

Combating Postcolonoscopy Colorectal Cancer: An Educational Perspective

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All participants for their time and efforts throughout the course

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Global Postcolonoscopy CRC Burden



“Systematic review with meta-analysis: the prevalence of PCCRC using the WEO nomenclature”

Kang GH...Lee J et al, APT 2021

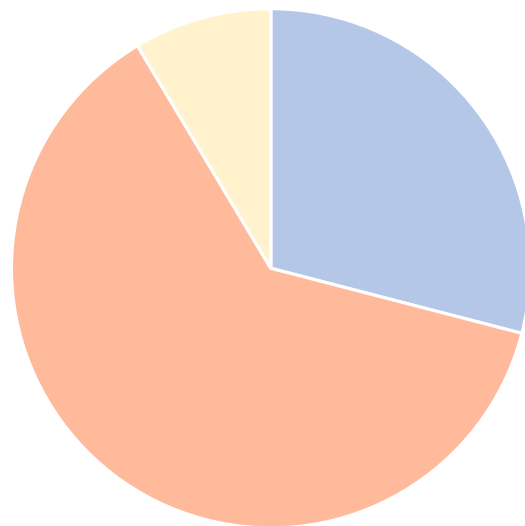
Thank you!
WEO PCCRC Team
Prof. Matt Rutter
Dr. Jeffrey Lee

Pooled 3-year PCCRC prevalence:

8.2% (95% CI = 6.9%-9.4%)

Hereditary CRC is a common cause of PCCRC

10% of PCCRCs in high-risk*

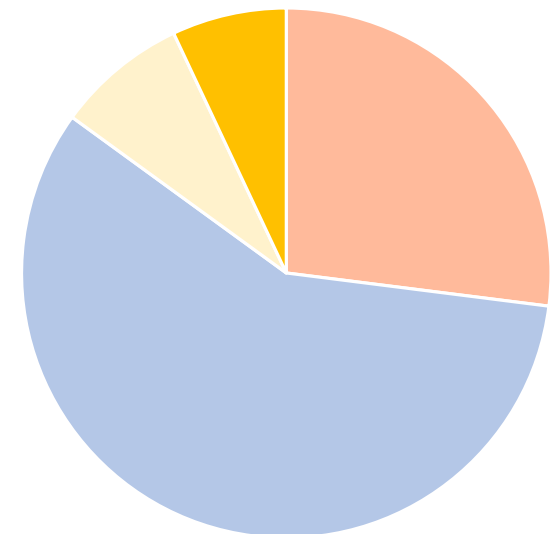


*Genetic syndromes, IBD

Beaton et al, Endoscopy 2021

43% of PCCRCs in high-risk#

Retrospective
Single center
107 PCCRCs



#Hereditary CRC, post colon resection for CRC, multiple complex polyps, IBD

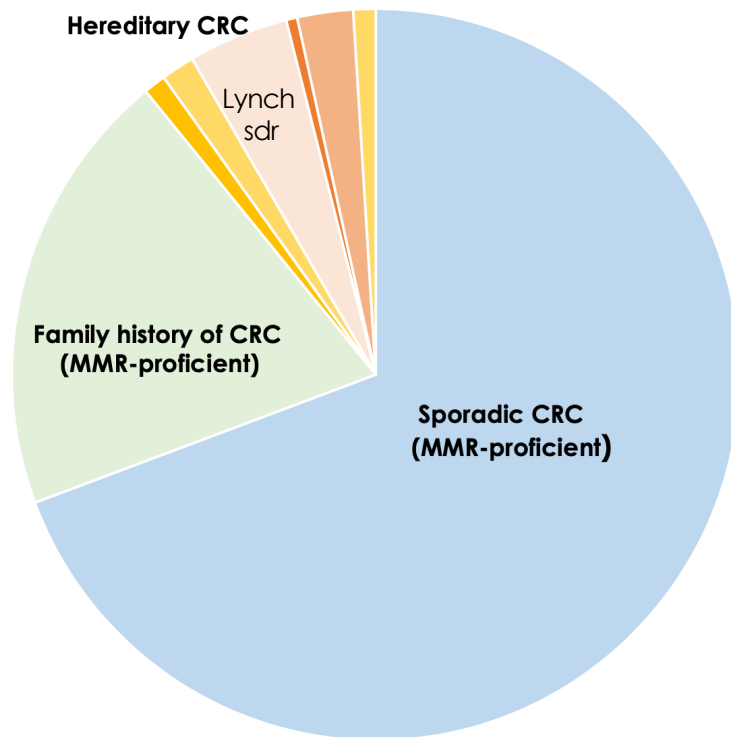
Anderson R et al, Gastroenterology 2020

Hereditary CRC – An Awareness Battle



- Patients with hereditary CRC are often under-recognised, under-diagnosed, and under-served.
- 1: 279 individuals carry a germline mutation in MMR genes
- However, approximately 95% of mutation carriers remain undiagnosed. So, opportunities to reduce cancer incidence and mortality are missed

Why is Hereditary CRC unrecognized ?



