

Insights from research and policy initiatives in different healthcare systems and settings

Chair: Dr Yoryos Lyratzopoulos

Speakers: Professor Peter Vedsted
Dr Hardeep Singh



Introductory observations

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Reader in Cancer Epidemiology

Cancer Research UK Clinician Scientist Fellow 2015-2019



An exercise in knowledge brokerage and 'comparing notes' for reciprocal learning...

Not about discovering
who is 'better' or 'worse'

“Root problems” = same everywhere

- Low predictive value of symptoms – *forever*
- Few accurate & easy-to-use tests – *currently*

We are all in this together

Session plan

- Introduction
- Evidence from Denmark

Good clinicians in supportive health care systems - the Danish three-legged strategy for cancer diagnosis

- Evidence from the US

Research on missed opportunities in cancer diagnosis in the US: Defining, measuring and reducing

- Panel / plenary discussion

Circle 1

*Non-prompt diagnosis is not only a
barrier to improving cancer
survival....*

*but a global 'quality and safety'
problem*

*[both for the public health and the
health care system]*

Consider.....

5-year survival with stage IV melanoma currently > 20%

But associated with:

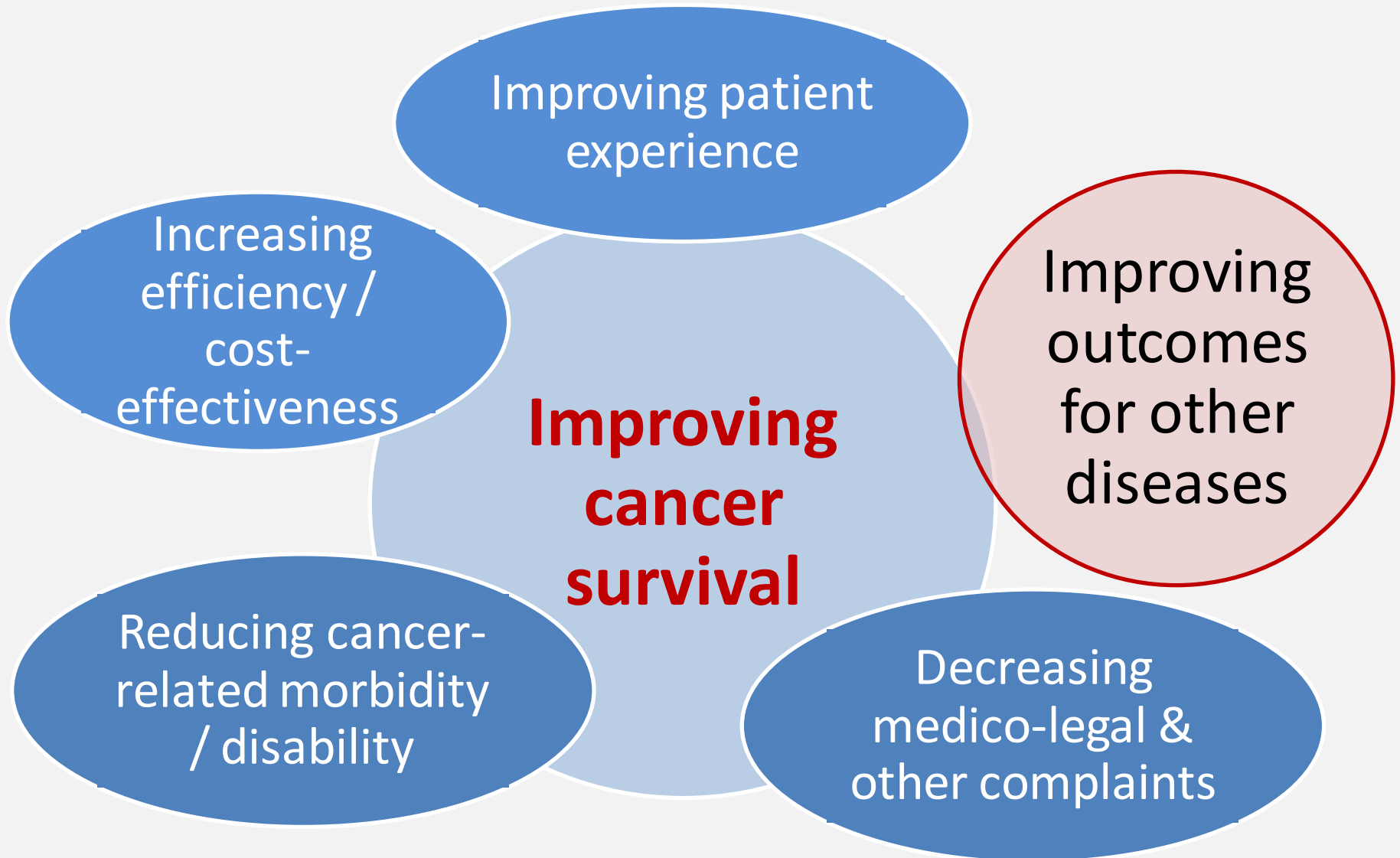
- Substantial treatment burden
- Considerable risk of serious side effects
- High costs to health care system

