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All films will be securely stored on University of Oxford and BMJ servers. Please make yourself known at the registration desk if you wish to remain off camera. Thank you for your cooperation.
Welcome

We are very pleased to welcome you to this special scientific gathering on overdiagnosis. This conference began with a small planning meeting at Bond University, Australia in 2012 which then developed into an international partnership which led to the inaugural Preventing Overdiagnosis conference that took place in September 2013 at Dartmouth, Hanover, New Hampshire, USA. The second Preventing Overdiagnosis conference is hosted by the Centre for Evidence-Based Medicine at the University of Oxford in partnership with the BMJ, The Dartmouth Institute for Health Policy and Clinical Practice the leading New-York based consumer organisation Consumer Reports, and Bond University Australia.

The conference has received an overwhelming response to the call for abstracts, attracting an impressive amount of quality sciences from across the globe. Delegates will convene to share research, opinions and ideas across more than 130 presentations, posters and workshops, all focussing on the issues of overdiagnosis, what is driving it and what can be done about it. Abstracts relate to the conference sub-themes including: the prevalence of overdiagnosis; methods for researching and measuring the problem; its causes or consequences; policy interventions and communication strategies. Work on defining overdiagnosis, and placing the problem within historical and cultural contexts are also welcomed.

A research planning meeting covering research, education, communication and policy-making will take place after the close of Preventing Overdiagnosis to develop solid plans and ongoing tangible outcomes. We hope that you enjoy the conference and are looking forward to working with you to prevent overdiagnosis.

News on the 2015 conference coming very soon.

Iona Heath, Ray Moynihan, Paul Glasziou, Steven Woloshin, Lisa Schwartz, Carl Heneghan
(On behalf of the scientific committee)

Scientific Committee

Paul Glasziou, Bond University, Australia
Iona Heath, former President Royal College of General Practitioners, UK
Carl Heneghan, Centre for Evidence-Based Medicine, University of Oxford, UK
Ray Moynihan, Bond University, Australia
Barry Kramer, National Institute of Cancer, USA
Jenny Doust, Bond University, Australia
David Henry, ICES, Canada
Steve Woloshin, The Dartmouth Institute for Health Policy & Clinical Practice, USA
Lisa Schwartz, The Dartmouth Institute for Health Policy & Clinical Practice, USA
Allen Frances, Duke University School of medicine, USA
John Brodersen, University of Copenhagen, Denmark
Jean-Claude Salomon, Princeps, France
Alexandra Barratt, University of Sydney, Australia

Event Coordinator

Ruth Davis, Centre for Evidence-Based Medicine, University of Oxford, UK
Monday September 15th
08:00 – 10:00  Registration
10:00 – 11:30  Keynote Session 1
11:30  Tea & Coffee
11:45 – 13:15  Parallel Sessions/Workshops
13:15  Lunch
14:00 – 15:30  Parallel Sessions/Workshops
15:30  Tea & Coffee
16:00 – 17:30  Parallel Sessions/Workshops

Tuesday September 16th
08:00 – 09:00  Registration
09:00 – 10:30  Keynote Session 2
10:30  Tea & Coffee
11:00 – 12:30  Parallel Sessions/Workshops
12:30  Lunch
14:00 – 15:30  Parallel Sessions/Workshops
15:30  Tea & Coffee

Wednesday September 17th
08:00 – 09:00  Registration
09:00 – 10:30  Keynote Session 3
10:30  Tea & Coffee
11:00 – 12:30  Parallel Sessions/Workshops
12:30  Lunch
13:30 – 14:30  Closing Keynotes
KEYNOTE SESSION 1 – Lecture Theatre 1
CHAIR: Fiona Godlee

10:00  
**K1** Iona Heath - Overdiagnosis and the individual patient
Susan Sontag’s kingdom of the well is being absorbed into the kingdom of the sick, and clinicians and health services are busy ushering people across this important border in ever increasing numbers. The costs, personal, social and economic, are enormous. Working face to face with individual patients, what can clinicians do to stem the tide? Many feel helpless in the face of the increasing stampede but patients need clinicians courageous enough to reassert the border between the well and the sick so that people only make the journey across when medical care is appropriate and will produce more benefit than harm.

10:30  
**K2** Sir John Burn - The highs and lows of genetic prediction

11:00  
**K3** Jack Wennberg – Is More Better?
In the United States, the per capita supply of physicians and hospital beds varies extensively among hospital referral regions and is closely associated with variation in the intensity of medical care as measured by the frequency of physician visits and hospitalizations. Regions with more visits and hospitalizations have higher Medicare spending and their populations receive more diagnoses per person. Patients living in regions with high care intensity incur greater out-of-pocket costs, see more physicians and are more likely to experience terminal care in an ICU. However, increased care intensity isn’t associated with improvement in population health as measured by lower mortality rates. The important determinants of the nearly two-fold regional variation in Medicare mortality are smoking, obesity, stroke, hip fracture and self-reported illness. Our analysis thus indicates the overuse of the health care delivery system in the provision of supply-sensitive care, and the underuse of the public health system in addressing the determinants of population health.

11:30-11:45  
TEA AND COFFEE BREAK
### PARALLEL SESSIONS - Each session will close with a 15 minute general panel discussion

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<td>Case Studies in Overdiagnosis (L2)</td>
<td>Mental Health (L3)</td>
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<td>Session Chair: Iona Heath</td>
<td>Session Chair: John Brodersen</td>
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<td>11:45 – 12:00</td>
<td>Overdiagnosis of Familial Mediterranean Fever by Genetic Screening in Adults - Cem Sungur</td>
<td>Overdiagnosis and dangerous overtreatment of irritable infants with &quot;reflux.&quot; A rapidly emerging non illness with a case study of an effective multi modal educational solution - Les Toop</td>
<td>Selling Depression and Antidepressants: The Mental Health Foundation of Australia’s National Depression Awareness Campaign - Melissa Raven</td>
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<td>12:00 – 12:15</td>
<td>How appropriately are we screening osteoporosis in 45 to 64 year old women?: a cross-sectional study - Maria de las Nieves Ganiele, Sergio Terrasa &amp; Karin Kopitowski</td>
<td>Difficulties in Estimating Overdiagnosis: The Special Case of Melanoma - Barbara Dunn</td>
<td>Medicalizing children’s behaviour as Attention Deficit Hyperactive Disorder (ADHD): a study highlighting the social processes at work in mis-diagnosis - Gloria Wright</td>
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<td>12:15 – 12:30</td>
<td>Making sense of diagnostic uncertainty after newborn screening for cystic fibrosis - Robin Hayeem</td>
<td>What’s in a name? The influence of a disease label on parent’s decision to medicate a colicky infant - Laura Scherer</td>
<td>Psychopathology and dynamics within the doctor-patient dyad - their potential as drivers of overdiagnosis - Rhonda Buskell</td>
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<td>12:30 – 12:45</td>
<td>Conceptualizing Overdiagnosis in Cancer Screening - Pamela Marcus</td>
<td>Overdiagnosis in Lung Cancer Screening with Chest X-Ray: Exploring what Appears to be Conflicting Findings in the Mayo Lung Project (MLP) and Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial - Pamela Marcus</td>
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Overdiagnosis refers to health care that harms rather than benefits patients. Various types of overdiagnosis have different drivers and require different solutions. The aim of this workshop is to discuss and test a typology for classifying overdiagnosis, which may be useful as a tool in developing strategies to prevent overdiagnosis.

The workshop will involve a brief presentation of a typology of overdiagnosis. Participants will then be invited to:

1. Discuss the typology and provide clinical examples for each type of overdiagnosis;
2. Provide critical feedback on whether the typology captures all or most cases of overdiagnosis;
3. Discuss if and how this typology can be useful in winding back the harms of overdiagnosis.

Typology of Overdiagnosis

1. **Mis-diagnosis**: the labelling of benign growths, or conditions that do not cause symptoms or morbidity in ways that imply that they are harmful (for example very small pulmonary emboli identified by CT angiography).
2. **Mis-classification**: conditions that are not harmful or progressive are classified as diseases:
   a. Expansion of categories by redefining cut-off levels for normal so that the ‘affected’ population increases in size (eg type two diabetes, chronic kidney disease);
   b. Disease mongering where conditions previously considered trivial or part of ordinary life are reclassified as disease (eg restless legs syndrome, now known as the neurological disorder Wils-Ekbom disease).
3. **Over detection**: lesions are investigated and treated even though many of them are harmless:
   a. Screening identified abnormalities (for example breast or prostate cancer);
   b. ‘Incidentalomas’ identified by increasingly sophisticated imaging.
4. **Overtreatment**: may not be a type of overdiagnosis, but is often the mechanism for harm occurring, arising from:
   a. Treatment of risk factors;
   b. Failure to be able to distinguish aggressive from non aggressive growths (eg breast cancer);
   c. Medical management of ‘ordinary life’ events (cf disease mongering)
Session 1E L5  
**Background:** Medicalization, overdiagnosis and overtreatment can steal away healthy old age with drugs frequently causing more death and illness than the diseases they’re supposed to treat. Systems of research, evidence, and clinical guidelines mean the ‘Good’ Doctor may end up providing care that is measurably better, but meaningfully worse, for the person.

**Aim:** To discuss the drivers for overdiagnosis and treatment, evidence from interventions to counteract this, and create a discussion of potential solutions at policy and clinical levels.

**Method:** We will highlight the quality of the science that drives this ‘therapeutic imperative’ to add more and more treatments vs science for discontinuation including the lack of regulatory actions to help address this question. This includes the drivers for overtreatment, the evidence for de-prescribing, and the possibilities in policy and clinical care for improving this situation including the involvement of patients and families. The narrative story of a family who intervened in a life-threatening drug interaction will show how families can be partners in care if they are fully informed.

We will discuss the problems of polypharmacy and overtreatment using data on morbidity cost and mortality associated with adverse drug reactions.

Evidence-based, clinical support for de-prescribing drugs safely and effectively will be described, including: prescribing or withdrawing drugs when kidney function is reduced; recognizing withdrawal reactions; determining when a drug can be stopped or must be discontinued gradually; and using specific drug treatments during the last stages of life.

**Conclusions:** Providing good care in the next decades could be defined by a new kind of prevention – where the values of research and clinical care support decisions to stop or reduce the dose of medicines and where comparative safety is as valued as much as comparative efficacy. A discussion of potential solutions and further steps will be invited.
Musculoskeletal problems - both traumatic and degenerative - are an enormous health problem. According to the WHO, joint degeneration is among the top 10 conditions in Europe with respect to burden on the society. The prevailing understanding regarding the etiology, pathogenesis, and treatment of many degenerative musculoskeletal problems is very similar: the pain is caused by a mechanical problem (e.g., degenerative meniscus tear). This has led to a very straight-forward diagnosis and treatment strategy: Attempts of conservative treatment are usually followed quite soon by surgical intervention. Many patients report improvement after surgery, but similar results have also been obtained with conservative treatment in randomized, non-placebo controlled trials. Until recently, the evidence on the true efficacy of many of the most common orthopaedic procedures has been scarce, an issue that cannot be addressed simply by evaluating the outcome of patients who have undergone surgery, as the role of the underlying disease process (natural course of healing) and the surgical procedure cannot be disentangled in such a study design.

The seminal sham-surgery controlled trial on the efficacy of arthroscopic debridement of advanced knee osteoarthritis (Moseley et al. NEJM 2002) marked an important turning point: we have since witnessed a series of trials challenging the justification of some of the most common orthopaedic procedures and diagnoses. But has this new evidence resulted in change in clinical practice? A number of landmark studies will be presented and investigators from these trials will share their own experience on how their studies have been welcomed and what change these findings have resulted in. Additionally, the relevance of the IDEAL framework for surgical evaluation will be considered.

The objective of this workshop is to explore how to achieve a more scientific and systematic approach to the evaluation of surgical procedures already in routine practice.
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<th>Session 2B: Public Professional Views on Overdiagnosis (L2)</th>
<th>Session 2C: Breast Cancer Information and Guidelines (L3)</th>
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<td>14:00 - 14:15</td>
<td>Abstract #142: The Effects of Shared Decision Making on Cancer Screening: A Systematic Review - Sarah Lillie</td>
<td>Abstract #167: Patients’ Knowledge about Screening and Overdiagnosis - Stacey Sheridan</td>
<td>Abstract #40: Uninformative Genetic Testing for those at High Risk of Breast Cancer - Kendra Flores</td>
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<td>14:15 - 14:30</td>
<td>Abstract #151: A Systematic Review of the Psychological Harms of Screening: The Evidence We Need vs. the Evidence We Have - Colleen Barclay</td>
<td>Abstract #30: A national survey of awareness and attitudes about Overdiagnosis - Ray Moynihan</td>
<td>Abstract #144: Information on overdiagnosis in breast screening: a survey study of women’s responses - Jo Waller</td>
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<td>14:30 - 14:45</td>
<td>Abstract #45: High Value Cancer Screening: A Conceptual Framework and Recommendations to Improve Cancer Screening Value and Reduce Overdiagnosis and Overtreatment - Timothy Wilt</td>
<td>Abstract #135: How much overdiagnosis are people willing to accept for breast cancer, prostate cancer and colorectal cancer? - Ann Van den Bruel</td>
<td>Abstract #169: Information about the benefit and harms of mammography screening provided to women - Gemma Jacklyn</td>
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<td>14:45 - 15:00</td>
<td>Abstract #44: Reconsidering primary HPV testing in cervical cancer screening in European countries - Carlo Liverani</td>
<td>Abstract #114: Taming Frankenstein’s monster: how doctors have begun talking about medicalization - Louisa Polak</td>
<td>Abstract #90: Overdetection in breast cancer screening: randomised controlled trial (RCT) of an information booklet to support informed choice - Jolyn Hersch</td>
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While there is agreement that overdiagnosis is occurring across the spectrum of health care, we have no commonly agreed definition of overdiagnosis. We need a common definition in order to progress research in the area and to understand how commonly overdiagnosis is occurring and the extent of its consequences.

Several definitions have been proposed. For example, the BMJ article “Preventing overdiagnosis” in 2012 used two: “when people without symptoms are diagnosed with a disease that ultimately will not cause them to experience symptoms or early death” and “over-medicalisation and subsequent overtreatment, diagnosis creep, shifting thresholds, and disease mongering, all processes helping to reclassify healthy people with mild problems or at low risk as sick.”

The aim of this workshop is for the group to progress towards a more agreed understanding of the definition of overdiagnosis and the types of overdiagnosis. The facilitators will present a brief overview of definitions that have been proposed. The participants will break into small groups to discuss these proposed definitions and will work on possible edits and improvements.

The need for decreasing US expenditure on healthcare, with the aim of achieving medical coverage for all Americans, is a major contributing factor in recent calls for a reduction in expensive medical procedures that have no clinical benefit. The ABIM’s “Choosing Wisely” project includes, as of today, more than 50 such recommendations by leading US Medical Boards.

