765**

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How do proxies compare to long-term estimates from 4 models (3 CISNET models, MOSAIC)?

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- Collaboration: US, Netherlands, Israel
- Luuk van Duuren, Iris Lansdorp-Vogelaar, Elizabeth Half, Zohar Levi, Barbara Silverman





Gastroenterology 2024;167:368–377

PREVENTION AND EARLY DETECTION

Effectiveness and Cost-Effectiveness of Colorectal Cancer Screening With a Blood Test That Meets the Centers for Medicare & Medicaid Services Coverage Decision

Rosita van den Puttelaar,[1] Pedro Nascimento de Lima,[2] Amy B. Knudsen,[3] Carolyn M. Rutter,[4] Karen M. Kuntz,[5] Lucie de Jonge,[1] Fernando Alarid Escudero,[6] David Lieberman,[7] Ann G. Zauber,[8] Anne I. Hahn,[8] John M. Inadomi,[9] and Iris Lansdorp-Vogelaar[1]

Gastroenterology 2024;167:378–391

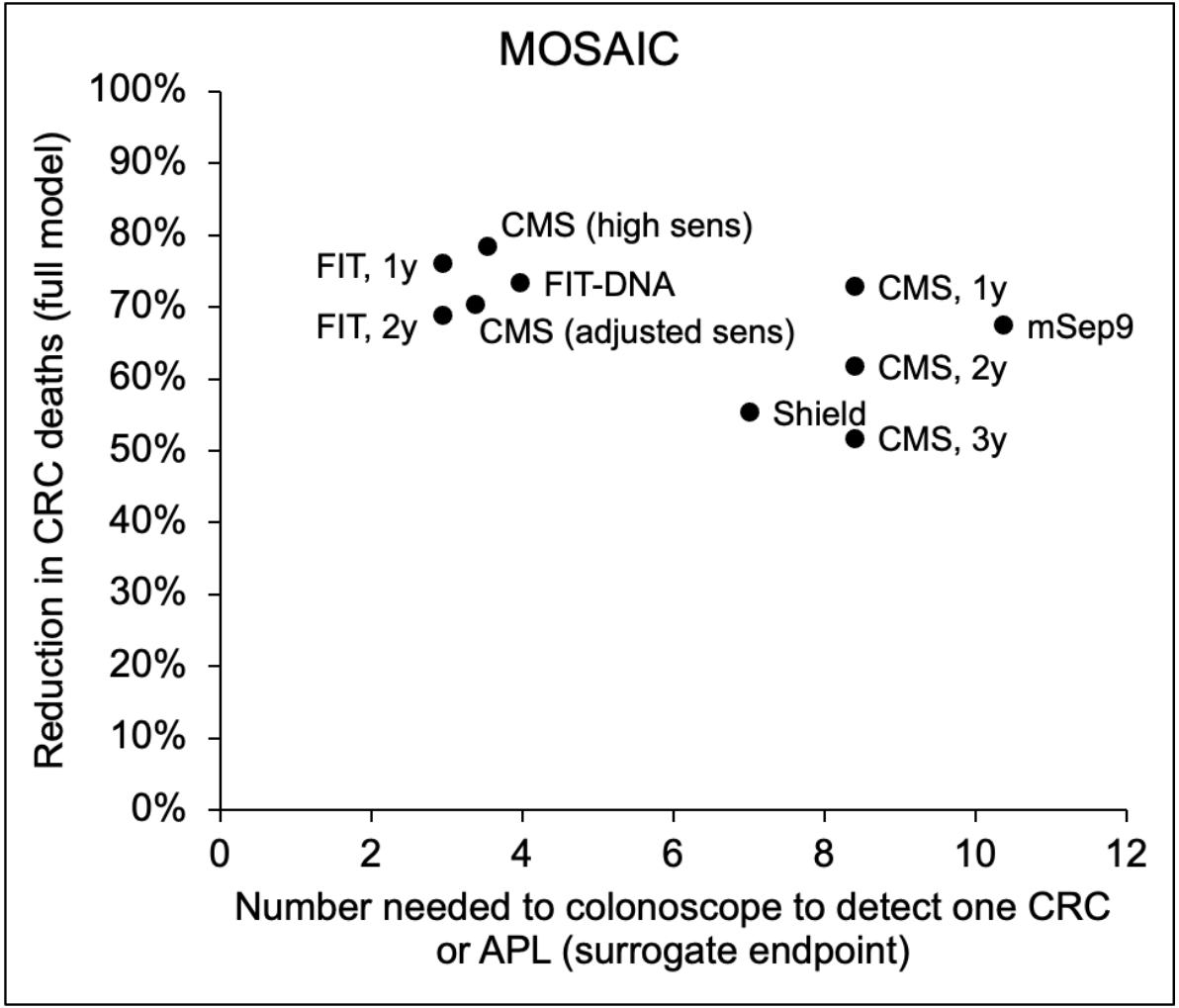
Comparative Effectiveness and Cost-Effectiveness of Colorectal Cancer Screening With Blood-Based Biomarkers (Liquid Biopsy) vs Fecal Tests or Colonoscopy