Therefore: We need to consider the impact of advanced stage diagnosis on morbidity / QoL / cost

Lebbé C *et al*, Ann Oncol, 2014

Why earlier diagnosis matters

– a more complete picture





Improving patient experience

- Cancer patients with a non-prompt referral, evaluate the experience of their subsequent cancer care more critically
- Associations stronger for aspects of cancer management involving primary care, and questions about 'confidence and trust'

Circle 2

Stratification (of risk of non-prompt diagnosis)

- *Between patient groups*
- *Between healthcare organisations (e.g. practices)*

Better understanding of variation in risk



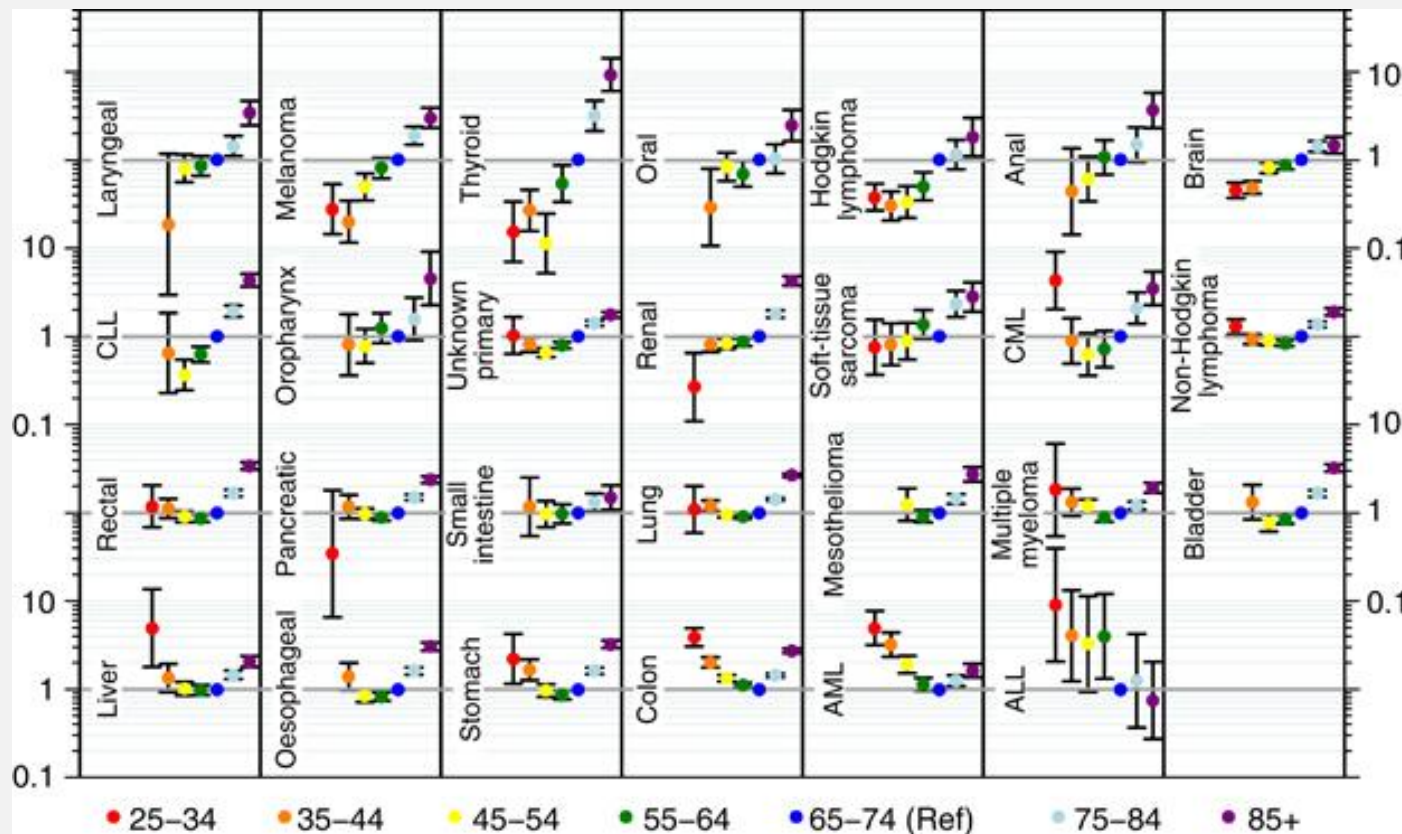
Targeting and tailoring of early diagnosis efforts