By now, it has become clear it is not enough to convince only the physicians. Patients, who for decades have had their expectations for a cure reinforced by overuse of unnecessary medical procedures, must jump on the change bandwagon. Previous studies reveal that the public arena is ripe for an open discussion. Patients are both willing to discuss the risks involved in medical testing and able to understand complex scientific principles used in the decision-making process.

As a first step towards such a dialogue, Clalit Health Services in Israel (CHS) - 4.2 million customers, 7500 physicians, 56% market share - has developed a 6 minute educational video aimed at instigating the conversation about unnecessary tests - before patients arrive at their physicians' appointments. We focused on a few guiding principles: Patients' responsibility for their own health; The necessity of open dialogue with the family physician; Distinction between screening tests and tests conducted in response to a symptom; Visualization of complex medical principles. Our aim is to encourage the conversation while preventing a backlash of fearing necessary tests. Further down the line we envision more specific videos centered on particular medical topics. In the coming months the video will be presented to focus groups of physicians and patients. This will allow us to evaluate our primary goals, namely changing patients' attitudes and thus the nature of interventions that follow. Ethical considerations, practical problems and challenges will be presented.
Respiratory tract infections (RTIs) are one of the most common reasons for encounter in primary care. 90% of all antibiotics are prescribed outside hospitals and 60% are for RTIs. Antibiotic use and especially use of broad-spectrum antibiotics are the main drivers for antimicrobial resistance, which is steadily growing to be a major threat for all modern medicine. Thus, reducing antibiotic use in primary care is one of the main tasks for primary care health workers.

The diagnostic tools in primary care are limited and the risk of overdiagnosing a cough as pneumonia is considerable. Over the last years, point-of-care tests (POC) like CRP, Strep A test, have become more common and may be a valuable tool to limit overdiagnosing and unnecessary antibiotic use. The need for better POC tests is definite, in order to target the patients that really will benefit from antibiotic use. In order to reduce antimicrobial resistance, a large reduction in antibiotic use is necessary in most countries. A large proportion of RTIs are either viral or self-limiting bacterial infections such as otitis media, acute sinusitis and sore throat. Campaigns for reducing antibiotic misuse should both address the public, GPs, and policymakers. This GRIN symposium will present some of the major studies in this field from primary care.

The scale of the problem of overtreatment of RTIs: Theo Verheij
Challenges with Point of care testing in primary care. Theo Verheij, Morten Lindbæk
Evidence for limited effect of antibiotics (GRACE), Paul Little
Enhanced communication skills in the consultation (IMPAC3T trial; GRACE INTRO; STAR), Chris Butler
Other Implementation studies: KTV (Norway) Morten Lindbæk,
Qualitative research: what the patients think. Chris Butler

14:00-15:30 WORKSHOP - Overdiagnosis and overtreatment of respiratory tract infections in primary care by GRIN (General practice Respiratory Infections Network)
Theo Verheij1, Paul Little2, Chris Butler3, Morten Lindbæk4
1University of Utrecht, Utrecht, The Netherlands, 2University of Southampton, Southampton, UK, 3University of Cardiff, Cardiff, UK, 4University of Oslo, Oslo, Norway

Session 2F L6

15:30-16:00 TEA AND COFFEE BREAK
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| 16:00-17:30| Session 3A  
Breast Cancer Screening (L1)  
Session Chair: Alex Barratt | Session 3B  
Guidelines, Algorithms and Prevention (L2)  
Session Chair: Barry Kramer | Session 3C  
Overuse and Pharmaceuticals (L3)  
Session Chair: Carl Heneghan |
| 16:00 -16:15 | Abstract #91  
DCIS grade distribution in 4,232 screened and non-screened women and estimated risk of overdiagnosis in breast cancer screening- a model of progression - Paula van Luijt |
| 16:15 -16:30 | Abstract #100  
Impact of diagnostic invasiveness on the psychosocial consequences of false-positive mammography: cohort study - Bruno Heleno |
| 16:30 -16:45 | Abstract #133  
Overdiagnosis of mammographic screening studied in birth cohorts - Dorien Ripping |
| 16:45 -17:00 | Abstract #110  
Mammography screening: Estimating over-diagnosis and dealing with denial and public incomprehension - Cornelia J. Baines |
| 17:00 -17:15 | Abstract #149  
Natural history of Breast Cancers Detected in the Danish Mammography Screening Programme: a Cohort Study - Per Henrik Zahl |
| 16:00 -16:15 | Abstract #87  
Guideline Driven Overtreatment in Primary Care - an update - Julian Treadwell |
| 16:15 -16:30 | Abstract #118  
Predictive risk algorithms as a driver of overdiagnosis - current status and what next? - Halfdan Petursson |
| 16:30 -16:45 | Abstract #130  
The use of cardiac troponin measurements in the clinical setting and development of an algorithm to diagnose ischemic cardiac events - Janne Cadamuro |
| 16:45 -17:00 | Abstract #176  
A Population-Based Nationwide Cross-Sectional Study on Preventive Health Services Utilization in Portugal-What Services (and Frequencies) Are Deemed Necessary by Patients? - Carlos Martins |
| 16:00 -16:15 | Abstract #107  
Overuse of antibiotic prophylaxis among surgical oncology patients in Japan - Momoko Iwamoto |
| 16:15 -16:30 | Abstract #102  
Overuse of antiemetic drugs in cancer patients receiving chemotherapy with minimal and low emetic risk in Japan - Ayako Okuyama |
| 16:30 -16:45 | Abstract #148  
Blockbuster diagnostics? The pharmaceuticalisation of the IVD industry - Stuart Hogarth |
| 16:45 -17:00 | Abstract #41  
Pharmaceutical industry behaviour and the Trans Pacific Partnership Agreement- Increased risk for overtreatment - M Erik Monasterio |
**Session 3D L4**

Norway is one of the world’s richest countries, developed within a strong social democratic political frame with public health care for all. We have observed an increase in psychiatric diagnoses in children and young adults. Many young people with disability pension have a main psychiatric diagnosis. Norway is ranked among the top nations regarding quality of life and among the top consumers of antidepressive medication. Our concern is the double betrayal: not only are these young adults excluded from contributing to society and to sustain themselves through work, they are also burdened with dubious diagnoses.

The aim of the workshop is to

1) Address how GPs meet and deal with these problems. We will also demonstrate some of the “screening tools” that are being widely distributed among public health nurses and teachers, encouraged by the Norwegian government as preventive measures.

2) Identify driving forces behind this diagnostic culture. We should not “blame the victim” when disability pensions are discussed as a problem, but discuss the different dilemmas that occur. The initiative behind this workshop is based on a strong belief in public health care and economic support of those who cannot sustain themselves. But every person also has a right and duty to contribute to society according to their abilities.

Questions to be addressed in the discussion

Do we believe that the increase of psychiatric diagnoses among young people represent a true increase in the prevalence of psychiatric illness? Or is it a consequence of an individualized answer to an increasing demand of productivity in the working life.

**Session 3E L5**

Among 40,000 patients living in nursing homes in Norway, approximately 15,000 use anti-depressants. Typically, when nursing home staff complains that “the patient has been unhappy and crying lately”, the doctor prescribes antidepressants without a reliable diagnosis or talking to the patient about the cause of her crying. Treatment other than drugs is infrequently used, although the efficacy-harm profile of antidepressants for old patients is unfavourable except probably for those with severe depression. Overdiagnosis and over-treatment of depression among old people entails that sadness is not acknowledged as an appropriate response to the losses of old age. The distinction between sadness and depression is collapsed and the patients’ own resources and coping strategies are undermined.

The theory of medicalization, or ‘iatrogenesis’ in the terms of Ivan Illich, and core insights of cultural anthropology, can be used to re-establish and clarify the above distinction. On the one hand, the benefit of applying a medical perspective on sadness is that those suffering from depression in a way that compromises their sense of agency can be identified and helped. But the medical gaze itself can be harmful at the level of cultural iatrogenesis, by displacing culturally embedded non-medical ways of dealing with the vicissitudes of human existence, including the inevitable losses of old age, dependency and finitude. Old people as well as their families, clinicians and staff rely on cultural strategies to come to terms with aging and death. Replacing reconciliation and acceptance with pharmaceutical treatment of sadness comes at the cost of an impoverished life rather like that engineered with ‘soma’ and rejuvenation in Huxley’s Brave New World.
16:00-17:30 WORKSHOP - Advanced Evidence Based Diagnosis: ROC curves, Interval Likelihood Ratios, Bias in test accuracy studies and the use of screening tests.
Dan Mayer, Michael Kohn, Christopher Carpenter
1Albany Medical College, Albany, NY, USA, 2University of California, San Francisco, San Francisco, CA, USA, 3Washington University School of Medicine, St. Louis, MO, USA

Session 3F
L6

Overview:
This workshop is based on real examples from the medical literature that you will discuss in small groups with other clinicians and educators with similar interests. We will review multiple studies of diagnostic test accuracy for both diagnostic and screening tests and show how the data can be (but often are not) presented to maximize the information to be gained from the test. We will also discuss various common but under-recognized biases and how they affect results.

Objectives:
1) Review of dichotomous tests, sensitivity, specificity, LR(+), LR(-), cross-sectional vs. case-control sampling, and the false negative rate confusion
2) Multilevel and continuous tests, getting the most out of published ROC curves, interval likelihood ratios, and the perils of making multi-level tests dichotomous,
3) Studies of diagnostic test accuracy -- beyond the check list: incorporation and spectrum biases, partial and differential verification biases
4) Screening tests: How to evaluate the usefulness of screening tests from the individual patient perspective and the societal perspective. Use of Likelihood Ratios, testing screening tests in RCTs and determining the usefulness of screening tests in large populations.
**TUESDAY, 16 SEPTEMBER 2014**

08:00-09:00 | **REGISTRATION**

09:00-10:30 | **KEYNOTE SESSION 2 – Lecture Theatre 1**
**CHAIR: Carl Heneghan**

09:00 | **K4** John Yudkin - Overdiagnosis and the Epidemic of Prediabetes
Attempts to tackle the increasing prevalence of diabetes have focused on identifying and treating people with marginally elevated measures of glycaemia. The definition of intermediate hyperglycaemia has expanded from impaired glucose tolerance to include people with raised fasting glucose or glycated haemoglobin (HbA$_1^C$) concentrations, and cut-off points have been lowered. While people in all the above categories have a raised diabetes risk, prediction is poorer for fasting glucose and HbA$_1^C$ than for impaired glucose tolerance. Moreover the expanded categories increase the prevalence of intermediate hyperglycaemia by twofold to threefold, with over half of all Chinese adults so defined. And there is no evidence that treatment of people in these newly defined categories, with lifestyle advice or with drugs, will improve mortality and morbidity. A label of “pre-diabetes,” as recommended by the American Diabetes Association, brings problems with self-image, insurance, healthcare costs, and drug side effects. Diabetes prevention requires changes to societies and a concerted global public health approach. Diagnoses and thresholds for clinical application may unrealistically burden societies in exchange for limited value.

09:30 | **K5** Rustam Al-Shahi - ‘Accidental’ over-diagnosis on brain magnetic resonance imaging (MRI)
In high income countries magnetic resonance imaging (MRI) has been increasingly recommended, available, and used since its release in the 1980s. MRI appeals to clinicians, researchers, and patients not only because it can image structure and function in exquisite detail, but also because it does not use ionising radiation. But the alluring safety and sensitivity of MRI make its dangers easy to overlook. On brain MRI, for example, incidental findings of potential prognostic and therapeutic significance lurk in 1 in 37 adults without neurological symptoms. Because these ‘incidentalomas’ are mostly vascular and can cause brain haemorrhage, they feel like ‘ticking time bombs’. But their consequences if left untreated are only well described in the short term, during which time observational studies and randomised trials show that incidentalomas treatment is more hazardous. So warnings about the unintended consequences of brain MRI should be given to patients with a low probability of disease, research volunteers, and those tempted to purchase ‘health check-ups’ using brain MRI.
As Hippocrates said, first do no harm. Within medicine there are activities where the risk of harm potentially and significantly outweighs the likelihood of benefit. Clinicians need to focus on getting the right diagnosis in the right patient at the right time, and yet getting the wrong diagnosis in the wrong patient at the wrong time is something that is remarkably easy to achieve. Overdiagnosis is a real problem. And underdiagnosis is a problem too. This dilemma crosses all manner of ethical and practical minefields. How do we balance benefits that apply at a population level with risks at an individual level? What are the ethical principles that apply when we find something wrong with someone who is not aware that they have a problem? Is medicalisation harmful? Or is failure to medicalise harmful? First do no harm – would that it were that easy....
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| 11:00-12:30| PARALLEL SESSIONS - Each session will close with a 15 minute general panel discussion | **Session 4A**  
Prostate Cancer Screening (L1)  
Session Chair: David Henry | **Abstract #66**  
Screening for prostate cancer in New Zealand - a policy to increase overdiagnosis.  
A cautionary tale and a proposal to avoid similar failures - Ben Hudson |
| 11:00-11:15|                                   | **Session 4B**  
Theory and reflection on Overdiagnosis (L2)  
Session Chair: Jenny Doust | **Abstract #165**  
Total health: The holistic overdiagnosis of Systems (P4) Medicine - Henrik Vogt |
| 11:15-11:30| Abstract #66                     | **Session 4C**  
Overuse (L3)  
Session Chair: Brian Nicholson & Jack O’Sullivan | **Abstract #134**  
Update in Medical Overuse - Daniel Morgan |
| 11:00-11:30| **Abstract #83**                 | **Abstract #165**  
Total health: The holistic overdiagnosis of Systems (P4) Medicine - Henrik Vogt | **Abstract #134**  
Update in Medical Overuse - Daniel Morgan |
| 11:15-12:00| **Abstract #20**                | **Abstract #42**  
The ethics of overdiagnosis: different sources and different remedies - Wendy Rogers | **Abstract #137**  
Doctor, could this be “pink eye”? How a disease label influences parents’ interest in antibiotics for treatment of conjunctivitis in children - Beth Tarini |
| 11:30-12:00| **Abstract #101**              | **Abstract #62**  
Conceptualising Over-diagnosis I: Describing Over-diagnosis - Stacy Carter | **Abstract #82**  
Measuring Overuse of Medical Procedures Using Health Insurance Claims Data - Junliang Tong |
| 12:00-12:15| **Abstract #67**                | **Abstract #63**  
Conceptualising Over-diagnosis II: Normatively Evaluating Over-diagnosis - Stacy Carter | **Abstract #37**  
Overstaging leading to overtreatment: the example of thyroid cancer - Stephen Hall |
| 11:00-12:00| **Abstract #62**                | **Abstract #63**  
Conceptualising Over-diagnosis II: Normatively Evaluating Over-diagnosis - Stacy Carter | **Abstract #37**  
Overstaging leading to overtreatment: the example of thyroid cancer - Stephen Hall |
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Conceptualising Over-diagnosis II: Normatively Evaluating Over-diagnosis - Stacy Carter | **Abstract #37**  
Overstaging leading to overtreatment: the example of thyroid cancer - Stephen Hall |
International concerns recognise a lack of generalist primary care as substantially contributing to the problems of overdiagnosis resulting from an overreliance on biomedical interpretations of health need.

