



THE ECOSYSTEM OF EVIDENCE

Lessons learned in the pandemic
era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023

#EBHC2023

Teaching overdiagnosis to medical students and family physicians within an evidence- based medicine framework

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Faculty/Presenter Disclosure



- Faculty: Eddy Lang
- Financial affiliations:
 - **No relevant disclosures**
- Intellectual disclosure:
- Chair of the 2022 Preventing Overdiagnosis Conference in Calgary
- Member of the Canadian Task Force on Preventive Health Care



Canadian Task Force
on Preventive Health Care

Background

“The labeling of a person with a disease or abnormal condition that **would not have caused the person harm if left undiscovered**, creating new diagnoses by **medicalizing ordinary life experiences**, or **expanding existing diagnoses by lowering thresholds or widening criteria** without evidence of improved outcomes. Individuals derive **no clinical benefit from overdiagnosis**, although they may experience **physical, psychological, or financial harm.**”

The screenshot shows a news article with the following content:

- Check for updates:** (button)
- OPINION** (tag)
- Overdiagnosis: it's official** (headline)
- Steven Woloshin,^{1,2} Barnett Kramer³** (authors)
- Recently the US National Library of Medicine (NLM) unveiled new terms to be included in the medical subject headings (MeSH) vocabulary used to index, catalogue, and search journal articles, books, and other biomedical and health related information.¹**
- One of the new terms is overdiagnosis**
- “overdiagnosis” in the title or abstract of journal articles—but it was obvious that many relevant articles were missed, and many irrelevant ones included in results.**
- Further, when we looked at the NLM MeSH browser we noticed that the concept was not categorised properly, listed only under “medical overuse,” and not differentiated from overutilisation, misdiagnosis,**



WHAT IS OVERDIAGNOSIS AND HOW BIG A PROBLEM IS IT?

Overdiagnosis happens when you get a diagnosis that ends up causing you more harm than good. It can happen when a healthy person is diagnosed with a very early form of a disease, but that disease would never have developed to cause any symptoms.

1 in 3

More than **1 in 3 prostate cancers** detected via commonly used PSA screening are overdiagnosed²⁰



Almost **1 in 5 breast cancers** detected via mammography screening may be overdiagnosed⁷

\$1.2 billion

It is estimated that the **annual cost of breast cancer overdiagnosis**, including Ductal carcinoma in situ (DCIS), in the United States is \$1.2 billion⁸



There is widespread **overdiagnosis of ADHD**. Canadian boys born in December are 30% more likely to get an ADHD diagnosis than boys born in January¹²



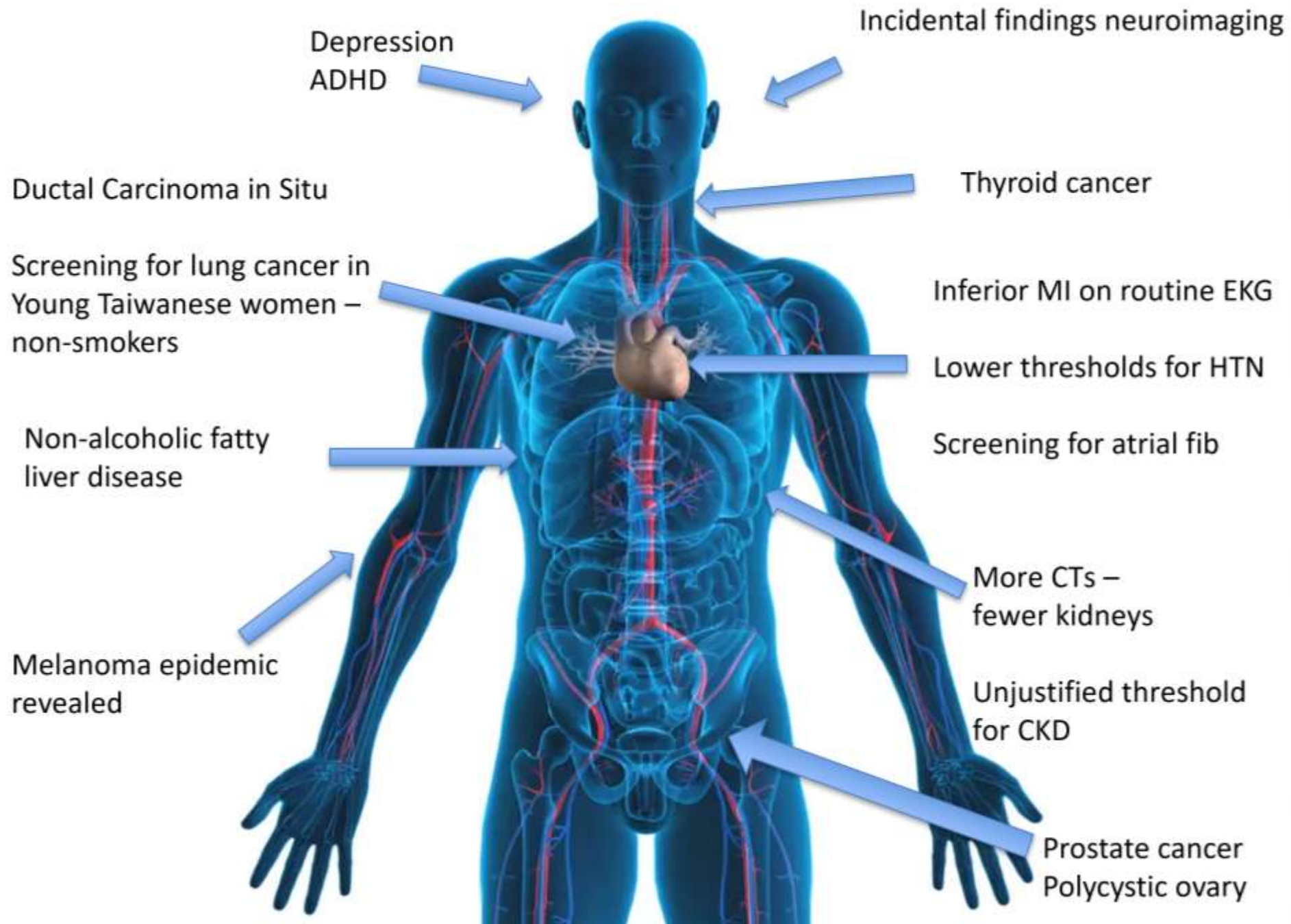
Canadian research estimates that **1 in 3 people diagnosed with asthma** may be overdiagnosed and overtreated¹⁰