Uri Ladabaum,[1,2] Ajitha Mannalithara,[1,2] Yingjie Weng,[2,3] Robert E. Schoen,[4] Jason A. Dominitz,[5,6] Manisha Desai,[2,3] and David Lieberman[7]

NNS to detect 1 AN

vs.

CRC death reduction



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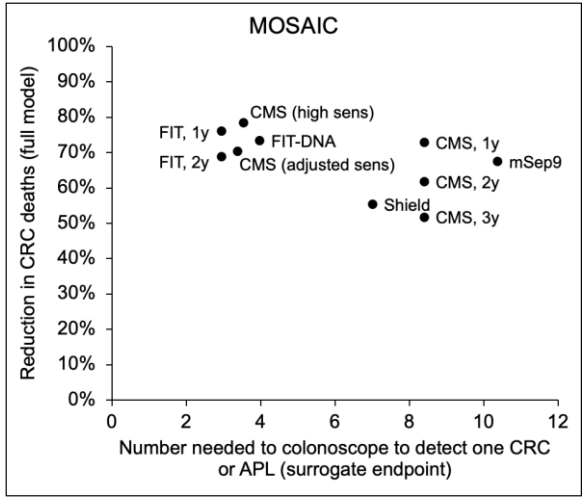
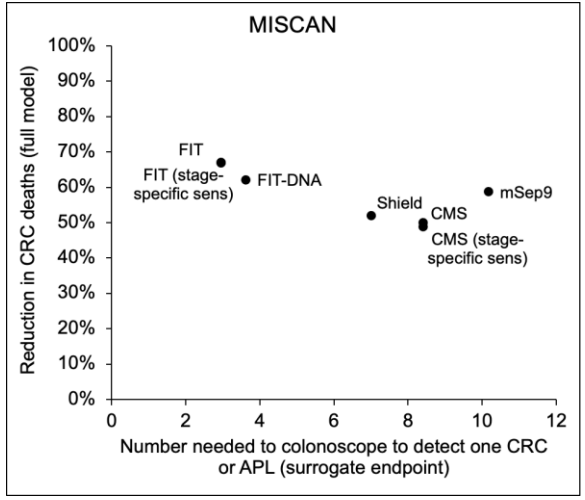
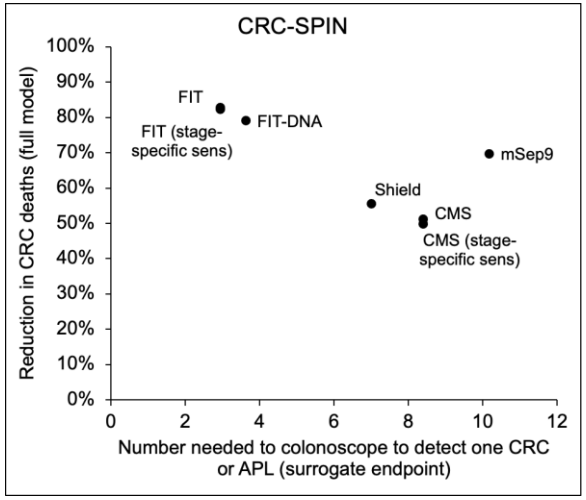
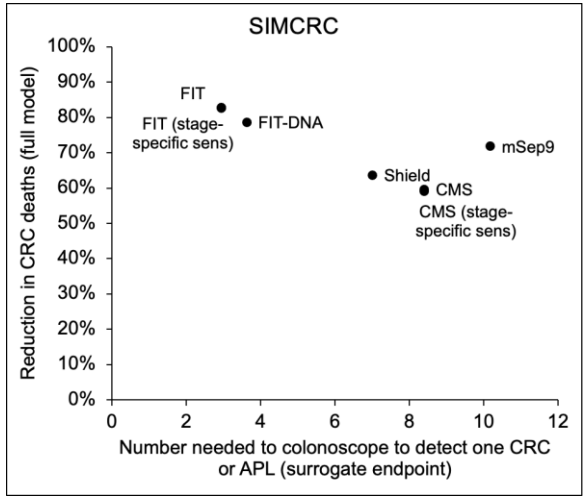