Three years ago, an international group of clinicians, researchers, educators, and 3rd sector representatives came together to seek solutions from collective wisdom. The result, the School for Advancing Generalist Expertise (www.primarycarehub.org.uk/sage) seeks to contribute to the reorientation of health systems through addressing a key practice-research gap. Namely a failure to recognise and understand the contribution of the personalised decision making that is the expertise of generalist practice, leading to a ‘technical bypass’ of the generalist role (protocol driven decision making), and so to overdiagnosis.

Our approach was to view expert generalist practice (EGP) as a Complex Intervention and so apply the principles of scientific enquiry to our goal of finding generalist solutions to complex problems. We have been working to identify whole systems enablers and constraints to EGP and so to systematically identify solutions. We now have a growing set of resources. The scene is set for change, we now seek to light the touch paper.

This workshop will invite you to be part of the next steps. A pre-workshop briefing paper will be made available to all conference delegates (and on our website). It will introduce the work of SAGE and invite people to complete a brief survey to identify priorities for discussion. On the day, we will start with a brief introduction to the SAGE resources. Colleagues from SAGE will support structured group work based on the survey responses which will identify and prioritise opportunities for implementation, and so generate initial action plans. Participants will be invited to sign up for working groups beyond the workshop, with SAGE supporting the development and delivery of plans for generalist solutions to Overdiagnosis.
Communicating information about overdiagnosis to clinicians, patients and the public has been recognised as a major challenge. The subject is complex, counterintuitive and emotive, especially in the context of cancer screening. Effective communication may be a potential solution to the problem of overdiagnosis (and associated overtreatment), for example by promoting informed choices by consumers, or changing terminology for illness states (such as Ductal Carcinoma in Situ) in order to reduce consumer demand and clinician pressure for testing and treatment.

This symposium brings together leading researchers from Australia, the UK and US to briefly present findings from a range of studies trying to address communication issues in the area of over-diagnosis. These issues will then be discussed in plenary, involving all attendees.

Assoassociate Professor Kirsten McCaffery – Introduction and chair.
Professor Adrian Edwards: Overview of risk communication formats (UK)
Dr Jo Waller: Women’s responses to information on over-diagnosis in breast screening: a population-based survey (UK)
Ms Jolyn Hersch: Impact of written information about over-detection to support informed choice in breast cancer screening: a randomised trial (Australia)
Ms Kristen Pickles: Approaches to PSA testing in Australian general practice: A GP perspective on communicating over-diagnosis information. (Australia)
Dr Jesse Jensen: Communicating about inappropriate polypharmacy: GPs’ and older patients’ views on (not) starting or stopping preventive medication (Australia)
Associate Professor Stacey Sheridan: Communicating about DCIS: a content analysis of discussions between providers and patients. (US)
Associate Professor Kirsten McCaffery: Investigating the impact of different terminologies for DCIS on patients’ concerns and treatment preferences: a quantitative and qualitative study (AUS)
Dr Laura Scherer: Influence of labelling illness ‘GERD’ in decisions to medicate infants (US)
Discussant: Professor Adrian Edwards
Cancer screening generates substantial over-diagnosis and over-treatment. The benefits of cancer screening are less than people believe, while its harms are greater than people think. Drivers of excessive cancer screening include consumer advocates, payers (who use cancer screening rates as quality metrics), and professional special interests, including clinicians and researchers. Promotion of screening is often based on the mistaken concept and conventional wisdom—that early diagnosis is always beneficial.

Health care providers (HCPs) and the public have been the primary targets of these messages. HCPs are at the center of this; they order and perform such testing, and they are the public's most trusted source of information. For cancer screening, the critical HCPs are Primary Care Providers (PCPs), who often experience a significant knowledge deficit regarding the interpretation of cancer screening statistics. PCPs must be re-educated and empowered to promote a more rational approach to cancer screening. To succeed, PCPs will require a more thorough understanding of the benefits and harms of cancer screening, a commitment to facilitating shared decision-making, and access to the necessary information and tools. This will include decision aids, visual representations such as pictograms, and information available in patient-oriented formats (e.g., number needed-to-screen, natural frequencies).

**Objective:**
Demonstrate innovative communication strategies and techniques for re-educating and empowering clinicians and patients to engage in rational approaches to cancer screening that will reduce over-diagnosis.

**Methods/Workshop Agenda:**
Review of key concepts (20 minutes):
- Drivers of cancer screening
- Heterogeneity of cancer
- Fundamentals of cancer screening statistics
- Harms associated with cancer screening, including Overdiagnosis
  - Discussion (5 minutes)

Presentation of tools/resources (30 minutes):
- Illustrative analogies (turtles, bears, grenades)
- Methods for communicating risk: natural frequencies, pictograms, etc.
- Pathway diagrams that illustrate possible outcomes
- Application of shared decision-making
  - Discussion (5 minutes)
Session 4G
CLR4

Workshop Objectives:
The enthusiasm for increasingly sensitive cancer screening tests has dipped into a very large reservoir of indolent lesions and tumors whose biological behavior is poorly defined or unknown. Many such lesions represent overdiagnosis, but others have lethal potential. Fear of the latter drives overtreatment, one of the most pressing problems in clinical oncology. Lack of knowledge about the natural history of screen-detected lesions also complicates informed decision-making about the benefits and harms of screening. There are debates regarding how to recognize overdiagnosed lesions. One proposed strategy is the development of disease-specific biomarkers that can distinguish aggressive cancers from non-aggressive ones detected by imaging and other technologies. Innovations in molecular biology, genomics, proteomics and immunology tools may provide insight. Advances have been made in identifying and understanding the genetic and other molecular changes associated with growth, survival, and proliferation of cancer cells. However, several lines of evidence point to the roles of a variety of other factors that affect development, progression and cancer cell metastasis, including stromal cells and immune cells in the microenvironment.

The purpose of this workshop is to discuss research directions toward identifying overdiagnosis at the molecular and cellular levels. Speakers will present study strategies and early results in the attempt to better define overdiagnosis in several model tumor types, including prostate cancer, breast cancer, and Barrett’s oesophagus.

12:30-14:00 | LUNCH & POSTER SESSIONS
14:00-15:30  PARALLEL SESSIONS - Each session will close with a 15 minute general panel discussion

**Session 5A**
Cancer and Overdiagnosis (L1)
Session Chair: Barry Kramer

14:00 – 14:15  
Abstract #14
Access and the Overdiagnosis of thyroid cancer - Stephen Hall

14:15 – 14:30  
Abstract #71
Overtesting for Cervical Cancer: Patterns and trends from a national reference laboratory in the United States - Brian Jackson

14:30 – 14:45  
Abstract #111
HPV vaccination and future cervical cancer screening - a collision between primary and secondary prevention - Mie Sara Hestbech

14:45 – 15:00  
Abstract #156
Overdiagnosis of borderline ovarian tumours in ovarian cancer screening; the UK Collaborative Trial of Ovarian Cancer Screening (UKCTOCS) experience - Aleksandra Gentry-Maharaj

15:00 – 15:30  
Abstract #27
Priorities and concerns among men presented with information on the benefits and harms of PSA testing: a qualitative analysis of community jury deliberations - Lucie Rychetnik

**Session 5B**
Clinical Matters (L2)
Session Chair: Carl Heneghan

14:00 – 14:15  
Abstract #152
Overdiagnosis of chronic kidney disease from routine monitoring of glomerular filtration rate in primary care, a simulation study - Jason Oke

14:15 – 14:30  
Abstract #140
Elderly Hip Fractures: Fragile Bones or a Frail Prevention Strategy? - Teppo Järvinen

14:30 – 14:45  
Abstract #49
Harm Associated with Inpatient Workup of Syncope in Low Risk Patients - Jenna Canzoniero

14:45 – 15:00  
Abstract #89
Mitigating clinician and community concerns about children’s flatfeet, intoed gait, or knock-knees/bow-legs – a simple approach of when to do what - Angela Evans

**Session 5C**
Clinical Matters 2 (L3)
Session Chair: Julian Treadwell

14:00 – 14:15  
Abstract #172
"No Practitioner of Medicine Should Be without a Sphygmomanometer": One Hundred Years of Hypertension – Stephen Martin

14:15 – 14:30  
Abstract #31
General Practice Wound Care and the Three little pigs- A story of too much huff and puff - Ian Charlton

14:30 – 14:45  
Abstract #166
A qualitative study of GP attitudes towards discontinuing statins - Michael Nixon

14:45 – 15:00  
Abstract #163
Interpretation through Hypostatization? Dealing with the challenge named Medically Unexplained Symptoms (MUS) - Anna Luise Kirkengen
If we want to diagnose less, what are the alternatives? Exploratory workshop

William House¹, Andrew Morrice²
¹St Augustine’s Medical Practice (research dept), Bristol, UK, ²St Chad’s Surgery, Bath, UK

Diagnosis is closely linked with disease theory - the attribution of suffering to a ‘disease’. This provides an ontology of morbid categories modelled on the classification of species (Eric Cassell: The Nature of Suffering) and has been extraordinarily successful, dominating medical knowledge and practice for 200 years. However, disease theory has thrived at the expense of ultimate causes and of the complex uniqueness of individuals and their interactions. There are now signs that this hegemony is failing. For instance, the international crisis of healthcare funding, the rise of complementary and alternative medicine and the movement behind this conference betray a deeper malaise. In line with Thomas Kuhn’s account of paradigm shift, widespread change requires that a new paradigm subsumes the old and is already in place before change will occur. The new must embrace both the ecology and the uniqueness of illness in a way that provides useful meaning in the everyday practice of professional healthcare, and in the perceptions of the public.

This will be a practical and grounded workshop more than a philosophical talk-shop. We will explore what adjuncts to diagnosis of disease are already available and could take centre stage. The knowledge, experience and ideas of the workshop members will create the output. We invite each member to bring a brief outline of at least one anonymized difficult case study from their own experience with individuals or populations. These will be discussed in small groups and then collated and evaluated in plenary. Examples of approaches might include narrative, or sense-making based on human needs and resources, or understandings through complex systems, or family and social context, or the more elusive, perhaps wordless ‘knowing’ of deep connection with another, or maybe all of the above. Some might call this the (neglected) art of medicine

Stepped Diagnosis as a strategy to address diagnostic inflation of childhood mental and developmental health problems

Laura Batstra¹, Anton Miller²
¹University of Groningen, Groningen, The Netherlands, ²University of British Columbia, Vancouver, BC, Canada

Prevalence of childhood diagnosed with childhood mental and developmental health conditions such as attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorders (ASD) has increased markedly over the past 10-20 years. At least part of this increase can be attributed to a process of ‘diagnostic inflation’.

Aims:
1. To discuss diagnostic inflation as it relates to childhood mental and developmental health problems – its nature, contributing factors and its significance.
2. To present a strategy that may help to limit diagnostic inflation, known as ‘Stepped Diagnosis’.
3. To consider obstacles to wide implementation of Stepped Diagnosis, specifically, commonly-held attitudes and administrative policies that require a confirmed diagnosis before a child with a developmental or mental health problems can access services and supports.

Prevalence of overdiagnosis in cancer screening: methods and implications

Alexandra Barratt¹, Per-Henrik Zahl², Harry de Koning³, William Black⁴
¹School of Public Health, University of Sydney, Sydney, Australia, ²Norwegian Institute of Public Health, Oslo, Norway, ³Department of Public
Session 5F
L6

Objective:
To describe methods and estimates of overdiagnosis in cancer screening and provide a forum for discussion and debate.

Background:
Estimates of overdiagnosis in cancer screening vary widely, preventing consensus about the nature and extent of the problem. Better understanding of the methodological issues may lead to better measurement, better understanding of the causes and development of strategies to minimise it.

Format
This workshop will comprise expert presentations plus a panel discussion. Presentations will address
1. Measuring the frequency of overdiagnosis in breast cancer screening – an overview of approaches (Alexandra Barratt)
   This presentation will describe the main approaches using breast cancer as an example. It will cover methods based on (i) cumulative incidence, and (ii) annual incidence.
2. Estimates of overdiagnosis in breast cancer screening and their interpretation. (Per-Henrik Zahl)
   Overdiagnosis of cancer can be estimated using different methods which are mathematically related but have very different interpretations. A high level of overdiagnosis in screening has only one possible mathematical interpretation: spontaneous regression of some breast cancers.
3. Overdiagnosis in prostate cancer screening (Harry de Koning)
   Estimates from the European Randomized Study of Screening for Prostate Cancer will be presented and discussed.
4. Overdiagnosis in lung cancer screening and a strategy to minimise it (Bill Black or delegate)
   Estimates of overdiagnosis from the National Lung Screening Trial will be presented and discussed, particularly with a view to potential solutions.

Presentations will be followed by a panel Q and A session.

| 15:30-16:00 | CLOSE WITH TEA AND COFFEE BREAK, INFO DESK OPEN |
| 16:00-19:00 | FREE TIME |
| 19:00 | DINNER – DANCING |

WEDNESDAY, 17 SEPTEMBER 2014
08:00-09:00 | REGISTRATION

09:00-10:30 | KEYNOTE SESSION 3 – Lecture Theatre 1
CHAIR: Iona Heath

09:00 | K7 Margaret McCartney - Professional, compassionate, evidence based general practice, and the ways I fail.
Preventing Overdiagnosis is crucial both to curb avoidable harms, and reduce health inequalities. But in practice it is enormously difficult, not least because of the systems we work in. Appointments are short and have competing interests: GPs are judged according to how well they adhere to guidelines: the need to make informed choices is overwhelming and yet the choices routinely offered may be distant from the choices of greatest meaning and value.

09:30 | K8 Linn Getz - On Crisis, Hubris and the Future of Medicalisation Or: You ain’t seen nothin’ yet
In Ivan Illich’ groundbreaking 1975 critique of modern medicine, titled Medical Nemesis, he marshalled that Greek goddess of divine retribution against those who succumb to hubris (gr: hybris; an excess of ambition and pride). Illich pointed to a scenario he found so overwhelming and complex as to nearly defy intellectual comprehension, and of such immensity that, to speak of it, he had to invoke the grand mythological narratives of our Western cultural cradle. I read Illich’ message as follows: We must realize that we are facing a colossal, real and almost archetypal human scenario. We should think both big and small, noting how the larger picture is reflected in local details. In this spirit, the lecture will start with a presentation of some local and some international evidence that medicine is close to a crisis (gr: krisis; a dividing, critical moment). Then comes the question: What will follow next? Without relinquishing the hope for a sustainable and responsible medicine in the spirit of “less is more,” we need to prepare ourselves now for the task of saving medicine from drowning in its own reflection. Beware, we may be about to enter the Age of Narciss-omics…

10:00 | K9 Junod Bernard - Fatal side effects and cancer induced by radiotherapy of overdiagnosed breast cancer in France
Fatal side effects and cancer induced by radiotherapy of overdiagnosed breast cancer in France
Consequences of overdiagnosis include overtreatment. Evidence of cardio-vascular death and increase in cancer of any site induced by radiotherapy was published for treated breast cancer patients. The amount of overdiagnosed breast cancer in France during year 2010 was obtained by long term excess-incidence approach. According to observational studies, 80% of breast cancer cases underwent radiotherapy in France. Attributable risk of cardio-vascular death and of cancer was applied to women overdiagnosed with breast cancer and treated by radiotherapy.
Overdiagnosed invasive breast cancer or carcinoma in situ amounted to 36597, that is 75.8% of all incident breast cancer diagnoses among women aged 35 or more in France during year 2010. Excess in cardiovascular death due to overtreatment by radiotherapy amounted to 843. The corresponding number of cancer of other sites than breast cancer induced by radiotherapy was 214.
Such alerting results require prevention of overdiagnosis by questioning early detection of breast “cancer”.