Controversially **lowered thresholds for diagnosing high blood pressure** in the US in 2017 may cause **25 million people to be overdiagnosed**¹¹

A *New England Journal of Medicine* paper estimates that **500 000 people were unnecessarily diagnosed with thyroid cancer** in 12 nations over the past 2 decades⁹

Overdiagnosis causes overtreatment, psychological harms, labelling, financial harms, and threats to health system sustainability



Aims

- Appreciate the challenges and solutions to imparting an understanding of overdiagnosis
- Review strategies that have been employed to provide first year medical students with the scientific basis for overdiagnosis in a large group teaching session



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Methods

Collective feedback from participants in a workshop dedicated to medical education and preventing overdiagnosis



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Results

Six themes identified

Three related to education / three related to structural barriers

Solutions suggested



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Education

Barriers

Solutions

Challenges in Teaching Overdiagnosis in Medical Education:

Effective Integration of Overdiagnosis in Medical Education:

Cynicism Concerns: Educators hesitate to teach overdiagnosis due to concerns about fostering early cynicism in medical students. The traditional diagnostic training approach may conflict with overdiagnosis awareness. This theme highlights the tension between conveying the concept of overdiagnosis and the conventional methods of medical education.

Foundational Learning and Early Exposure: This theme emphasizes the importance of introducing overdiagnosis concepts early in medical education, during pre-clinical stages. Early exposure establishes a foundational understanding that can be built upon in clinical settings. This approach ensures that students have a solid grasp of overdiagnosis concepts from the beginning of their medical training, setting the stage for deeper learning.

Impact of Examination Pressure on Medical Education:

Holistic and Evidence-Based Medical Education:

Exam Focus: The intense pressure of board exams directs students' attention toward passing exams rather than understanding core concepts like overdiagnosis. This shift compromises their ability to critically analyze and apply knowledge. This theme underscores how examination pressures can deter deep learning and understanding in medical education.

Continuous and Comprehensive Learning: This theme advocates for a longitudinal approach to teaching overdiagnosis as part of a continuous, comprehensive curriculum throughout medical education. Such an approach ensures that students develop a deep and evolving understanding of the concept. It aligns with the principles of evidence-based education and encourages students to critically evaluate medical practices over time, contributing to more informed decision-making and medical practice.

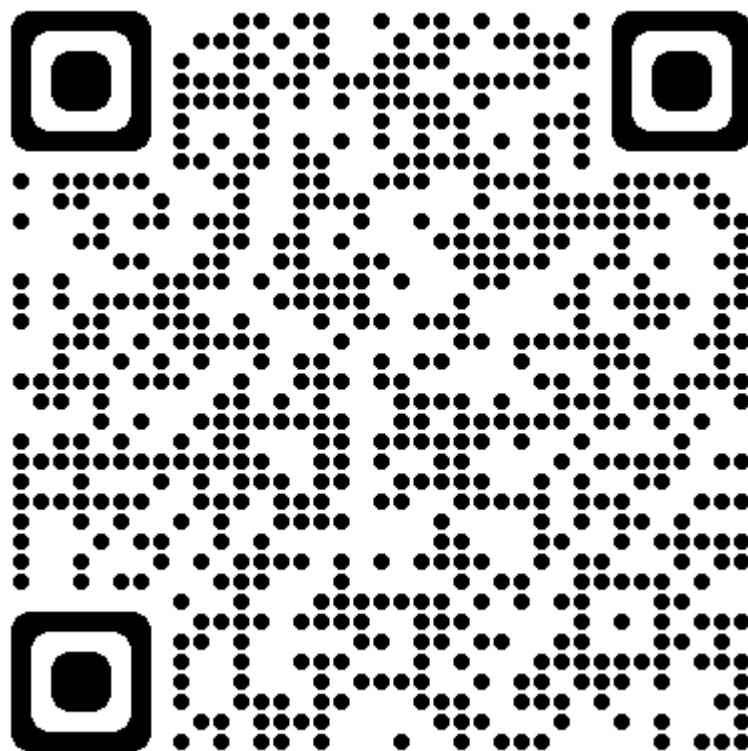
Challenges in Statistical Literacy and Informed Decision-Making:

Enhancing Patient-Centered Care and Communication:

Statistical Ignorance: Both healthcare professionals and patients often lack a comprehensive understanding of medical statistics. This deficiency leads to difficulties in interpreting and communicating risks and benefits accurately, ultimately impacting the quality of informed decision-making. This theme highlights the importance of addressing statistical literacy in medical education to improve healthcare decision-making.

Effective Communication and Patient Interaction: This theme highlights the need for specialized training in communication skills for future physicians. By equipping them with these skills, medical students can effectively explain diagnostic risks and outcomes to patients, facilitating better decision-making. This theme underscores the importance of not only medical knowledge but also effective patient interaction in preventing overdiagnosis.

Structure	
Barriers	Solutions
Patient-Physician Dynamics:	Shift Towards Patient-Centered Care and Communication:
Patient Expectations: This theme underscores the impact of patient expectations on the dynamics between patients and physicians. Patients often expect specific diagnoses, which can exert pressure on physicians to provide such diagnoses, even when they may not be medically necessary. This pressure contributes to overdiagnosis, highlighting the importance of understanding and managing patient expectations in healthcare settings.	Rethinking Diagnosis: This theme highlights the importance of shifting the medical focus from merely providing a diagnosis to emphasizing the explanation of management plans. By prioritizing patient-centered care and effective communication, this approach aims to mitigate overdiagnosis. It recognizes that patient understanding and involvement in their healthcare decisions can lead to more appropriate and informed choices.
External Influences on Medical Education and Practice:	Promoting Ethical Patient-Centered Practice:
Pharmaceutical Influence: This theme focuses on the external factors influencing medical education and practice, particularly the influence of pharmaceutical companies. It points out that rapid education driven by these companies may prioritize generating more prescribers, potentially leading to an overemphasis on specific medical interventions without adequate consideration of their necessity. This external influence can contribute to overdiagnosis and highlights the need for transparency and ethical considerations in medical education.	Patient-Centered Approach and Ethical Understanding: This theme emphasizes the significance of defining overdiagnosis through the lens of patient values and perspectives. By considering the ethical aspects and patient-centered definition of overdiagnosis, healthcare professionals are encouraged to make decisions that prioritize the best interests of patients. This approach promotes more ethical and patient-centered decision-making.
Challenges in Medical Education and Healthcare Evolution:	Enhancing Clinical Decision-Making Skills and Education:
Technological Evolution and Knowledge Gap: This theme addresses the challenges arising from the evolving landscape of medical technology. It emphasizes the discrepancy between outdated textbook knowledge taught in medical education and the rapidly advancing medical technology, resulting in discrepancies and uncertainties in medical practice. This theme underscores the need for medical education to adapt to modern healthcare challenges and ensure that practitioners are well-equipped to navigate technological advancements.	Reflective Practice and Real-World Application: This theme focuses on the importance of incorporating real-world clinical scenarios and a dedicated component for reflection in medical education. By doing so, future doctors are encouraged to critically assess their decisions, consider the implications of overdiagnosis, and engage in reflective practice. This approach promotes a deeper understanding of the real-world implications of medical decisions and helps healthcare professionals become more thoughtful and responsible practitioners.



[https://docs.google.com/document/d/1DMCUYGfgMV25rMCRVBnt9Le
pixWwlZle/edit](https://docs.google.com/document/d/1DMCUYGfgMV25rMCRVBnt9LepixWwlZle/edit)



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Results

Large group session at U of Calgary EBM course

Highest rating in student evaluation

Epidemiologic signature of overdiagnosis

Gap between cancer specific and all-cause mortality

Case scenarios of individuals likely harmed by overdiagnosis

Proscarrest new lab test for prostate cancer (actually PSA)



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Conclusions

- Overdiagnosis an important part of patient harm and a threat to healthcare sustainability
- Difficult to conceptualize and raise awareness among learners
- Closely linked to Shared Decision Making
- Solutions exist to tackle the education and structural barriers



Thank You / Mille Grazie