NNS = “number needed to scope”

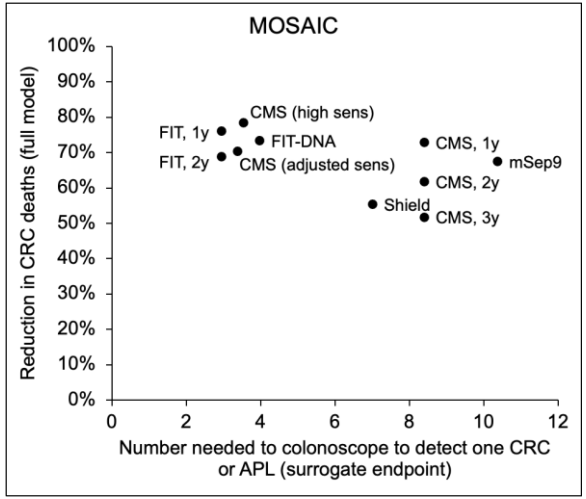
NNS to detect 1 AN

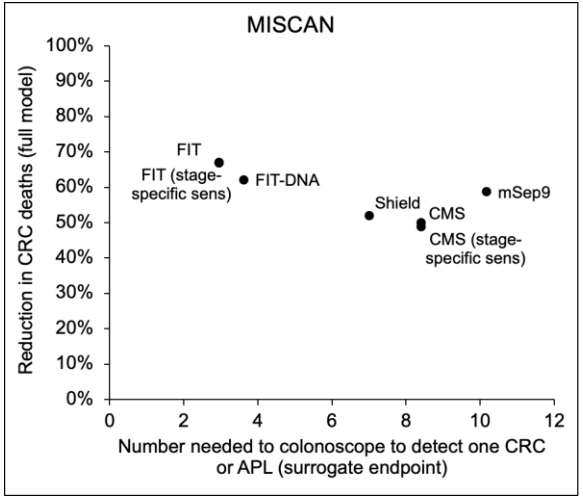
vs.

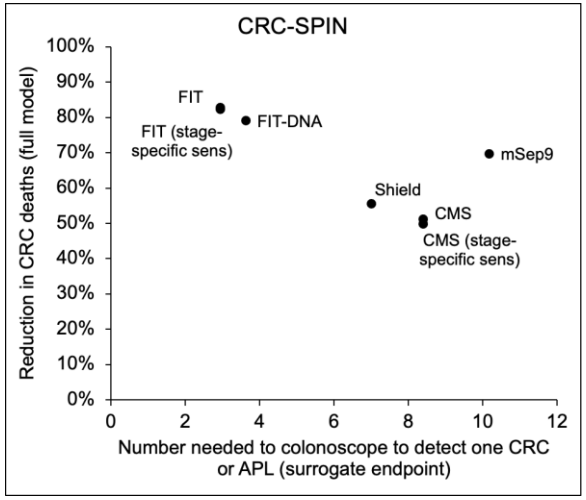
CRC death reduction

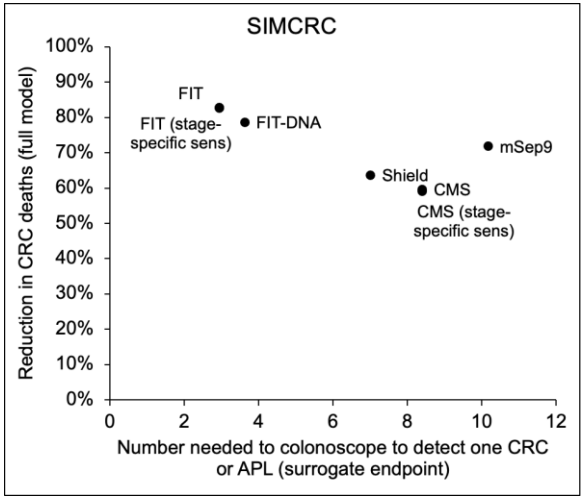
- ***Fails if low specificity***
- ***Does not reflect interval***