10:30-11:00 | TEA AND COFFEE BREAK
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<td><strong>PARALLEL SESSIONS</strong> - Each session will close with a 15 minute general panel discussion</td>
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| 11:00 – 11:15 | **Session 6A**  
Responses in policy and practise (L1)  
Session Chair: Steve Woloshin & Lisa Schwartz | **Session 6B**  
Communication and Overdiagnosis (L2)  
Session Chair: Kirsten McCaffery & Tessa Richards | **Session 6C**  
Overdiagnosis and Economics (L3)  
Session Chair: Jenny Doust |
| 11:00 – 11:15 | **Abstract #55**  
Deliberative methods: a tool for addressing overdiagnosis?  
- Chris Degeling & Lucie Rychetnik | **Abstract #76**  
Communicating Overdiagnosis through Comics  
- Luca Laboli | **Abstract #52**  
Evidence of relative over-provision of acute services to the most privileged as a primary cause of financial over-parity in a large health board area characterised by concentrated social deprivation  
- Helene Irvine |
| 11:15 – 11:30 | **Abstract #39**  
Management of risk in primary care - can a new model help avoid over-treatment?  
- Ulrica Dohnhammar | **Abstract #173**  
Communication style and models of decision-making within the clinical consultation: contributors to overdiagnosis?  
- Frances Wilson | **Abstract #168**  
Health economics of screening programmes: failing to include harms from overdiagnosis and overtreatment?  
- James Raftery & Rebecca Kandiyali |
| 11:30 – 11:45 | **Abstract #57**  
Preventing Overdiagnosis: an Exercise in Mobilization  
- the Québec Experience  
- Laurent Marcoux & Normand Laberge | **Abstract #122**  
Five barriers to communicating overdiagnosis topics to health consumers and evidence-based strategies to overcome them  
- Teresa Carr | **Abstract #28**  
Overdiagnosis as overconsumption: health care’s contribution to “uneconomic growth”?  
- Martin Hensher |
| 11:45 – 12:00 | **Abstract #16**  
The Balint Movement: Historical Answers to Questions of Overdiagnosis  
- Gwyn Carney | **Abstract #178**  
Consumer Reports Translates BMJ Overdiagnosis Papers for the General Public: What We’ve Learned So Far  
- Lisa Gill | **Abstract #132**  
Adding value to health care through discontinuation of low-value practices: ESSENCIAL Project in Catalonia  
- Anna Kotzeva |
| 12:00 – 12:15 | **Abstract #80**  
Over-diagnosis - A Personal Perspective from Three Different Angles: Payer, Clinician, and Patient  
- Aaron Lai | **Abstract #141**  
Patient Perspectives about the Benefits and Harms of Prostate Cancer Screening and Reactions to New Prostate Cancer Screening Guidelines  
- Melissa Partin | **Abstract #25**  
Defunding overdiagnosis: Bottom-up reform to improve appropriateness in Northern Sydney Local Health District, Australia  
- Philip Hoyle |
11:00-12:30  WORKSHOP  - General Practitioners: What to do next?
Julian Treadwell¹ & Margaret McCartney²
¹RCGP, London, UK  ²Chair of newly formed RCGP group on Overmedicalisation

Session 6D  L4
This year’s conference in the UK provides a unique opportunity for British GPs to engage with the Preventing Overdiagnosis movement, not least because of the recent formation of a Standing Group for Preventing Overdiagnosis and Overtreatment within the RCGP, to be chaired by Dr Margaret McCartney.

This session is primarily aimed at UK GPs to discuss next steps, though Primary Care Practitioners from other countries are very much encouraged to come along.

Possible outcomes are:
- Formation of a network of regional “champions”
- Planning of educational and information sharing activities
- Potential on-line resources - what would be useful?
- Ideas and inspiration exchange.

11:00-12:30  WORKSHOP  - Teaching It
Alex Fitzgerald-Barron
GP facilitator – St Clements Practice, Winchester

Session 6E  L5
The NHS is being driven towards the concepts of overdiagnosis and over medicalisation generally while battling with restricted resources. With a particular interest in medical education, I often see students and trainees being fed guideline driven protocols where tests and further management is seen to be the only “right” way, and an awareness of the harmful effects or emperors clothes scenarios need significant reflective moments which often need mentors and supervisors to instil.

It is one thing that professors of medicine and senior clinicians may be quietly aware of it, but how is this best spread, shared and accepted as part of good practice, particularly to those newer to accepting medicine as an art and not just a science. This workshop will explore how you can best “illuminate” your students and trainees to this philosophy?
A direct measure of overdiagnosis attributable to mammography screening was obtained by randomized controlled trials conducted in large populations. The objective of this study is to compare the size of such populations with the number of subjects to be included when making use of an appropriate design restricted to patients with suspected tumors.

Two radiologists independently rate each mammography according to the Breast Imaging Reporting and Data System® (ACR BIRADS®). When one of the two radiologists rates a mammography from 0 to 3, and the other from 4 to 5, the woman would be asked if she would agree to enter a randomized controlled trial. The usual care group would undergo a biopsy. The active surveillance group would be followed up every 3 months by active surveillance with MRI, and other non-X-ray imaging before deciding to biopsy or not. Registration of morbidity, of breast-cancer mortality, and of total mortality would provide the outcome. The rate of breast cancer when screening is estimated 8 per 1000 in the general population and 10 per 100 among patients with suspected tumors.

At power of 80%, alpha-probability of 5% and a rate of overdiagnosis identical to the rate of progressive cancer, the number of women to be included in a population based randomized controlled trial would amount to 10192. It would be restricted to 438 patients only with the proposed design. Difference in morbidity over time between the two arms of this randomized controlled trial would provide reliable measure of overdiagnosis by direct observation of the natural history of the tumor in the active surveillance group.

The results of such a study would provide clues for evidence-based guidelines in the use of active surveillance by imaging of breast tumors.
13:30-14:30 | CLOSING KEYNOTE – Lecture Theatre 1
CHAIR: Paul Glasziou

13:30-14:00 | K10  Alexander Barratt - Overdiagnosis in screening: 45 years and still in the making
Abstract: In 1969 Feinleib and Zelen described pitfalls in the evaluation of screening programs, including the risk of identifying cases “that may never go on to recognizable clinical disease”. Despite this and other early, reputable appearances, it's taken decades for this shadowy idea to be accepted in the mainstream of medical awareness. Along the way it's been the subject of vitriolic debate, professional division and public confusion, misunderstanding and disbelief. From the perspective of a researcher working in this field for 20 years, this closing talk will reflect on the long journey of overdiagnosis from outlandish idea to acknowledged reality.

14:00 – 14:30 | K11 Barry Kramer - Here We Are and Here We Go”—Moving Forward in a Maturing Field
Overdiagnosis results from two general factors: (1) a reservoir of indolent “disease,” and (2) tools to dip into the reservoir ever more deeply. But the specific drivers vary from discipline to discipline: expanding definitions of “disease” may dominate one field, while increasingly sensitive screening tests may drive another. As the field matures, we are moving beyond simple description to more standardized definitions, refined measurement, better communications about the phenomenon, and ultimately preventive interventions. The advantage of a multidisciplinary meeting like this one is to provide insights across fields that can advance each of these areas. There’s a long way to go, but the first two international meetings have set the path. In that vein, I’m pleased to announce that the third meeting will take place next September in Bethesda, MD, at the U.S. National Institutes of Health. I hope to see many of you there.

14:30-15:30 | SAFE JOURNEY HOME
ABSTRACTS

#6 - Overdiagnosis of Familial Mediterranean Fever by Genetic Screening in Adults
Cem Sungur
Medicana Hospital, Ankara, Turkey

The gene frequency of Familial Mediterranean Fever (FMF) is 0.011 (CI 0.06 - 0.15) and the carrier rate is 0.20 (CI 95% 0.12-0.28) in Turkish population. With a population of 70 million, the number of carriers can be estimated to be more than 16 million people. The most frequent gene mutation is M694V and constitutes 55% of the mutations. The AA type systemic amyloidosis is the most morbid association/complication and is encountered in 12.2% of pediatric patients with FMF. The classical symptoms of FMF constitute of periodic attacks of fever, abdominal pain (peritonitis), chest pain (pleuritis), arthritis and rash.

With the introduction of genetic tests into clinical practice, adult patients evaluated at the outpatient setting with a variety of symptoms have been offered genetic screening. Fever, abdominal pain and chest pain are among the top ten symptoms examined in the outpatient setting. Therefore several groups have defined clinical criteria and an algorithm to diagnose FMF more accurately.

We have analyzed the demographic findings and clinical symptomatology of 100 adults with a positive genetic test for FMF. The mean age of the group was 42.3 years (Range 18 - 66). Fifty six (56%) were male and forty four (44%) were female. Only 5% of this group had classical attacks of FMF and met the clinical criteria of the disease and all of them were under 30 years of age. The remaining 95% didn’t meet the clinical criteria of FMF and lacked evidence of systemic amyloidosis.

Fifty five percent of the patients were examined by a rheumatologist, 24% by an internist and 12% by an infectious disease specialist. All of the patients were prescribed colchicine and were advised to take their medications for the rest of their lives. 50% were prescribed 0.5 mg once a day, 28% 0.5 mg b.i.d., and 22% t.i.d. When medical files of these 100 patients were further analyzed, it was realized that 56% had chronic medical conditions necessitating long-term medical treatment, which had potential interactions with colchicine.

Like many other clinical conditions (e.g. pulmonary thromboembolism), diagnosis of FMF requires detailed clinical information, family history and an algorithm for diagnosis. Omitting this important part of diagnostic approach in a clinical entity with common symptoms and ordering genetic screening tests in a community with a high gene carrier frequency is leading to overdiagnosis of FMF. The resulting clinical results are numerous adverse outcomes, ranging from being stigmatized to unnecessary drug treatment for indefinite duration with potential side effects and interactions.

#14 - Access and the Overdiagnosis of thyroid cancer
Stephen Hall1, Jonathan Irish2, Patti Groome1
1Queen’s University, Kingston, Ontario, Canada, 2University of Toronto, Toronto, Ontario, Canada

Objectives: The incidence of thyroid cancer in women is increasing at an epidemic rate. Numerous studies have proposed that the cause is increasing detection due to availability and use of medical diagnostic ultrasound. Our objective was to compare rates of diagnosis across different healthcare regions to rates of diagnostic tests and to features of both health and access of the regional populations.

Method: Population-based retrospective ecological observational study of 12,959 patients with thyroid cancer between Jan 1 2000 and Dec 31 2008 in Ontario Canada based on the healthcare utilization regions (Local Health Integration Networks) of the province of Ontario Canada

Results: Some regions of Ontario had 4 times the rates of diagnosis of thyroid cancer compared to other regions. The regions with the highest use of discretionary medical tests (pelvic ultrasound, abdominal ultrasound, neck ultrasound, echocardiogram, resting electrocardiogram, cardiac nuclear perfusion tests, bone scan), highest population density and better education had the highest rates of thyroid cancer diagnoses.

Conclusions: Differences in the rates of the ordering of discretionary diagnostic medical tests, such as diagnostic ultrasound, in different geographic regions of Ontario lead to differences in the rates of diagnosis of thyroid cancer.
#16 - The Balint Movement: Historical Answers to Questions of Overdiagnosis

Gwyn Carney1,2
1Caritas Health, Wrexham, UK, 2Cardiff University, Cardiff, UK

Original primary source historical research by a General Practitioner.

In 1957 the psychiatrist Michael Balint published The Doctor, his Patient and the Illness. This contributed to a revolution in the concepts of illness and the training of primary care doctors (Marinker).

Balint described a humanist model of medicine. He explored doctor-patient communication and that between specialists and GPs. Of particular relevance to this conference, Balint addressed the over diagnosis of somatic disease and the failure to accurately diagnose and treat psychological problems. A new approach was conceptualized that encouraged deeper “levels of diagnosis” to avoid the “collusion of anonymity” between doctors. By this he meant the way in which overall responsibility for patient care could be abrogated by the many individual clinicians who encounter the patient, with each feeling they had fulfilled their duty, but leaving the patient with their original symptoms and deep anxiety. He encouraged primary care doctors to take central control of their patient’s management.

Where Balint’s work is recognized in the medical and historical literature, it is usually attributed solely to one man, rather than recognizing the major contribution made by the other members of the group. His wife, Enid Balint, was also a psychoanalyst who had contributed to the development of social work. The GPs had varied and interesting backgrounds and experience. The group crossed disciplinary boundaries and was the richer for doing so. It was the group that shaped the theories and revised the book.

This work addresses the psycho-social and historical aspects of over diagnosis. It suggests solutions that will lie not just in disseminating expert opinion downwards, but in local, small scale, practical changes, multidisciplinary group work and improved communication, especially between consultants and GPs.

#20 - Deliberative democracy for cancer screening decisions: the effect of a community jury on men’s knowledge and intentions to participate in PSA screening

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Introduction: Because of uncertainty about benefits and the risk of “overdiagnosis”, PSA screening is controversial in the medical community. It is also unclear whether men would choose to participate if “fully informed”. A community jury (informed by experts, with participants able to ask questions and deliberate on the information) enables public consideration of complex information.

Aims: To determine whether participating in a community jury, compared with a control group, had an effect on men’s knowledge about and their intention to participate in PSA screening.

Methods: We randomized twenty-six men aged 50 to 70 years to either a 2-day community jury or control group. The control group were given two factsheets about PSA screening from the Australian Cancer Council and Andrology Australia). Three experts presented information on PSA screening to the community jury group:

- a neutral expert provided back ground information; an expert emphasized the benefits of screening with a focus on selected screening; and another emphasized the harms, then participants discussed the information and questioned the experts

Results: At post-assessment, men in the community jury group had less intention to screen for prostate cancer than men in the control group (Effect Size -0.6SD; p=.049). After adjusting for the number of prior PSA tests, community jury men had a lower mean score for intention to be screened for prostate cancer than control group men (p=.005). The difference in the intention to be screened for prostate cancer was sustained at 3 month follow-up. Community jury men also believed they were more informed about PSA screening (Effect Size=1.2SD; p=0.001) and answered more knowledge questions correctly.