- **Interventions:** Increased effectiveness & efficiency
- **Research:** Higher 'Return on Investment' (ROI)

0.75 million patients, 27 cancers, ~2000 strata (*cancer-age-sex-deprivation*) regarding risk of emergency presentation

Very large degree of complexity and variability – lots of
variation to explain and learn from

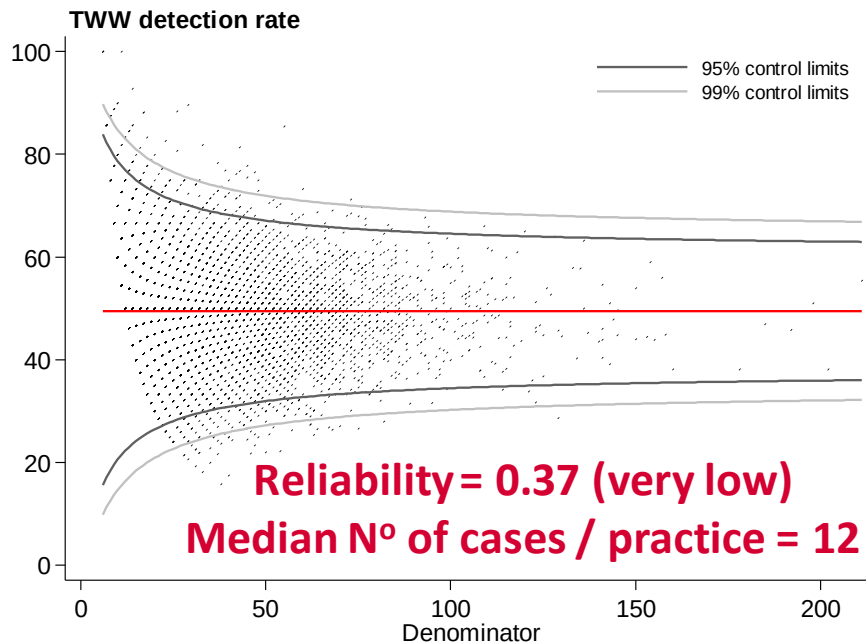


Abel, Shelton, Johnson, Elliss-Brookes, Br J Cancer 2015, NAEDI Supp.