NNS = "number needed to scope"





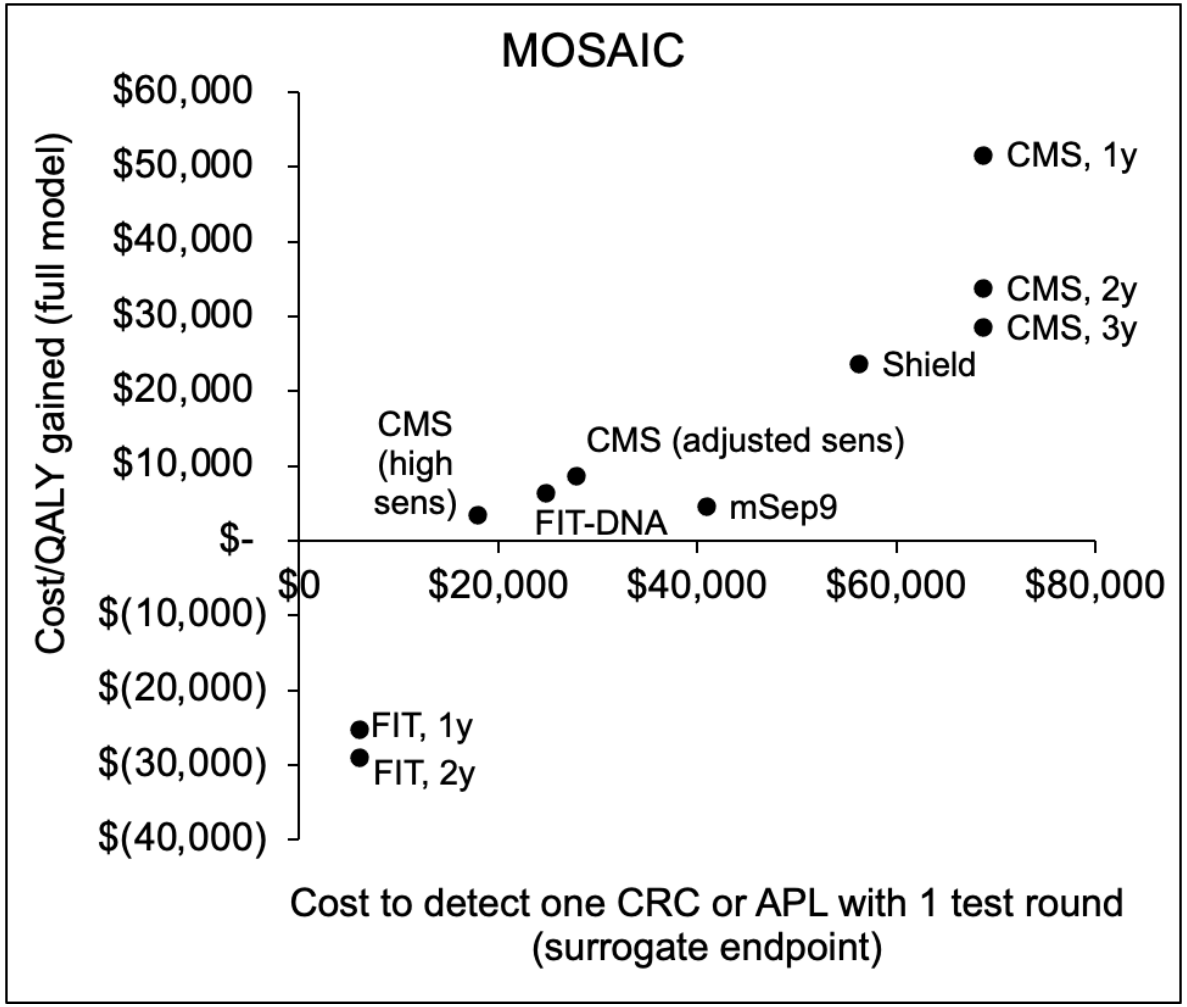




Cost to detect 1 AN

vs.