Conclusion: Community juries may be a valuable method for exploring the value placed on screening benefits versus overdiagnosis and a method for eliciting target group informed input to clinical guidelines but requires further research in community jury formats and recruitment.
#21 - Medicalizing children's behaviour as Attention Deficit Hyperactive Disorder (ADHD): a study highlighting the social processes at work in mis-diagnosis

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In recent decades, Attention Deficit Hyperactivity Disorder (ADHD) has achieved a high profile in academic and popular culture alike, evidenced in several competing perspectives across a variety of sectors. As the social processes at work in objectifying a child as ‘ADHD’ are not well understood, this paper explores the specific diagnostic mechanism by which social forces encapsulated in medical, family and educational agencies synergize to construct children’s behaviour as a “medical” problem.

Despite the dominance of biochemical and neurological explanations of ADHD and in the absence of pathological evidence, the identification of ADHD predominantly relies on social interpretations of human behaviour. This paper shows that ADHD is situated within a broad global trend that redefines perceived ‘abnormal’ social behaviours and non-medical problems as illnesses, diseases and mental disorders requiring medical intervention.

A qualitative approach is used to investigate four case clusters in an Australian context, comprising the mothers, the doctors and the teachers. Unstructured in-depth interviews provide rich data in which flawed diagnostic practices are illuminated.

The findings suggest a shift from the more established view of teachers being dominant actors in the launching of the medicalization process to that of the mothers. Relief from mothering stress is implicated in the mothers reaching a ‘tipping point’ and fear of the consequences of disengaging with ADHD diagnoses appears to be the major reason for the maintenance of the children’s passive patient state. Mother-doctor partnerships reveal much about the power of social interactions and perceptions in achieving ADHD diagnoses.

#23 - Conceptualizing overdiagnosis in cancer screening

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The aim of cancer screening is to detect asymptomatic cancers whose treatment will result in extension of life, relative to how long life would have been had screening not occurred. Unfortunately, cancer screening also results in overdiagnosis, the detection of cancers that, in the absence of screening, would not present symptomatically. Thus, their detection and subsequent treatment is unnecessary and detrimental. This definition of overdiagnosis, while succinct, does not capture its complexity or the ways in which it can occur. We propose a simple dichotomy, the “tumor-patient” classification, to help us better conceptualize this unwanted consequence of cancer screening. The tumor category includes overdiagnosis that is driven by tumor characteristics: it includes malignant disease that would regress spontaneously if left alone, and malignant disease that progresses too slowly to be life-threatening in even the longest of lifetimes. The patient category includes overdiagnosis that is driven by patient experience: it includes disease that is malignant and progresses quickly enough to be life-threatening during a lifetime of typical length, but death due to another cause, such as death due to a co-morbidity, occurs prior to what would have been the date of symptomatic diagnosis had screening not occurred. Screening for cancer of most organs is likely to result in overdiagnosis due to both tumor characteristics and patient experiences. However, the ratio of tumor-driven to patient-driven overdiagnosis almost certainly varies by organ and screening modality. The tumor-patient classification is intended to be conceptual and didactic, but it also may prove useful in clinical settings as advances in molecular techniques allow us to better understand the carcinogenic process.
An enduring puzzle in the overdiagnosis debate is why funders tolerate waste and quality problems. The paper reports the use of locally owned commissioning and clinical governance tools to address overdiagnosis and overtreatment in a large health service in Sydney, Australia.

Recent reforms in public sector health governance and funding in Australia have potential to recast relationships between service providers and funders. At first glance the reforms place those interests in opposition, but with some thought they can catalyse bottom-up consensus on appropriate diagnosis, treatment and funding.

Under the Reforms, Local Health Districts (which both “own” and fund public services) use case mix methods to internally commission care from clinical units, at a statewide “efficient price”. This has changed the relationship with providers: from paying doctors to do what doctors do, the service is now paying doctors to do what it asks. The challenge for the health service is to know what to ask for (i.e. what to commission). Superficially, this is merely a matter of specifying top-down DRG volumes, prices and quality parameters but NSLHD saw a genuine opportunity to mobilise clinical governance systems to define locally owned and implemented standards of care that address appropriateness, effectiveness, quality and efficiency.

NSLHD is doing this through clinically led Clinical Networks, comprising providers, consumers, managers and funders. The example is given of a service consolidation that had been tried for over a decade, but was achieved painlessly within a year by reversing the onus of proof so that opponents of change had to demonstrate safety to the Network, which they were unable to do.

Work is now occurring on a detailed specification for Carotid Endarterectomy, including case selection, diagnostic standards, service location and surgical methods.

A partnership between funders and providers, mobilising the common interest in appropriateness is effective in preventing overdiagnosis.
#27 - Priorities and concerns among men presented with information on the benefits and harms of PSA testing: a qualitative analysis of community jury deliberations
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**Introduction:** PSA screening may improve survival but also leads to harms. Cancer screening policies and programmes should take account of public priorities and concerns.

**Aims:** To determine the priorities and concerns of men aged 50-70 who were informed of the benefits and harms of PSA screening; and empirically examine the value of a community jury for eliciting public values on PSA screening.

**Method:** A jury was convened to consider PSA screening benefits and harms and whether government campaigns on PSA screening should be conducted. A qualitative analysis was conducted of the jury’s deliberations, which were audio recorded and transcribed.

**Results:** The jury reported being previously unaware of the benefits and harms of screening, and expressed a preference for obtaining such information from their GP. Men perceived the following information as important as well as unexpected: prevalence of prostate cancer among older men, progression of prostate cancer, rates of over-detection and treatment of cancers that would not otherwise have become clinically apparent, uncertainty about correlations between PSA test results and risk of cancer, prevalence of treatment side-effects such as impotence and incontinence, and the notion that PSA testing is a matter of individual choice rather than indicated by evidence or the ‘right’ thing to do.

The jury concluded governments should not invest in programmes focused on PSA screening directed at the public because the PSA test did not offer sufficient reassurance or benefit and would raise unnecessary alarm. They recommended an alternative programme to support GPs to provide patients with better quality and more consistent information about PSA screening.

**Conclusions:** Community juries provide valuable insights into the priorities and concerns of male participants evaluating the benefits and harms of PSA screening. It will be important to assess the degree to which these findings are repeatable and generalisable to other settings.

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#28 - Overdiagnosis as overconsumption: health care’s contribution to “uneconomic growth”?
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There is a striking parallel between emerging definitions of “overdiagnosis” (i.e. as describing situations in which treatment can only bring a downside, rather than positive benefits), and the emerging concept in ecological economics of “uneconomic growth.” Uneconomic growth describes the situation in which the negative social and environmental impacts of increasing economic activity outweigh the benefits of production. A health care system that, in fact, undermines health through overconsumption of diagnostic and treatment resources potentially represents (due simply to the sheer scale of health care as an economic sector) an important subset of an economy which may increasingly be undermining human welfare through overconsumption.

This paper considers the possible relationship between overdiagnosis, overconsumption and uneconomic growth in the developed countries, and explores the extent to which these phenomena share common drivers and causes or possible solutions. A particular focus is placed upon the role of traditional measures of economic welfare (such as Gross Domestic Product) and their tendency to mask the negative effects of consumption on welfare. The possibility that addressing overdiagnosis in health care may offer an important opportunity to change prevailing attitudes towards economic activity and consumption more broadly is explored.

The paper explores potential avenues for further research to generate evidence on which to develop policy in this area, and attempts to identify some of the potential barriers to and risks of addressing overdiagnosis within two alternative paradigms: either through a conventional economic and health care policy model, or as part of a sustainable economic model which recognises the possibility of “uneconomic” growth.
#30 - A national survey of awareness and attitudes about Overdiagnosis
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Objectives: There is growing scientific evidence and concern about the “modern epidemic” of overdiagnosis, but few data on public understanding. Causes include increasingly sensitive tests, screening programs and expanding disease definitions that medicalize more people. We aimed to survey awareness and attitudes about overdiagnosis and related issues.

Methods: We conducted a 15 minute Computer Assisted Telephone Interview survey with a randomly selected community sample of 500 adult Australians, using a dual frame sample, January-February 2014. We iteratively developed and piloted a questionnaire, first with a convenience sample (n=20), and subsequently with an experienced survey company (n=20 pilots). Key questions included: whether respondents had been informed about overdiagnosis; opinions on whether people should be informed about it; views about expert panels which set disease definitions.

Results: Our sample was generally representative, but included a higher proportion of females and older Australians, as typical of telephone health surveys. The response rate was 47%. 10% of people reported ever being told about overdiagnosis by a doctor. 18% of men who reported having prostate cancer screening and 10% of women who reported having a mammography said they were told about the risk of overdiagnosis. 89% completely or mostly agreed that along with screening benefits, people should be informed about overdiagnosis risks. Re: panels setting disease definitions, 72% felt it inappropriate for members to have financial ties to pharmaceutical companies and 54% believed panels should be entirely free of members with ties.

Conclusions: Only a small minority of Australians surveyed, including those screened for prostate or breast cancer, report they had been informed of overdiagnosis risks; almost all believed people should be informed; and over half felt it inappropriate that panels setting disease definitions had financial conflicts of interest. Strategies to better inform people about overdiagnosis, and reform disease definition processes, are required.

#31 - General Practice Wound Care and the Three little pigs - A story of too much huff and puff.
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A considerable industry has sprung up to provide the requirements of modern wound care, however as recent Cochrane and systematic reviews demonstrate, there is precious little evidence to support the use of sophisticated dressing materials in General Practice. Rather, there is growing evidence that they may delay healing, increase allergic reactions and certainly add to costs. The complexity now surrounding wound care has reached the point where patients (and doctors) have become deskilled in managing even simple wounds and referral to a wound care specialist in the multidisciplinary team is regarded as standard care. Curiously much of modern wound care theory springs from studies done on three pigs in the 1960’s. Although for the times, they were landmark studies, how applicable they are to current needs warrants consideration. What then can the primary care physician do to assist the healing processes of mother nature, avoid overtreatment of wounds and limit costs associated with heavily promoted products?
#35 - Selling Depression and Antidepressants: The Mental Health Foundation of Australia's National Depression Awareness Campaign

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**Objectives:** Depression has been vigorously promoted as a major public health and social problem in Australia in recent decades. A key advocate in the 1990s was the Mental Health Foundation of Australia (MHFA), chaired by leading psychiatrist Professor Graham Burrows. In 1994 MHFA launched a National Depression Awareness Campaign (NDAC), modelled on the US National Public Education on Clinical Depression. A key component of the NDAC was the Depression Awareness Journal (DAJ), a throwaway journal distributed free to Australian doctors from 1997 to 2003. This paper analyses the strategies used in the NDAC, particularly the DAJ, and analyses the impact of the NDAC.

**Methods:** An interpretive thematic analysis was undertaken of all 13 issues of the DAJ, along with other relevant documents about the NDAC, MHFA, Burrows, and Australian mental health policy.

**Results:** Funded consecutively by Bristol-Myers Squibb (BMS) and GlaxoSmithKline (GSK), the DAJ aggressively promoted two antidepressants, BMS's Serzone® ( nefazodone), which was subsequently withdrawn from the market because of potentially fatal liver toxicity, then GSK's Aropax® (paroxetine [Paxil®, Seroxat®]). The DAJ also strongly promoted depression as a serious health issue. Key depression-related themes that emerged from the content analysis included an epidemic of undiagnosed and untreated depression and associated suicide; depression as disease, not character weakness; depression as a chronic disorder; and the need for early diagnosis and treatment. Many prominent Australian psychiatrists had articles published in the DAJ, including Professor Ian Hickie, the inaugural CEO of the Australian Government funded beyondblue: the national depression initiative. Several senior government personnel also contributed articles, giving the DAJ further credibility and demonstrating Burrows' political influence.

**Conclusions:** Both depression and antidepressants were successfully 'sold' by the NDAC, through which Burrows played a major role in the establishment of beyondblue and the positioning of depression at the center of Australian mental health policy.

#36 - Overdiagnosis of the Patient Health Questionnaire two questions (PHQ-2) for depression

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**Objectives:** Depression is a major public health concern. The prevalence is rising in modern society and screening tools are available to general physicians in primary care. This suggests that screening tools need to be more accurate, with high sensibility and specificity. Our objectives were to estimate the accuracy of PHQ-2 for depression and to investigate factors associated with its false positive.

**Methods:** A cross-sectional, population-based study was held in Brasilia (Brazil) following a probabilistic cluster sampling of two stages. Adults of 18 to 65 years old residents in census tracks higher than 200 inhabitants were eligible. All individuals answered the PHQ-2 and the PHQ-9 with trained interviewers. The PHQ-9 score ≥ 9 was considered the reference standard. Sensibility, specificity, predictive values and likelihood ratios were obtained through “diagt” routine in Stata 10.1 with weight correction for complex sampling. Factors associated with false positives were investigated with a Poisson regression of robust variance following a hierarchical model.

**Results:** We recruited 1,820 adults (women=59.3%). PHQ-2 was positive by 40.3% (IC95%: 36.8-43.7%) of the participants. The prevalence of depression (PHQ-9 positive) was 6.3% (IC95%: 5.0-7.7%). The sensibility was 89.1% (IC95%: 88.7-89.5%); specificity was 63.1% (IC95%: 62.9-63.2%); positive predictive value was 14.0% (IC95%: 13.9-14.2%); negative predictive value was 98.8% (IC95%: 98.8-98.9%); positive likelihood ratio was 2.41 (IC95%: 2.4-2.43); and negative likelihood ratio was 0.173 (IC95%: 0.166-0.179). False positives were observed in 34.6% (IC95%: 31.1-38.2%). Multivariable analysis showed that unemployed, poor, women and chronic diseases were more positively associated with false positive results.

**Conclusions:** PHQ-2 overdiagnosed depression in a population-based survey. High rates of false positive may increase unnecessary care in health services. 24% of participants were incorrectly classified by PHQ-2, and this trend more common in vulnerable people. Others tolls must be investigated for depression screening.
#37 - Overstaging leading to overtreatment: the example of thyroid cancer

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**Background**: Clinical practice varies for differentiated thyroid cancer (DTC) due to the absence of high quality evidence.

**Method**: Population-based study of all 4,880 patients with DTC \(< 4\text{ cm}\) in Ontario Canada (1990-2001). The 9 cancer treatment regions of Ontario were divided according to the proportions of patients (higher vs lower) having total thyroidectomy compared to lobectomy. We compared the number of harvested lymph nodes and the number of positive nodes between the groups of regions. Multivariate regression was used to identify prognostic factors for 15 year disease specific survival and Logistic Regression was used to identify triggers for adjuvant Radioactive Iodine 131 (RAI).

**Results**: The patients in Regions A (more extensive surgery) had smaller tumors with less aggressive histology compared to patients from Regions B. 50% of the patients from Regions A had cervical nodes removed compared to 38% for Regions B. Despite the difference in severity of cancer in the thyroid gland, +ve nodes were present in 20% of cases in both groups. The presence of +ve nodes was a trigger for RAI in both regions (OR (A) = 1.68, OR (B) = 1.45) and 20% more patients from Region A were given RAI. The presence of +ve nodes had no impact on the outcome (HR = 1.3 (0.70-2.41), p=0.40) and there was no difference in outcome comparing Regions A (97.0%) and B (96.9%) (HR =1.21, (0.74-1.97))

**Conclusions**: The regions of Ontario Canada that did more extensive surgery to the thyroid gland for lower risk disease also harvested more lymph nodes presumably for staging. Due to the high underlying rate of neck metastases in this disease, a stage shift toward higher staged disease occurred in the patients of Regions A and more patients were treated with RAI. There was no overall difference in outcome despite very different treatments.