Ladabaum, CGH 2020 (adapted)

- Recognition depends on either the healthcare professional or the patient raises a critical question:
Is there a family risk for cancer?

Because this does not happen routinely we often fail to identify them

- Clinical diagnosis is not always straightforward; genetic classifications are complex and difficult to apply at bedside

How to close the gap?

Traditional education

- no structured curriculum during GI fellowship
- didactic lectures, self-learning
- insufficient exposure for creating mental representations
- no formal assessment

Science of Education & Expertise

- captures problem-solving expert decision skills
- deliberate practice with feedback
- social learning, cohort-based learning
- objective assessment



Pilots – 'Topgun School'



Surgeons

How to Reproduce Expert Performance?

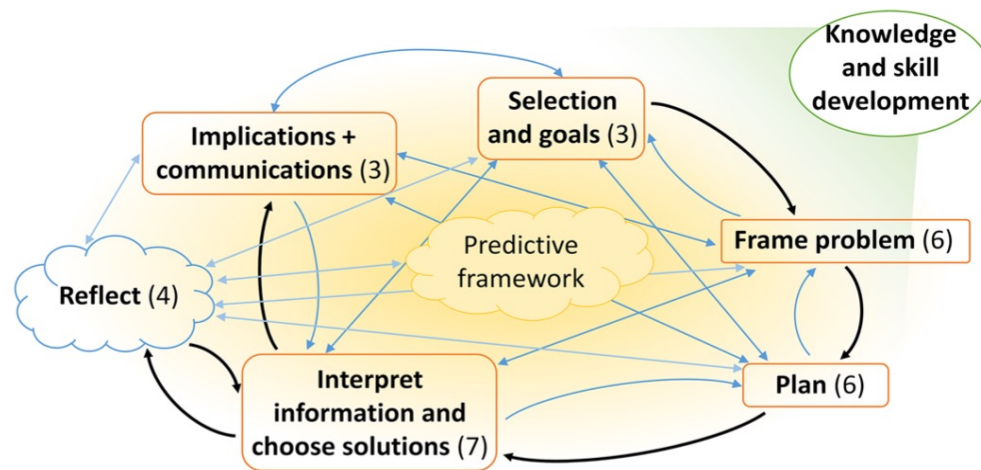


Firefighters



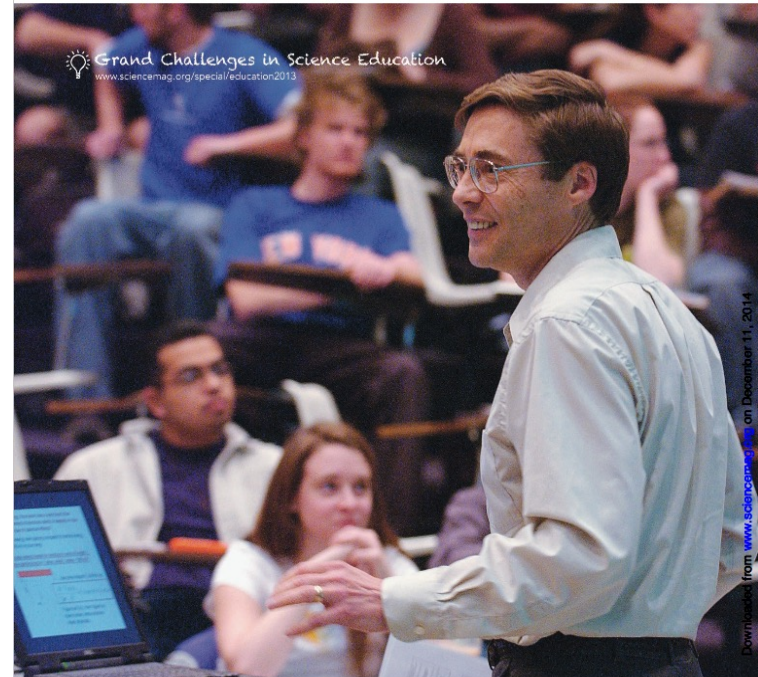
Chess players

Science of Education & Expertise



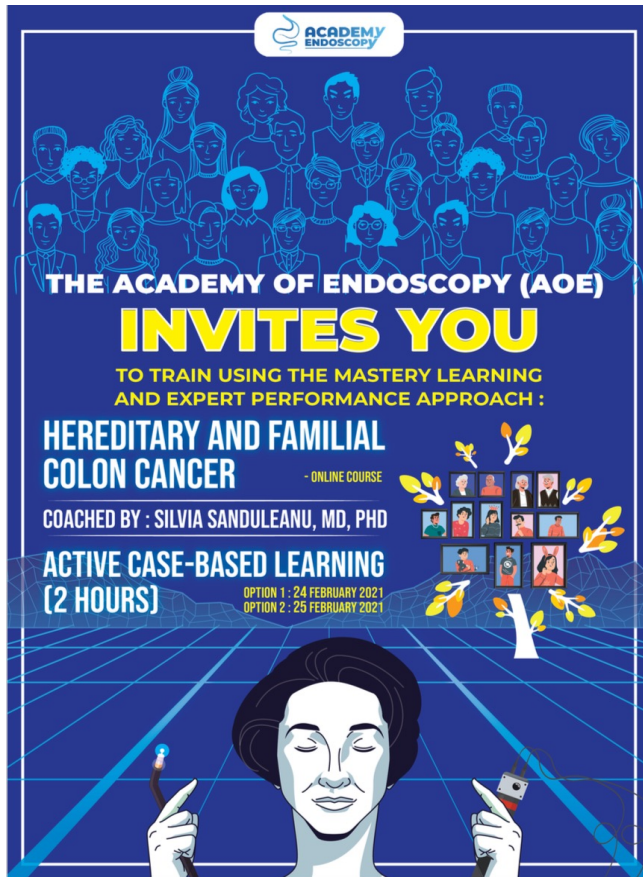
A Detailed Characterization of the Expert Problem-Solving Process in Science and Engineering: Guidance for Teaching and Assessment

Argenta M. Price^{1,...}, Carl E. Wieman^{1,2} et al.,
Life Science & Education 2021



'...True understanding comes only when learners actively construct their own understanding via a process of mentally building on their prior thinking and knowledge...'

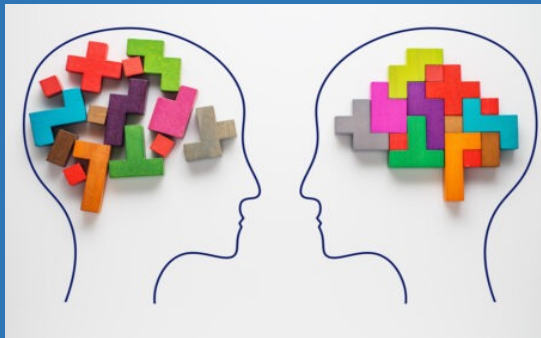
Carl Wieman. "Improving How Universities Teach Science."