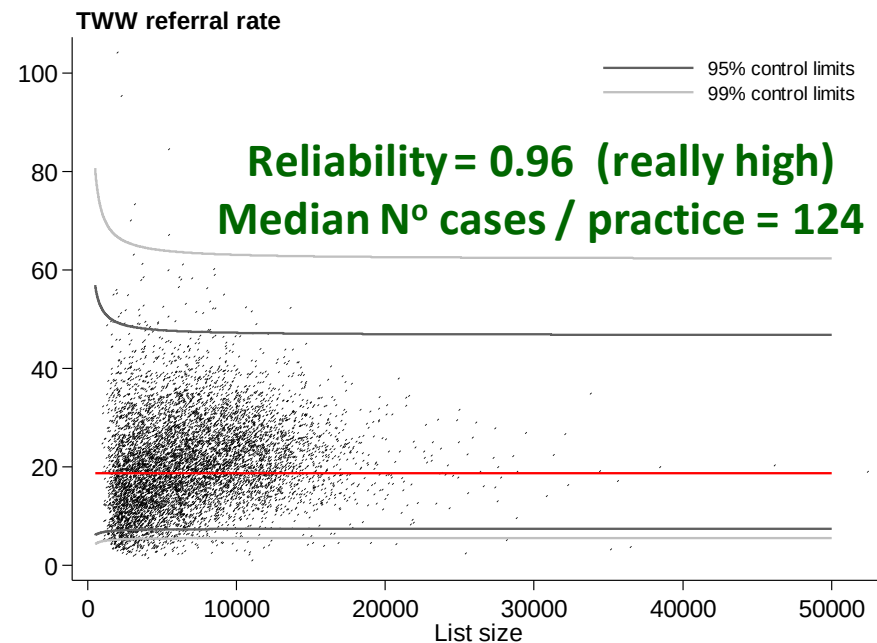
What about stratifying organisations (practices) for cancer-relevant diagnostic activity?

Telling practices apart challenging for some indicators

Diagnostic **outcome** indicators



Diagnostic **process** indicators



Emerging findings from NAEDI grant
see poster #1 by **Abel et al.**

Circle 3

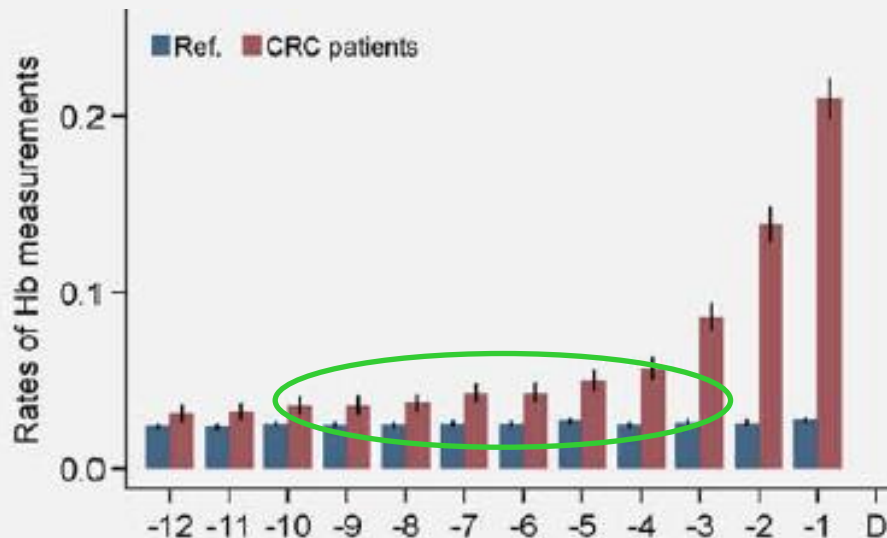
“Missed diagnostic opportunities”