#38 - Overdiagniosis and dangerous overtreatment of irritable infants with "reflux." A rapidly emerging non illness with a case study of an effective multi modal educational solution.

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The off label (unlicensed) use of Proton Pump Inhibitors (PPIs) to "treat" irritable infants with "reflux" has increased 11 fold recently in the US and from the mid 2000's a similar increase swept across New Zealand. This was particularly evident in the province of Canterbury (population approx. 400,000), such that by 2010, 1 in 6 infants were prescribed a PPI at least once in their first year of life. The apparent explosion of the diagnosis of pathological "irritability caused by reflux" became a fashionable subject for patient help websites, magazines and generated a huge parental demand for PPI treatment, fuelled by some health professionals buying into and promoting the erroneous irritability caused by reflux theory.

True gastro oesophageal reflux disease (GORD) is very uncommon in infants. However, crying (sometimes for hours per day) and regurgitation of milk are both common physiological stages in the first few months of life and occur in all countries and in all cultures. The conflation of these two unlinked developmental stages led to dangerous overtreatment of a non disease. Despite being distressing to parents, neither crying nor regurgitation is harmful to infants. In the absence of the rare GORD, studies have shown that PPIs do not reduce irritability and have numbers needed to harm (NNH) of just 10 for Pneumonia and 4 for Gastroenteritis. A multi modal, multidisciplinary education programme (including comparative prescriber feedback) was developed and implemented. This portfolio of action was designed by and targeted to the key players, including parents, and resulted in a rapid 75% reduction in prescribing and thus PPI exposure (to less than one in 25 infants by 2013). There was no equivalent reduction in prescribing nationally.

This is an example where a concerted, combined educational approach effectively reduced dangerous over diagnosis and overtreatment in a vulnerable population.
Management of risk in primary care - can a new model help avoid over-treatment?

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Widened diagnostic criteria for conditions associated with risk for future disease have been highlighted as one of the drivers of overdiagnosis. In primary care, this phenomenon manifests itself in steadily increasing prescribing of medications. This prescribing is governed by guidelines, scientifically motivated by long-term benefits established on a population level and often resulting in polypharmacy. Assessment of quality of prescribing rests on efficiency, appropriateness, safety and cost-effectiveness - all indicators of benefit defined by a medical model of health and illness.

Against a background of growing concerns that the current system is causing problems in terms of overprescribing - tangible for individuals as well as whole health care systems - we suggest that a new model is needed.

We recognise the use of medicines to manage long-term risk for disease as a complex intervention that involves professionals, patients and society. Current models of prescribing encompass only the benefits and risks identified from a medical perspective, leaving out other actors. Informed inclusion of some of the ways in which patients and practitioners understand and deal with polypharmacy could provide for a more sustainable model of the usage of medicines.

Drawing on a synthesis of literature and new empirical work, we are developing a new conceptual understanding of the complex intervention that is management of risk for future disease. We look forward to sharing our primary ideas as we believe suggestions and contributions from the conference participants would be very valuable.

Uninformative Genetic Testing for those at High Risk of Breast Cancer

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Genetic testing for BRCA1 and BRCA2 mutations is an invaluable tool to establish breast cancer risk. It is a tenet that genetic testing is most informative when performed on patients with personal histories of BRCA-associated cancers. However, no previous studies have addressed the frequency of uninformative genetic testing, that is, the testing of unaffected individuals when a more appropriate family member is available to test.

We examined the family histories of 124 individuals referred for genetic counseling between August, 2012 and February, 2014 to a high-risk breast clinic. Overall, 70 of the 124 patients were referred for genetic testing despite having a relative meeting NCCN criteria who was alive and available to test, an inappropriate referral rate of 57%. Of these 70 patients, despite in-depth genetic counseling on the limitations of testing, 20% elected genetic testing for themselves; none carried a mutation. Two patients chose to have their relative with cancer undergo genetic testing first, leading to the identification of a causative mutation in both cases.

Subsequent targeted testing for the identified mutations in our patients was negative. Genetic testing other than BRCA1 or BRCA2 would have been recommended to the affected family member in 33% of cases. Within this cohort, patients still elected BRCA1 and BRCA2 testing for themselves 32% of the time. Of the 54 patients meeting NCCN criteria for testing, 35 (65%) elected to be tested; 3 (8.5%) harbored a mutation in BRCA1 or BRCA2.

These data suggest that education on the limitations of genetic testing in unaffected individuals is needed for referring physicians. There was a significant difference in the rate of testing uptake for those that were appropriate to test compared to those inappropriately referred ($X^2 35.82 p>.0001$), stressing the importance of pre-test genetic counseling.
#41 - Pharmaceutical industry behaviour and the Trans Pacific Partnership Agreement: Increased risk for overtreatment

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Objectives: Trans Pacific Partnership Agreement (TPPA) is a regional trade agreement involving 12 countries, which has the potential to significantly alter the domestic environment for health policy-making in areas such as pharmaceutical policy, tobacco control, alcohol and food policy. The purpose of this presentation is to discuss the implications of the TPPA for health policy and use (and overuse) of medications, and diagnostic and surgical methods.

Methods:
1. We draw on leaked documents to outline the proposals that have been made for pharmaceuticals in the TPPA and the new privileges they would provide to the pharmaceutical industry.
2. We draw on literature reviews and the author's research on pharmaceutical industry strategy over the past 15 years to estimate the likely implications of the TPPA.

Results:
1. Through the TPPA, the United States is seeking to eliminate therapeutic reference pricing, introduce appeals processes for pharmaceutical companies to challenge formulary listing and pricing decisions, and introduce onerous disclosure and “transparency” provisions that facilitate industry involvement in decision-making around coverage and pricing of medicines (and medical devices).
2. Pharmaceutical industry strategy to increase its market share and extend medication monopolies include illegal promotion of off-label prescribing (prescribing a drug for an indication outside of that for which it is licensed), reporting bias with unpublished negative findings and misreported studies, medical ghost-writing and evidence of increasing expenditure on promotion, to the extent that almost twice as much is spent on advertisement than in research and development.

Conclusions: If the TPPA is successfully prosecuted it will contribute to adverse health outcomes by limiting policies governing and rationalising the use of medications, and reducing access to affordable medicines. This calls for patent law that prioritises the public interest, and for public institutions and decision making processes that are independent and free from pharmaceutical industry influence.
#42 - The ethics of overdiagnosis: different sources and different remedies
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Objectives: Overdiagnosis refers to a range of healthcare activities or interventions which end up harming rather than helping patients. Thus overdiagnosis is in conflict with the fundamental ethical principle to do no harm. One potential response is simply to stop the activities that lead to overdiagnosis, which will avoid the harms. But this approach is too simplistic given the range of ways in which overdiagnosis arises, as each source of overdiagnosis raises specific ethical issues and may require different remedies. The aim of this paper is to identify and classify the various ethical issues raised by different sources of overdiagnosis.

Results: Overdiagnosis can occur in many ways, including: mislabelling benign lesions or diagnosing clinically insignificant lesions; expanding disease categories to include conditions that do not pose a health risk; and over detection due to screening or investigating unrelated conditions. Each source of overdiagnosis raises specific ethical issues. For example, responding to ‘incidentalomas’ requires judgment on the part of the practitioner, with the potential risks of under or over-reporting. Expanding disease categories are linked to conflicts of interest in some cases. This raises questions about fair or just ways to decide the membership of the groups who define diseases, and who should determine the criteria for defining the boundaries of disease categories. Over detection as a consequence of screening raises questions of justice in the use of public resources: should governments cease to offer or fund screening if over detection occurs in twenty to thirty per cent of cases? And what kind of informed consent is ethically appropriate when screening leads to overdiagnosis?

Conclusion: In this paper I argue that as well as causing harm, different sources of overdiagnosis raise particular ethical issues requiring individual analysis and response.

#44 - Reconsidering primary HPV testing in cervical cancer screening in European countries
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The purpose of a cervical screening program is to reduce morbidity and mortality from invasive cervical cancer. High-risk HPV DNA testing is more sensitive but less specific than conventional cytology. The increase in sensitivity results in doubling of positive subjects compared with Pap smear. However, low-grade epithelial anomalies are over-represented when using HPV testing. Investigation and eventual treatment of many self-limiting conditions that would regress spontaneously results in needless psychological morbidity and increased costs. The same hold true for false positive results caused by a reduction in specificity. Moreover, the difference in sensitivity in favor of HPV testing has been demonstrated mainly at single testing. However, performance of repeated Pap smears at pre-determined time intervals greatly improves the accuracy of cytology. Limited adherence to prevention programs of women in lower socio-economic strata is among the risks related to the increase in cost of screening. The widespread utilization of different molecular tests not applied consistently according to the rules of good scientific practice has an economic, social, and psychological impact that seems to have greatly outweighed benefits. In addition, there is no general agreement on appropriate triage test for a positive HPV result, and guidelines are often not followed in general practice. Inappropriate testing increases costs without benefit, and potentially results in overtreatment. In European countries, where infrastructures are available, cytology is likely to remain the most cost-effective strategy in cervical cancer prevention, together with the implementation of HPV vaccination programs.
#45 - High Value Cancer Screening: A conceptual framework and recommendations to improve cancer screening value and reduce overdiagnosis and overtreatment. Authors: Timothy J. Wilt, Russell Harris, Amir Qaseem

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Objectives: Develop a framework, based on screening intensity in searching for asymptomatic lesions, to define cancer screening value and apply it to six common cancers to enhance cancer screening value.

Methods: We developed a framework for assessing cancer screening value (do benefits justify harms and costs) according to 5 concepts related to “screening intensity” defined as the target population screened, screening frequency and screening test sensitivity. We classified strategies as high, indeterminate and low value. We identified cancer screening recommendations from US national guideline and disease relevant society groups for breast, cervical, colorectal, lung, ovarian and prostate cancer. We evaluated results from randomized trials, systematic reviews, modelling and cost studies and applied our value framework to assess benefits, harms, costs and value of screening strategies. We identified high (if they existed), indeterminate and low value strategies. We developed recommendations for enhancing value through implementation of screening intensity strategies that preserve the majority of benefits while reducing harms and costs; especially overdiagnosis and overtreatment.

Results: Cancer screening strategies and recommendations vary in their intensity and value. Use of low-value, high-intensity cancer screening is common. Higher intensity strategies detect more cancers and may prevent more cancer deaths. However, they are not always better value. High-intensity strategies often result in little additional benefit compared to lower intensity strategies but markedly increase harms and costs-mainly due to overdiagnosis and overtreatment. Lower intensity strategies often optimize benefits versus harms and costs, provide better value and would facilitate delivery of effective screening to those eligible but not undergoing screening thus increasing population value.

Conclusion: Cancer screening strategies vary in intensity and value. Increasing intensity beyond an optimal level leads to low-value screening. Clinicians should adopt a cancer screening policy focusing on reaching all eligible people with high-value cancer screening strategies while reducing overly intensive low-value screening.

#49 - Harm Associated with Inpatient Workup of Syncope in Low Risk Patients

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Syncope is a common diagnosis and can have many underlying etiologies, leading to wide variation in evaluation. The San Francisco Syncope Rule (SFSR) is a validated clinical tool to identify patients who can be safely treated as outpatients, however many of these patients are still admitted to the hospital. In this study, we examine the risk of adverse events (AEs) in low risk patients admitted for syncope.

We performed a retrospective chart review on adult patients admitted through the emergency room with syncope from 2006-2012. Patients who were low risk by SFSR criteria were included. The evaluation was quantified by length of stay (LOS), laboratory, imaging, procedures, and consults. AEs were identified using the Institute for Healthcare Improvement (IHI) Trigger Tool. We also recorded unexpected, clinically significant findings, as well as unexpected findings of unclear clinical significance that may lead to further testing.

Data collection is ongoing. To date, 206 patient encounters have been examined, of which 49 (23.7%) met the inclusion criteria. Three preventable in-hospital AEs occurred: IV infiltration, altered mental status, and rebound hypertension from inadvertent medication discontinuation. In patients who experienced an AE, the average LOS was 1.75 days and average number of additional tests was 12.67, compared to 1.58 days and 9.7 in patients who did not experience an AE, respectively. Only two patients had clinically significant findings revealed by the extra testing while 11 patients had unexpected findings of unclear significance. Among low risk patients unnecessarily admitted to the hospital, 6% suffered from preventable, in-hospital adverse events. Adverse events tended to occur in patients with longer lengths of stay who underwent more diagnostic testing. Previous studies have examined the monetary cost of testing in syncope; preliminary analysis of this study supports the idea that there is also an increased risk for harm to patients who undergo overtesting.
Evidence of relative over-provision of acute services to the most privileged as a primary cause of financial over-parity in a large health board area characterised by concentrated social deprivation: The interface of the financial allocation formula and hospital activity analyses in Scotland.

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Objectives: To assess why NHS Greater Glasgow and Clyde, which is the most populated health board in Scotland (1.2m) and an area of concentrated social deprivation, has been experiencing rising financial over-parity since 2000 and whether the national allocation formula in Scotland is fairly remunerating NHSGG&C for the high costs of rising admission rates.

Methods: To explore the NRAC formula in Scotland and whether it is fairly remunerating NHS GG&C for the high costs of social deprivation. As the NRAC formula is a utilisation-based formula, to comprehensively analyse the hospital activity datasets for GG&C in 2010/11. The analyses of admission data included age-standardised trends for GG&C and Scotland stratified by gender and SIMD quintile between 2001-2010.

Results: NHS GG&C has the highest admission rates in Scotland and these rose the most steeply. In most specialities, the standardised rates were higher in 2010/11 in GG&C than in the Scotland but this excess was highest in the most privileged quintile. Furthermore, the steepest rise in almost every speciality was for elective work in the most privileged SIMD quintile, particularly medical but also surgical, and in some clinical areas, including elective oncology for females, there was clear evidence of inverse care law at local level; the admission rate was persistently higher for the most privileged than the most deprived. Remarkably, the third commonest cause of admission out of 315,553 admissions was breast cancer (n=5,834).

Conclusions: This two-pronged study provides a wealth of data that suggests that even in a health board that is famous for concentrated social deprivation, the rising activity and costs are increasingly disproportionately attributed to elective activity in the most privileged and this includes screening-related over-diagnosis and over-treatment for the worried well. The allocation formula was never designed to remunerate health boards for excessive activity in the privileged and hence the rising financial over-parity.
#55 - Deliberative methods: a tool for addressing overdiagnosis?
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Health care screening programs can result in both benefits and harms. Screening programs are often established without considering the harms of overdiagnosis because:

a) The notion that screening can be harmful can be counterintuitive;
b) At an individual level it is difficult to know who screening has benefited, and who has been harmed
c) Screening programs are championed by clinicians who treat advanced disease, patients who have had the disease, and people who believe they have benefited from screening;
d) Expert panels often have financial or professional conflicts of interest;
e) Clinicians and the public confuse reducing the harms from screening with cost-cutting; and
f) There is conflict over the correct methodology for estimating the risk of overdiagnosis.