(2017) Harvard Univ Press



Hypothesis

We hypothesized that implementation of a training curriculum grounded in the science of expertise can lead to Mastery of the detection and management of HCRC and FCRC in practicing gastroenterologists

Curriculum Development: Key Steps



Deconstruction
of expert thinking
In basic, trainable units
(Cognitive analysis)



Create materials;
Deliberate Practice with
targeted feedback
on authentic cases
(Instructional design)



Assessments
(Simulation-Based
Mastery Learning)

Virtual classroom

ns to describe appearance



- A. Fold convergence
- B. Expansion
- C. Loss of lobulation
- D. Deep depression
- E. Firmness

Case-studies
MCQs and OEQs
with polling



Topic

Lynch sdr

Familial CRC

Polyposis sdr



Training Interventions

- ❖ Effectiveness – 2021 Cohort
- ❖ Replication – 2022 Cohort

Cohort description

Note: No intention to compare between cohorts but rather to assess the reproducibility in a different setting

2021 Cohort	2022 Cohort
Completely independent	
Country A Vast experience on population-based CRC screening program	Country B Inaugural stage CRC screening program
We delivered the same course (methods, materials) by same instructor. Same inclusion criteria	

Effectiveness

2021 Cohort

Primary outcomes (QUAN)

proportion of participants reaching MPS

effect size (Cohen's d and Hedge's g coefficients)

Secondary outcomes (QUAL)

course satisfaction

return on investment (short-term)