*Bridging **epidemiology** and
improvement science*

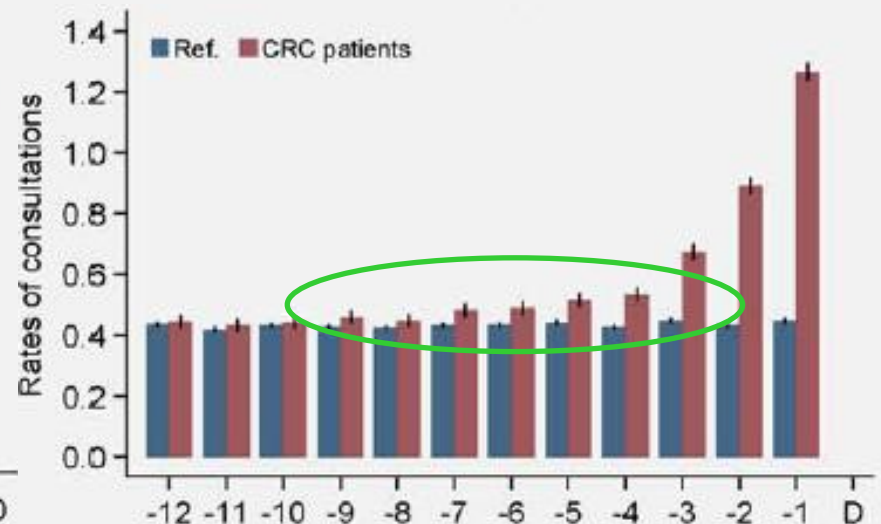
Opportunities for earlier diagnosis *may* exist but we do not know the mechanisms involved

- Primary care use -12 to -1 months before diagnosis
 - Patients **with** / **without** colorectal cancer

Pre-diagnostic haemoglobin tests



Pre-diagnostic consultations



Hansen PL, Hjertholm P, Vedsted P, Int J Cancer 2015

Understanding missed opportunities for more timely diagnosis of cancer in symptomatic patients after presentation

G Lyratzopoulos^{*,1,2}, P Vedsted³ and H Singh⁴



‘Missed diagnostic opportunities’: 3 key aspects of definition

- Case analysis suggests that something different could have been done to make the correct diagnosis earlier
- Occur anywhere in the ‘evolving’ diagnostic process
 - E.g. during consultation or during follow-up (*or lack of it*)
- They have multiple aetiologies
 - Patient, provider and system factors at play (*often together*)

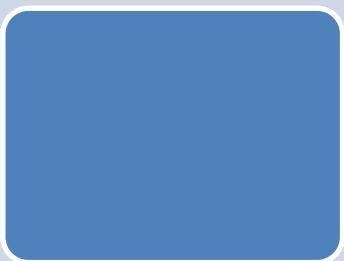
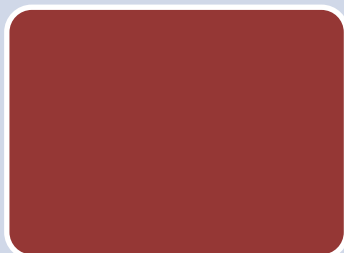
Phase of Dx process