Strategies to address overdiagnosis should consider public values and concerns. Community juries and other deliberative methods have contributed to informed public debate about complex socio-political problems that are underpinned by scientific uncertainty and ethical conflicts. We performed a scoping review of the use of deliberative techniques in health policy research for the years 2003-2012. We identified 25 papers on 22 deliberative exercises in the peer-reviewed literature, one of which was concerned with cancer screening.

We draw lessons for applying these methods to address overdiagnosis, and propose that deliberative methods can promote greater public accountability and transparency in screening policy decisions, encourage consumer engagement, and ensure programs reflect the values of the target population.

However, success requires clear articulation of (i) the purpose of the research (ii) the deliberative techniques and (iii) the choice of public involved: ‘active service users’ or the ‘public at large’. If deliberative methods are to assist in reducing overdiagnosis, researchers must ensure participants are afforded a protected space and time to engage and become the type of ‘public’ that is able to contribute meaningfully to this complex debate.

#56 - Practice variation in common fracture presentations: A survey of orthopaedic surgeons
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Background: Practice variation may indicate a lack of clear evidence to guide treatment. This study aims to quantify practice variation for common orthopaedic fractures, and to explore possible predictors of the variation.

Materials and methods: A nationwide electronics survey of Australian orthopaedic surgeons was performed. Five common fractures (ankle, scaphoid, distal radius, neck of humerus, and clavicle) were presented. Data on management preferences and surgeon background were gathered. Potential predictors of operative (vs. non-operative) treatment were explored.

Results: 358 of 760 (47%) surgeons responded. For the ankle, undisplaced scaphoid, distal radius, neck of humerus, and clavicle fractures, operative treatment was chosen in 40%, 44%, 77%, 26%, and 38%, respectively. Operative treatment was significantly more likely to be chosen by more junior surgeons, and by surgeons specialising in the affected area (i.e., shoulder surgeons for clavicle and neck of humerus fractures, and hand surgeons for scaphoid and distal radius fractures).

Conclusions: Variations exist in the management of common fractures. Variation may represent legitimate improvisation for varying clinical scenarios, but it may reflect clinician bias, which in turn, may contribute to varying standards of care for the management of common orthopaedic conditions.
# Preventing Overdiagnosis: an Exercise in Mobilization - the Québec Experience

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Objectives:
- To enhance the awareness of the various stakeholders of the pernicious effects of overdiagnosis and overtreatment in the Québec health care system.
- To build a consensus on the necessity of adopting a plan of action to face up to the phenomenon of overdiagnosis.

Methods: In April 2013, in a public position statement, the Québec Medical Association (QMA) addressed the urgent need to optimize clinical practice in order to redirect approximately $5 billion, for the province of Québec alone, to those activities that are most useful and relevant to patients.

The QMA embarked on a new phase in its endeavours to enhance awareness of the problems related to optimizing clinical practice by organizing a Québec delegation of representatives of the main health care organizations to attend the Preventing Overdiagnosis conference in New Hampshire, in September 2013.

The delegation was made up of about 15 physicians, physician-managers and research and assessment professionals from the following organizations:
- Québec Medical Association
- Association of Health Care Facilities
- Association of Councils of physicians, dentists and pharmacists
- National Institute of Excellence in Health and Social Services
- National Institute of Public Health
- Order of Pharmacists
- Order of Nurses
- Federation of family physicians
- Federation of specialists

Results: The QMA initiative was extremely well received by Québec health care organizations. Encouraged by this success, the QMA will host the First Québec Symposium on Overdiagnosis, on April 2, 2014. Over one hundred physicians, professionals, health care managers and government officials are expected to attend this Canadian premiere. Concrete actions resulting from this event will be presented at the POD 2014 Conference.

Conclusions: The strategy based on mobilizing various institutions and health care organizations to make the issue of overdiagnosis a priority for the medical community and government authorities over the next few years proved to be successful.
How appropriately are we screening osteoporosis in 45 to 64 year old women?: a cross-sectional study.

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Introduction: Current guidelines recommend to perform a bone density scan for women aged 65 or older, and younger ones at increased risk for osteoporotic fractures (OF), estimated by age, body mass index and other factors. However, many women are being “overscreened”, with the possible consequence of overdiagnosis and overmedicalization and waste of resources.

Objective: To estimate the proportion of women aged 45 to 64 years being inappropriately screened for osteoporosis in Hospital Italiano de Buenos Aires (HMO-HBA), Buenos Aires, Argentina.

Methods: Cross-sectional study. We identified women aged 45 to 64 years who had undergone at least one dual energy X ray absorptiometry (DXA) during 2011. A randomly selected sub-group was then assessed for the presence of risk factors for osteoporosis through the review of medical records and telephone interviews. Their 10-year risk for OF was estimated using the FRAX™ score.

Results: 4310 women fitted inclusion criteria; the final sample included 401 patients. Complete data were retrieved for 45% of the women studied (182/401). Demographic, anthropometric, densitometric and medical care characteristics did not statistically differ from non-responders. 86.5% (95% CI, 80.6 to 91.2) of the women who had DXA hip testing (154/178) did not exceed the minimum 10-year risk for OF threshold required for screening in asymptomatic population; and 49.4 % (95% CI, 41.9 to 57) did not have at least one risk factor (88/178). In the inappropriately screened subgroup, “densitometric osteoporosis” without a global clinical increased risk of OF was reported in 12.5% and 3.5% of spine and hip DXAs, respectively. In addition, “densitometric osteopenia” was found in 47.3% of the former and 62.5% the latter.

Conclusion: Half of the women screened with DXA did not meet the criteria for proper testing, which can lead to “labeling phenomenon” and improper treatment in individuals at low risk of fracture.

Conceptualising Over-diagnosis I: Describing Over-diagnosis
Stacy Carter, Chris Degeling, Alexandra Barratt
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Objectives: We focus on the conceptualisation of over-detection, over-diagnosis and over-treatment (which we refer to as ‘over’ problems). In this first part of a two-part presentation we answer the question: how should ‘over’ be defined?

Methods: This conceptual analysis draws on our expertise in ethics, philosophy, epidemiology and public health.

Results: We distinguish detection, diagnosis and treatment and consider the standard by which each is judged. Much writing about ‘over’ does not specify what a ‘correct’ detection, diagnosis or treatment is taken to be. Many imply that ‘correct’ means a strict ‘correspondence to material reality’. In extreme contrast, others propose it is impossible—even foolish—to attempt to fix on what is ‘correct’. Both positions are problematic and ultimately unhelpful. An alternative is that a ‘correct’ detection, diagnosis or treatment must be one consistent with the professional standard, that is, consistent with what a reasonable, skilled and well-informed member of the relevant professional community would do. We argue that this account is more descriptively accurate and more useful than alternatives.

Propose two conditions that must be satisfied for ‘over’ to occur. The first is the intersubjective justification condition. By this we mean: to be ‘over’, the detection, diagnosis or treatment must be consistent with the professional standard as outlined above. The second condition is: the detection, diagnosis or treatment must not deliver sufficient benefit to health for the individual concerned. We refer to this as the insufficient benefit condition. This condition is essential, but to fully understand it requires grappling with fundamental, demanding and as-yet-unsolved methodological and conceptual challenges.

Conclusions: All instances of ‘over’ must satisfy both the intersubjective justification condition and the insufficient benefit condition. This approach exposes and addresses important and previously neglected problems in our conceptualisation of ‘over’, and is preferable to alternatives.
Conceptualising Over-diagnosis II: Normatively Evaluating Over-diagnosis

Stacy Carter, Chris Degeling, Alexandra Barratt
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Objectives: In this second part of a two-part presentation we answer a central question in conceptualising ‘over’: when are over-detection, over-diagnosis and/or over-treatment ethically justified or unjustified?

Methods: This is a conceptual analysis drawing on our joint expertise in ethics, philosophy, epidemiology and public health.

Results: We suggest a two-part process for making normative judgements about ‘over’.

‘Over’ must be evaluated on a consequentialist foundation, as its very existence depends on consequences (benefits and/or harms). We argue that two qualities of consequences are especially relevant: the magnitude of net benefit or harm, and the degree to which they could have been avoided (avoidability). However consequences alone do not provide a sufficient basis for normative evaluation. Taking a pragmatic approach, we combine consequentialist reasoning, including about avoidability, with reasoning about the intention of actors. We argue that, taken together, this produces an ethical distinction (unlikely to be categorical), between predatory, misdirected, and tragic ‘over’. The worst of these -- predatory forms of ‘over’ -- are morally unconscionable. The least-worst -- tragic instances of ‘over’ -- are undesirable but can be justified when they occur. This variation may alter our normative assessment of the decisions and actions of individual professionals, and perhaps of entire professions. However states and/or professions may be obliged to institute systems to manage all three forms of ‘over’. Our analysis suggests three pressing issues.

1) How should we reason from consequences, and how should the difficulties in doing this be resolved?
2) Who is morally responsible for ‘over’?
3) How should we respond to the injustice that may result from changing the professional standard to restrict diagnostic definitions?

Conclusions: ‘Over’ can be normatively distinguished into predatory, misdirected and tragic forms, with different ethical implications. This analysis identifies questions which must be confronted for progress in preventing overdiagnosis to occur.

PREVENTING OVERDIAGNOSIS
Winding back the harms of too much medicine
Screening for prostate cancer in New Zealand - a policy to increase overdiagnosis. A cautionary tale and a proposal to avoid similar failures.

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Objectives: Following strong political lobbying, New Zealand’s Ministry of Health released a Prostate Cancer “Awareness and Quality Improvement Programme” last year. The programme includes recommendations for clinical practice and health promotion in the area of prostate cancer screening. Major concerns have been expressed about the potential for this programme to increase prostate cancer overdiagnosis. The recommendations are quite different from those published by the recently disbanded New Zealand guidelines group in 2009. We have assessed the programme against the current evidence base.

Methods: The evidence for prostate cancer screening, health promotion, and guideline development of screening was matched to the programme’s recommendations.

Results: Major concerns were identified in the following areas:

- Programme development:
  - Inadequate representation of experts from primary care and cancer epidemiology.
  - Conflicts of interest not declared.

- Health promotion:
  - Failure to provide meaningful information on risk of disease, harm of disease, benefits and harms of screening.

- Clinical guidance:
  - Absence of estimates of benefits and harms of screening.
  - Failure to provide clinicians with tools to facilitate shared decision making.
  - Non evidence-based approach to "high risk groups".
  - Non evidence-based testing strategy

The programme is likely to increase men’s anxiety about prostate cancer and to increase requests for screening. The recommendations are likely to encourage a more pro-active approach to screening, lead to screening at a younger age, and encourage a lower-specificity testing strategy. These changes will almost certainly result in more men being referred for prostate biopsy, and consequently the incidence of prostate cancer is likely to increase.

Conclusion: New Zealand’s recent prostate cancer programme contains significant errors, omissions, and makes non evidence-based recommendations. The programme is likely to increase overdiagnosis and hence overtreatment. The deficiencies identified in our analysis provide elements of a checklist which could be applied to future screening policy proposals to assess their potential effect on overdiagnosis.
Approaches to PSA testing in Australian general practice: a new empirical analysis of overdiagnosis and the personal burden experienced by doctors
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Background: Although overdiagnosis is an established problem in PSA testing for prostate cancer, high testing rates continue in Australian general practice. We report on a study of PSA testing in Australian general practice with a focus on overdiagnosis.

Aims: 1. To describe GPs’ approaches to overdiagnosis in PSA testing; 2. To describe GPs’ routine PSA testing practices; 3. To explain how GPs reason about their PSA testing routines; and 4. To describe how these routines influence GPs’ personal experience as clinicians.

Methods: We recruited 32 urban and rural GPs from throughout Australia to participate in this grounded theory study. We included GPs of varying ages, clinical experience, and patient populations; we purposively sampled from men’s health clinics and rural practices in regions where supply of GPs and Urologists was variable.

Results: GPs who were engaged with the issue of overdiagnosis fell into three groups: those who knew about overdiagnosis but prioritized avoiding underdiagnosis, those who weighed underdiagnosis and overdiagnosis case by case, and those who prioritized avoiding overdiagnosis. A fourth group of GPs did not engage with the problem of overdiagnosis at all. We observed patterned variation between these groups. They differed in testing practices, responses to patient request for testing, and approach to communication about overdiagnosis. Their reasoning differed with respect to reliance on: first-hand experience, concepts of medico-legal risk, and guidelines or evidence. Finally, they experienced very different levels of personal burden related to PSA testing. Those most concerned about overdiagnosis reported the greatest burden.

Conclusions: Variation in GPs’ PSA testing practices is strongly related to their approach to over- and under-diagnosis of prostate cancer. Men receive very different care depending on their GP’s reasoning and practice preferences. Future policy to address overdiagnosis will be more likely to succeed if it responds to these patterned variations.

Difficulties in Estimating Overdiagnosis: The Special Case of Melanoma
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SEER data indicate melanoma incidence has been increasing in the U.S. since 1975 while mortality has remained relatively stable, strongly suggesting overdiagnosis. Localized invasive melanoma rates (initial diagnosis only) increased from 5.7/100,000 in 1975 to 17.8/100,000 in 2010 while late-stage disease increased from 1.1/100,000 to 2.5/100,000 during the same time period. In situ-cancers increased from 0.4/100,000 in 1975 to 15.2/100,000 in 2010. Suggested contributors to these trends include increased awareness leading to increasing scrutiny of skin lesions and biopsies, as well as increased UV exposure. An important caveat is that diagnosis can only translate into incidence if reported to tumor registries. From 1975-1979, 95% of cases were reported by hospitals/clinics. By 2006-2010 this fell to 60%, with the balance reported from outside sources (physicians, medical practitioners, laboratories). Changes in sources of reporting were associated with increased under-reporting of cases. However, more recently, with adoption of new reporting methods (electronic transmission of pathology data and medical records from physicians’ offices), melanoma reporting may improve. Cases reported from outside sources are less advanced (in 2010: hospitals/clinics - 34% in situ, 44% stage I, 40% with Breslow’s depth of <1mm; versus outside sources - 58% in situ, 34% stage I, and 61% <1mm). These findings suggest that cases diagnosed outside, more likely to be under-reported, are also more likely to be overdiagnoses. Using census data, a comparison of white non-Hispanics diagnosed in 2010 by SES categories show higher incidence rates of melanoma and percent early-stage disease among higher SES (lowest quintile age-adjusted rate of 29.9/100,000 and 85% in situ or localized disease: versus highest quintile - 55.6/100,000 and 92%). A similar analysis comparing metropolitan and non-metropolitan counties showed the former to have higher rates of early-stage disease. Results are consistent with more overdiagnoses in higher SES and metropolitan populations.
#71 - Overtesting for Cervical Cancer: Patterns and trends from a national reference laboratory in the United States.