Cost/QALY gained



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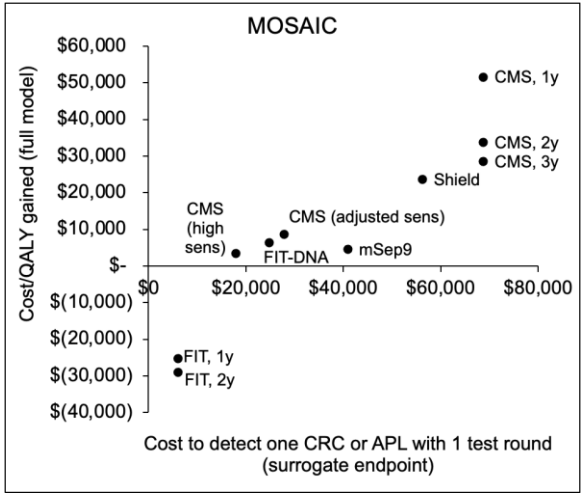

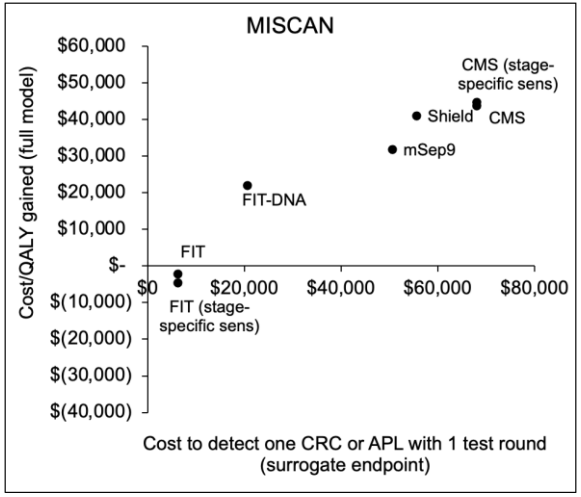

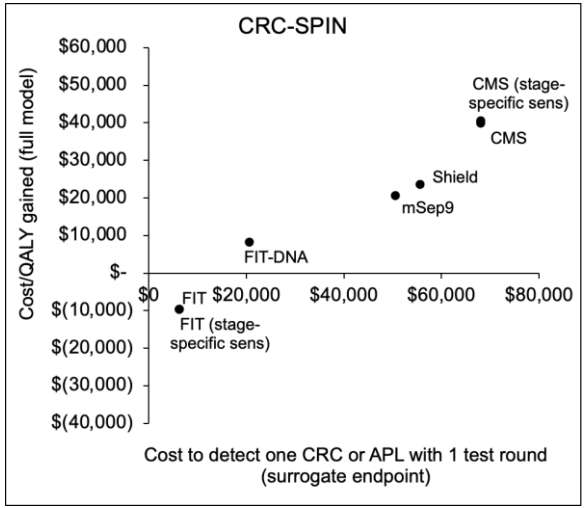

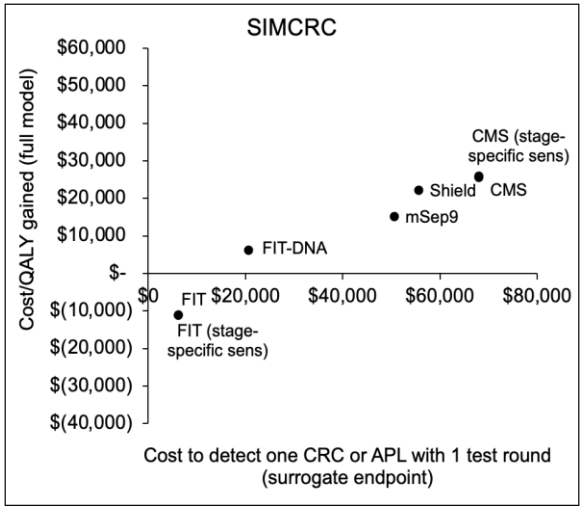

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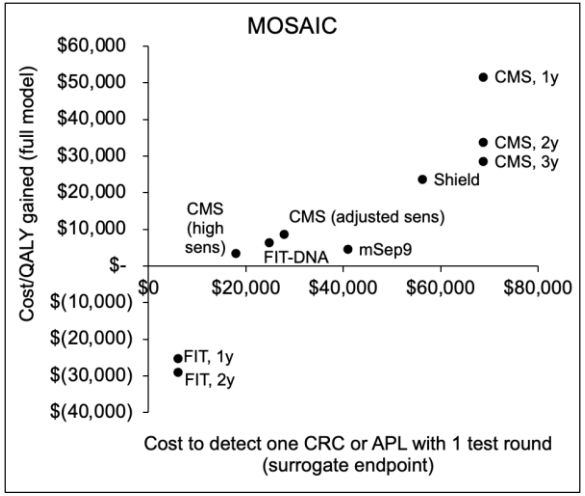

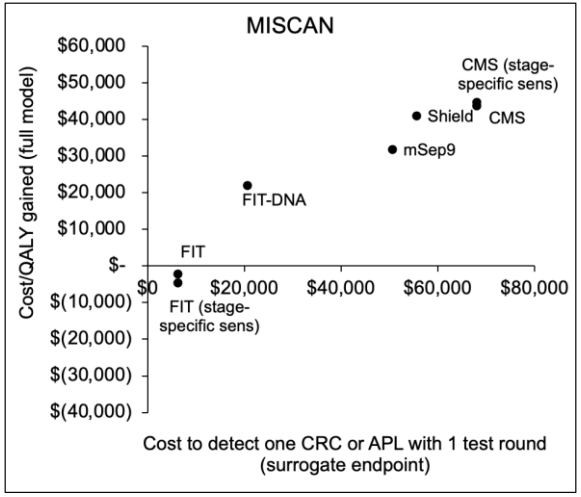

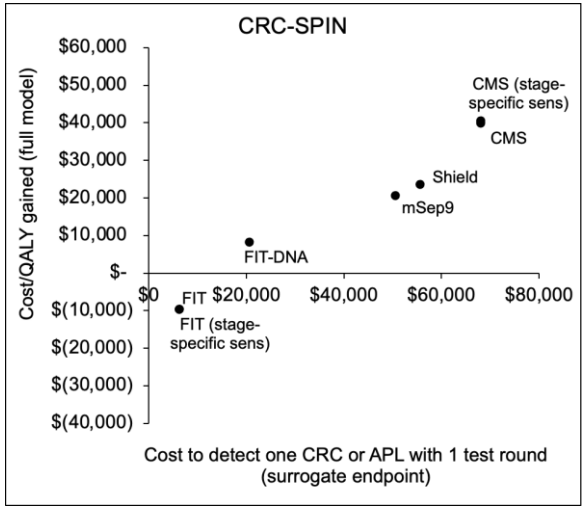