Clinical
encounter

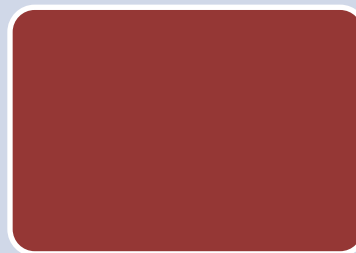
Test
performance

Follow-up

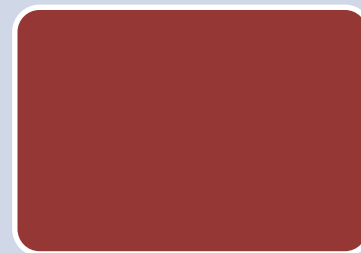
Patient factors



Provider factors



System factors



Phase of Dx process

**Clinical
encounter**

**Test
performance**

Follow-up

Patient factors

Awareness /
psychosocial
factors

Practical barriers
/ fear of result or
procedure

Practical barriers
/ attitudinal
issues

Provider factors

Inadequate Hx
taking / cognitive
factors

Cognitive barriers
/ biases

Cognitive over-
load /
unappreciated
abnormal findings

System factors

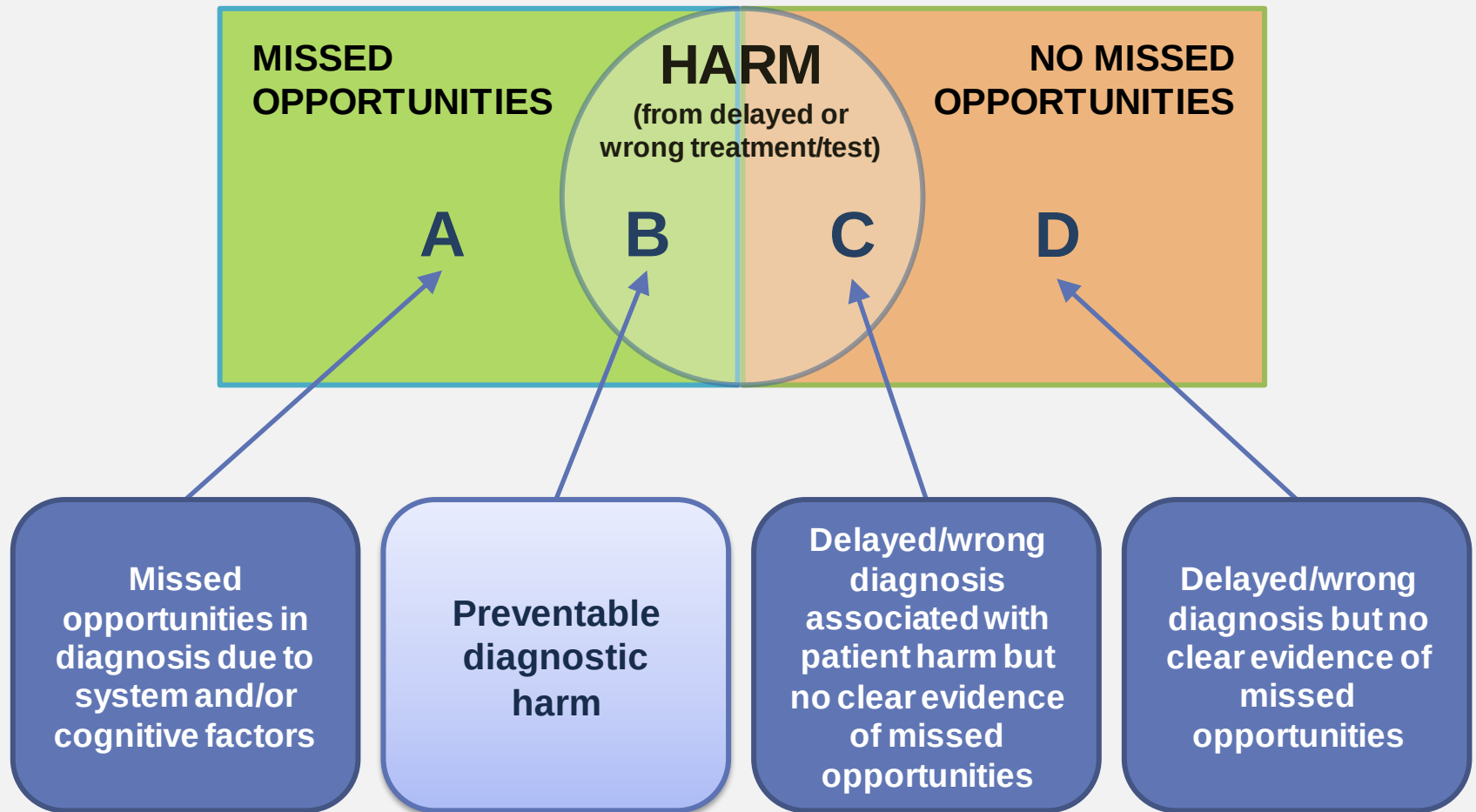
Rigid consultation
norms / 10'
consultation

Lack of fail-safe
systems for no-
shows or alerting
abnormal results

Over-reliance on
patients to 'call
back'

Not all missed opportunities come to harm

Not all harm comes from missed opportunities



Interim conclusions

- Early diagnosis matters for many different outcomes
 - Not just survival
- Epidemiology increasingly identifying stratified risk of early/late diagnosis
 - Revealing potential mechanisms and intervention targets
- Epidemiology is vital but not adequate
 - Multidisciplinary research needed to support the diagnostic process and improve timeliness
 - Patient, provider and healthcare factors operate both during and after the first encounter

Our two speakers...