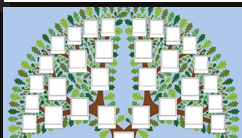
Silvia Sanduleanu

TAIWAN

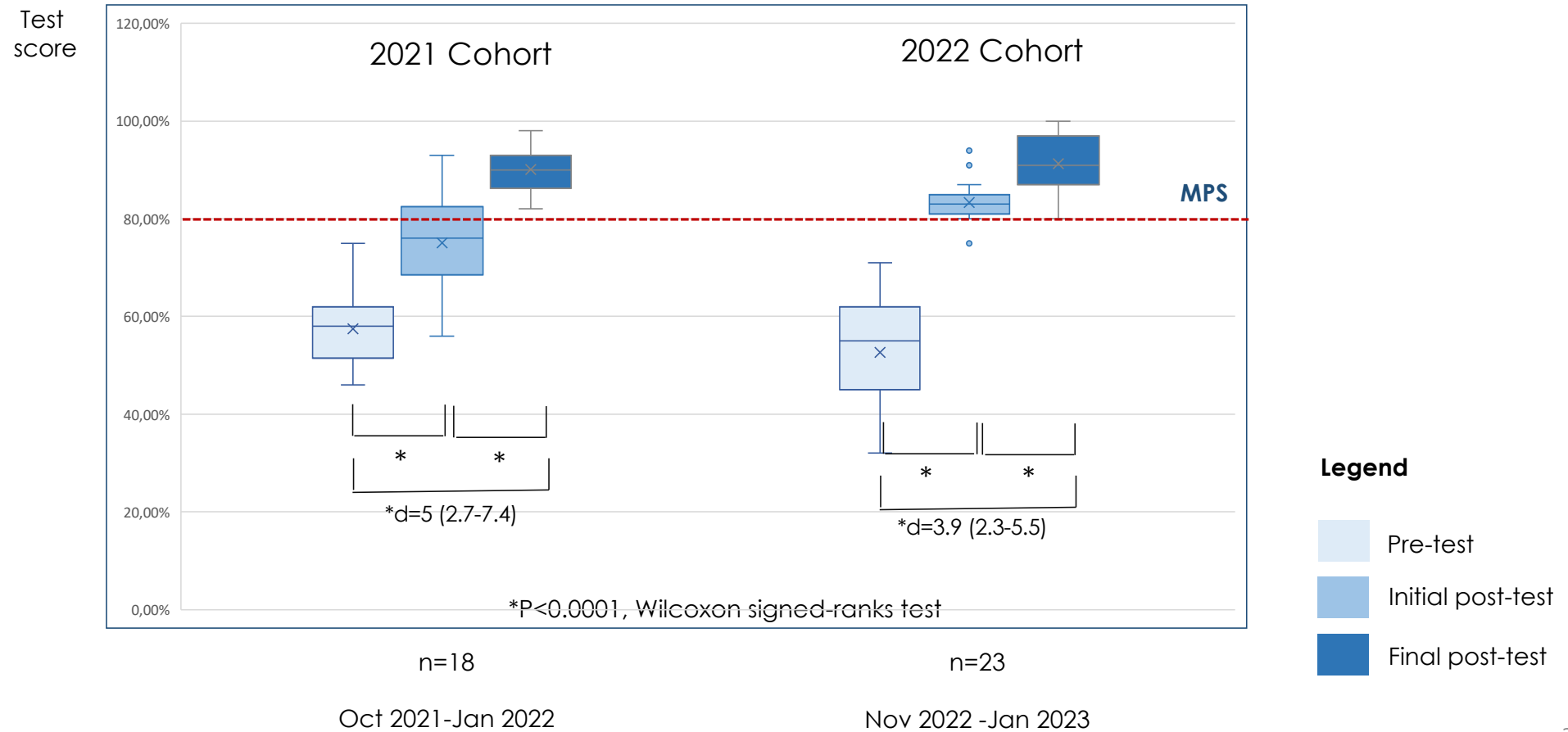
TAIWAN

TAIWAN

**Academy of Endoscopy,
Class of 2021-2022**
Hereditary & Familial CRC
Case-based learning using EPA/ML



Excellence for all





Return on Investment

- ❖ set-up dedicated clinical programs in their institutions
- ❖ conducted a genetic study and reported the data
- ❖ transferred this knowledge to GI fellows/ peers
- ❖ included it in national GI board examination
- ❖ first step towards setting-up cancer registries for HCRC

Course feedback

- ❖ "I was surprised to discover during the course that decision frameworks provide a well-structured, a 'mathematical' approach to solving difficult problems" like HCRC recognition"
- ❖ "Applied decision making is the most intuitive format for learning..."
- ❖ "The unique part of this course is teaching clinical reasoning...This course is like playing chess"

Key learnings

- ❖ Teaching clinical decision making accelerates the transfer of complex knowledge on recognition of HCRC and FCRC for achieving Mastery among practicing clinicians
- ❖ Deliberate practice of decisions using problem solving expert decision frameworks applied on authentic cases creates powerful mental representations which in turn forms the basis for high-competence
- ❖ Train-the-Trainer programs are needed to develop expert-like decision skills to foster a change in practice and ultimately bridge the gap in HCRC recognition