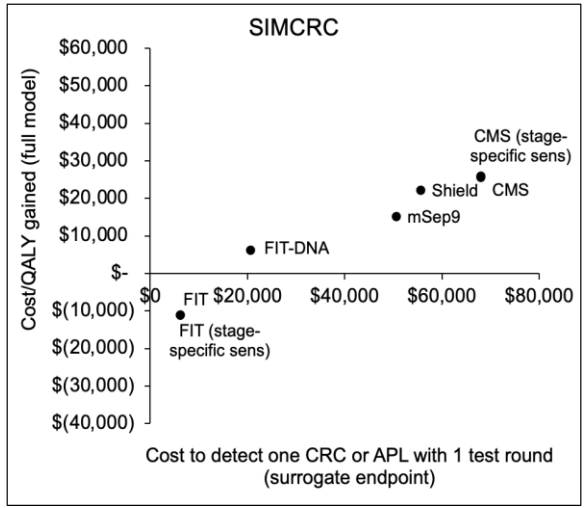

Discussion: Surrogate endpoints in modeling

- Number needed to colonoscope to detect one CRC/APL in round 1 of screening:
  - PROMISING proxy for effectiveness
- Cost to detect one CRC or APL in round 1 of screening:
  - PROMISING proxy for cost-effectiveness
- Further validation needed
- Incorporate in early phases of test development?