- Leading multi-disciplinary research groups
Representing 'early diagnosis research systems'
- Research across the translational pathways
From observational studies to randomised controlled trials
- Sustained productivity innovation / many years

Introducing Professor Vedsted

Few very recent innovative contributions to the evidence



Novel diagnostic care models evaluation

Implementing Direct Access to Low-Dose Computed Tomography in General Practice—Method, Adaption and Outcome

“Missed opportunities” in Danish primary care



British Journal of General Practice
bringing research to clinical practice

Quality deviations in cancer diagnosis:

prevalence and time to diagnosis in general practice

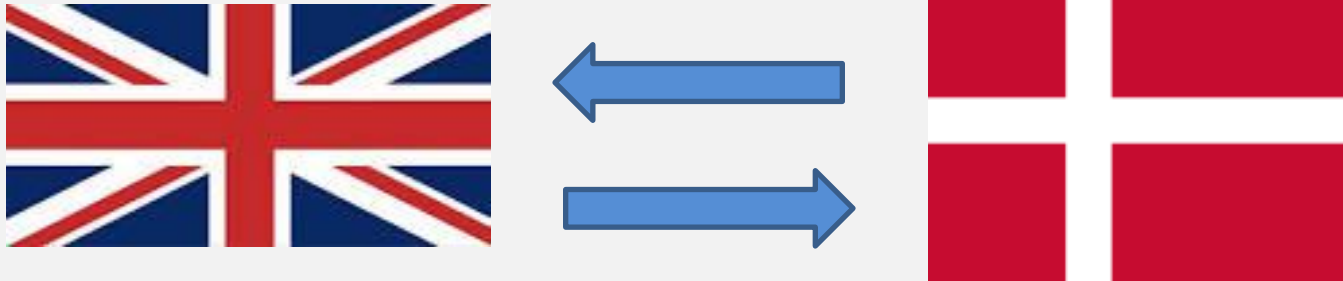
Epidemiology of diagnostic pathways



Increased diagnostic activity in general practice during the year preceding colorectal cancer diagnosis

Pernille Libach Hansen¹, Peter Hjertholm^{1,2} and Peter Vedsted¹

**Danish early diagnosis research and policies
have *inspired and influenced* UK early diagnosis
research and policy for many years**



Ready for another migratory wave of good
ideas and learning form Denmark

Introducing Dr Singh

Exploring situational awareness in diagnostic errors in primary care

Hardeep Singh,¹ Traber Davis Giardina,¹ Laura A Petersen,¹ Michael W Smith,¹ Lindsey Wilson Paul,² Key Dismukes,³ Gayathri Bhagwath,⁴ Eric J Thomas⁵

ABSTRACT

Objective: Diagnostic errors in primary care are harmful but poorly studied. To facilitate the understanding of diagnostic errors in real-world primary care settings that use electronic health records (EHRs), this study explored the use of the situational awareness (SA) framework from aviation human factors research.

Methods: A mixed-methods study was conducted involving reviews of EHR data followed by semi-

these errors are challenging to study and have received inadequate attention.^{15–18} Additionally, the science of understanding and analyzing outpatient diagnostic errors is poorly developed.^{19–21} Although patient and system factors are known to contribute to diagnostic error,²² little is known about how diagnostic decision-making errors occur in routine primary care settings.²³

All our 'comfort blankets' questioned

- US setting – problems amidst 'diagnostic information affluence' and minimal gate-keeping
- Focus not only on the 'consultation' but what happens 'afterwards'
- Emphasis on system factors in 'diagnostic safety'

Few milestone papers

Fact-finding (based on integrated patient records)

JOURNAL OF CLINICAL ONCOLOGY

Characteristics and Predictors of Missed Opportunities in Lung Cancer Diagnosis: An Electronic Health Record–Based Study

Theory-building / conceptual frameworks

JAMA Internal Medicine

Formerly Archives of Internal Medicine

Types and Origins of Diagnostic Errors in Primary Care Settings

Interventions

BMJ Quality & Safety

Electronic health record-based triggers to detect potential delays in cancer diagnosis