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**Objectives:** Cervical cancer screening is a well-studied preventive care activity associated with widely published guidelines. Human papillomavirus (HPV) testing data from a high volume national testing laboratory in the U.S. was used to identify and characterize testing patterns versus what would be expected under the recommended practice.

**Methods:** Methodology was similar to that in Shirts BH (J Pathol Informatics 2010;1:26), updated to reflect the years 2009-2013 as well as the most recent American Society for Colposcopy and Cervical Pathology (ASCCP) guideline. ARUP Laboratories is a large clinical laboratory that performs HPV testing for several hundred hospitals and regional laboratories across the U.S. (Most of these laboratories perform their own Pap smears; thus, HPV data was analyzed as surrogate for overall screening practices.) HPV orders were analyzed according to patient age and testing frequency over the years 2003 through 2013. Data were deidentified prior to analysis to protect patient privacy.

**Results:** The proportion of HPV tests in this sample performed on patients under the age of 21 remained relatively steady between 12% and 13% during the years 2003 through 2007, but since then has declined sharply to slightly over 1%. The most common repeat interval following a negative result was 12 months, and this was true in all years studied. The proportion of these patients with at least a 24 month repeat interval was 31% overall; however, this proportion increased to 47% by 2013. The distribution of repeat intervals following a positive result was bimodal, with peaks at 6 and 12 months.

**Conclusions:** Observed HPV testing patterns continue to suggest overall more frequent testing than would be expected if all physicians followed current guidelines. However, testing in a particular contraindicated age group (<21 yrs) has dropped off sharply since 2007, and repeat intervals following negative tests appear to be lengthening.

#80 - Over-diagnosis - A Personal Perspective from Three Different Angles: Payer, Clinician, and Patient

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Over-diagnosis is a complex issue that involves many different “agents” when we adopt a system point-of-view. Every diagnosis involves at least three parties (or agents): the patient, the clinician(s), and the payer(s). Each agent has its own interest and limitations, which are not necessarily aligned with one another. We searched Medline, Scopus, PubMed and Psych-Info and Cochrane Systematic Reviews but were unable to locate existing literature on the roles of those three agents and how they communicate together within the context of over-diagnosis.

As a result, we offer perspectives from the point-of-view of a payer, a clinician, and a patient advocate with an emphasis on communicating and problem solving. The recent controversy and emotional uprising surrounding the publishing of reviews centered on mammogram screening is a cogent example of how different perspectives could result in different conclusions.

Our presentation is structured in this way. We will first explain the situation faced by each agent and its primary interest. Then, we will elaborate the limitations and difficulties faced. Next, we will offer a system view using mammogram screening as an illustration. Finally, we will propose solutions on how to resolve those conflicts.
#82 - Measuring Overuse of Medical Procedures Using Health Insurance Claims Data
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Objectives: To evaluate the potential of using health insurance claims data to document the use of procedures not recommended by medical guidelines.

Methods: Claims data from an Upper Midwest United States health insurance plan with 1.6 million enrollees were analyzed to determine the potential for quantifying the use of procedures not recommended by medical guidelines. The procedures included: imaging studies for non-specific acute low back pain, CT scans for suspected appendicitis in children, Pap tests in adolescent females, PSA tests in men over age 75 years, and colonoscopies for patients over age 75 years. The number of enrollees at risk and the prevalence of procedures performed during 2011 were documented with magnitude of procedures allowed and their immediate costs.

Results: The overuse of studied medical procedures was found to be less than recent national estimates and most of the overuse was for low cost items. Only 5% of the patients with low back pain received an MRI within six weeks of diagnosis; and fewer than 1% of children with suspected appendicitis received CT scans. PSA tests for men over 75 years old were somewhat higher (9%), but the unit cost for these procedures was only $30. Three percent of enrollees over 75 years old had colonoscopies and inappropriate Pap tests were about 2%.

Conclusions: Our study demonstrates that health insurance claims data can be an important source to evaluate the overuse of medical procedures. Moreover, our study identified measurement issues that must be addressed to assure the accuracy the data and we have presented analytic methods to resolve those issues; an additional advantage of claims-based analysis of the use of procedures not recommended by medical guidelines is that the influence of patient and provider characteristics can be analyzed and appropriate interventions can be developed.

#83 - Evolution (2006-2013) of the rate of indication of PSA screening in primary care, and association with rate of prostatectomies and mortality by prostate cancer in the Basque Country
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Objectives: to describe the evolution between 2006 and 2013 of the indication of PSA determination for the screening of cancer of the prostate, and its association with the rate of prostatectomies and with disease-specific mortality.

Methods: design: ecological study of the evolution of the rates of indication of PSA, radical prostatectomy and specific mortality rate by cancer of the prostate; subjects: male population older than 20 years of the Basque Country (868,101 persons in 2013); measurements: age-standardized (reference population: Basque Country 2009) rates of: persons ordered a PSA exam in each of the 8 years included; radical prostatectomies performed; deaths by cancer of the prostate; analysis: evolution of the rates, assessed by Poisson models. The effect of over time changes in the rate of PSA on the prostatectomy rate was assessed by linear regression procedures, adjusted by time.

Results: The men ordered a PSA measurement increased from 2006 (102/1000) to a peak in 2010 (144/1000), and settled down in the following years -mean annual increase: 4.8% (95%CI 4.7 to 4.9). The rate of prostatectomies shows a similar evolution, from 4.6/10000 in 2006 to 8.0/10000 in 2011 -9.9% (95%CI 8.1 to 11.8) increase annual. Mortality peaked at 5.3/10000 in 2009 (baseline 2006=4.2/10000) and decreased to 4.7/10000 by 2012, a global mean increase of 2.1% (95%CI 0.01 to 4.3) annual over the period. Higher rates of PSA were associated with higher rates of prostatectomy (p<0.0001).

Conclusions: several years after most scientific guidelines advised against the screening of cancer of prostate with PSA determination, our health system continues offering it to the general population. Our data also validate the advice of most guidelines in the sense that more determinations of PSA lead to a higher rate of prostatectomy -along with its undesirable side effects- but not to a sizeable impact on mortality.
#87 - Guideline Driven Overtreatment in Primary Care - an update.
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This year's conference in Oxford provides a unique opportunity for British GPs to engage with the Preventing Overdiagnosis movement, not least because of the recent formation of a Standing Group for Preventing Overdiagnosis and Overtreatment within the RCGP, to be chaired by Dr Margaret McCartney and launching at the RCGP conference in October.
This session is aimed at Primary Care clinicians from all countries to discuss next steps and share ideas. The output of the workshop will inform what the RCGP group plans for the short and long term.
Areas for discussion will include educational ideas, creating information resources, how to address political challenges and how to share ideas internationally.

#89 - Mitigating clinician and community concerns about children's flatfeet, intoed gait, or knock-knees/bow-legs – a simple approach of when to do what.
Angela Evans¹,²
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Background: Foot and lower limb postures are a common parental concern, and present frequently to a range of clinicians. Referral of children with flatfeet, intoed gait, or knock-knees that is within normal developmental limits has been reported as approximating 40%. This represents a substantial and unnecessary cost to any health care system. It would appear that many clinicians are unsure as to the bounds of what is physiologically normal in terms of foot posture, gait angles, and knee position in childhood. The issue of intervention for paediatric flatfoot is repeatedly reported as being controversial. This need not be, given the direction from evidence and clinical guidelines. Gait angle of progression, and especially intoed gait, is a common concern for which there are known developmental patterns, and scant evidence for intervention. Knee position has a consistently documented progress with age, which generally guides the need for management.
The aim is to present a framework for understanding the need to attribute concern for each of these conditions, that can be used to develop and evaluate the need for interventions.
Review of current research of the evidence for treatment of each of flatfeet, intoed gait, or knock-knees/bow-legs, focussed on diagnosis designed to reduce overuse of both consultations and intervention. The dilemma for caring clinicians is that each of these common presentations can be frankly pathological, so erring on the side of caution is understandable.
A framework for clinicians provides three quick questions that can clarify the need to attribute concern for each of these paediatric musculoskeletal conditions, and a diagnostic directive that will reduce the chance of overlooking something more serious.
#90 - Overdetection in breast cancer screening: randomised controlled trial (RCT) of an information booklet to support informed choice
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OBJECTIVES: This RCT investigates the effects of information about overdetection in breast screening on decision-making outcomes among women approaching the age of 50.

METHODS: We developed an evidence-based information booklet that explains overdetection and other screening outcomes (breast cancer mortality reduction and false positives) with icon arrays illustrating how often these occur among 1000 women screened for 20 years. We refined booklet content and presentation through 49 user-testing interviews before starting a community-based trial to evaluate the booklet’s impact. Approximately 1000 women aged 48-50 are being randomised to receive either the intervention (described above) or a control booklet (including mortality reduction and false positives only). The primary outcome is informed choice (adequate knowledge, and consistency between attitudes and screening intentions) assessed via telephone interview 2 weeks post-intervention. Secondary outcomes include decision process variables and psychosocial outcomes.

RESULTS: User-testing phase: Women found the intervention and control booklets clear and helpful, subsequently demonstrating good knowledge of general screening concepts (95% accuracy) whereas numerical knowledge was less accurate. Most women (91%) recognised that screening increases the likelihood of a diagnosis, though there was some confusion about the distinction between overdetection and false positives. Screening attitudes remained positive overall, with 85% of women intending to be screened.

RCT: Recruitment to the RCT is nearing completion, with data analysis to follow shortly. Main findings to be presented include the proportion of women making an informed choice, comparing the intervention and control groups.

CONCLUSIONS: Mammography screening services worldwide are considering how to deal with overdetection, in the context of a broader international debate concerning overdiagnosis and overtreatment. This RCT addresses the need for evidence about how best to accurately and sensitively inform women. Findings will help ensure that information on overdetection may be communicated clearly and effectively, using an evidence-based approach, to women considering breast screening.

#91 - DCIS grade distribution in 4,232 screened and non-screened women and estimated risk of overdiagnosis in breast cancer screening- a model of progression
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Objectives: Ductal carcinoma in situ (DCIS) is generally considered as a non-oblige precursor of invasive breast cancer. The natural history is dependent on grade, which can be low, intermediate, or high. We aimed to determine whether distribution of DCIS grade is dependent on mass mammography screening status and to estimate overdiagnosis rate by grade.

Methods: We extracted grade from pathologic reports of 4,232 Dutch women of all ages in 2007-2009 with incident cases of DCIS, provided by the nationwide network and registry of histopathology and cytopathology in the Netherlands (PALGA). We established the incidence rate of the different DCIS grades by patients’ screening status and age. We added the distribution of the DCIS cases in our microsimulation model (MISCAN) and estimated overdiagnosis rates by DCIS grade.

Results: Overall, 17.7% of DCIS were low-grade, 30.6% intermediate-grade, and 51.7% high-grade. This distribution did not differ by screening status. DCIS grade had an inverse linear association with age group. Overdiagnosis as proportion of all cancers in women of the screening age for DCIS was 61% for low-grade, 57% for intermediate-grade, 45% for high-grade; and for invasive cancer 2%. For women with a high-grade DCIS in the ages 50-60 this overdiagnosis rate was 21-29%, compared to 50-66% in women with high-grade DCIS in the ages 60-75.

Conclusion: Half of all DCIS are high-grade. DCIS grade distribution depends on age, not on screening status. The estimated overdiagnosis rate among DCIS lesions is extremely high, except for younger women with a high-grade DCIS, and calls for a non-treatment randomized controlled trial for low-grade DCIS.
#92 - OVERDIAGNOSIS IN LUNG CANCER SCREENING WITH CHEST X-RAY: EXPLORING WHAT APPEARS TO BE CONFLICTING FINDINGS IN THE MAYO LUNG PROJECT (MLP) AND PROSTATE, LUNG, COLORECTAL AND OVARIAN (PLCO) CANCER SCREENING TRIAL
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Data from the MLP, a randomized controlled trial (RCT) of about 9200 male ever smokers that began in 1970, demonstrated the existence of overdiagnosis in lung cancer screening. With post-screening long-term follow-up, the cumulative number of lung cancer cases was 585 in the intervention arm (I) and 500 in the usual care arm (UC) (p=0.009), suggesting that the magnitude of overdiagnosis was about 15%.
PLCO, a larger RCT (n~155,000) of both men and women that began in 1992, observed a much smaller (5%) statistically non-significant excess in lung cancer cases in the intervention arm after post-screening long-term follow-up (I - 1696; UC – 1620). Furthermore, the two arms experienced nearly the same numbers of cases (I - 518; UC -520) when restricted to the approximately 30,000 PLCO participants who smoked for at least 30 pack-years. Our presentation will explore possible explanations for the conflicting findings using data from the two trials and other sources. We will address differences in modality and intensity of screening, including use of screening in the comparator arm; we also will address temporal changes in prevalence of competing causes of mortality, characteristics of tumors detected through screening, and in diagnostic evaluation and treatment of screen-detected abnormalities and cancers. The possible impact of temporal changes in composition of cigarettes and treatment of competing causes of mortality will be discussed as well. Regardless of the explanation, the conflicting findings of the two trials suggest that the magnitude of overdiagnosis in lung cancer screening is not be fixed. Furthermore, this conflict reminds us that overdiagnosis is a consequence of cancer screening, and that discrepancies across studies ought to be explored to better understand the factors driving this phenomenon.

#100 - Impact of diagnostic invasiveness on the psychosocial consequences of false-positive mammography: cohort study
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Objectives: To assess whether increasing invasiveness of diagnostic procedures after a positive mammography is associated with increased negative psychosocial consequences.
Methods: Subgroup analysis of a cohort study of 454 women with abnormal screening mammography and 908 matched controls with normal results. Using a condition-specific questionnaire (Consequences of Screening in Breast Cancer), we assessed 12 psychosocial outcomes at 5 time points (0, 1, 6, 18 and 36 months) in two groups of women with false-positives (non-invasive and invasive groups) and we compared them with women with normal screening and to women with breast cancer.
Results: Compared with women with normal results, women in the non-invasive group had worse psychosocial consequences one month after diagnosis (P<0.01 for 11 of 12 outcomes); but at 36 months the difference was no longer significant (P<0.01 for 2 of 12 outcomes). Compared with women with normal results, women in the invasive group also had worse psychosocial consequences one month after diagnosis (P<0.01 for 11 of 12 outcomes); and at 36 months the difference was no longer significant (P<0.01 for 0 of 12 outcomes). There were no differences between women in the non-invasive and invasive groups at any of the time points (P<0.01 for 0 of 12 outcomes).
Conclusions: Women with false-positive mammography experience psychosocial harm. Women only requiring non-invasive procedures had worse psychosocial consequences than women with normal results, at least in the short-term. There was no evidence that increased invasiveness of diagnostics was associated with worse psychosocial consequences.
How important is Overdiagnosis to members of the public offered the chance to include it in an online multi-criteria decision aid for prostate cancer screening?

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Objectives: To establish the proportion of men who chose to include Overdiagnosis as a criterion in an online multi-criteria decision aid for the prostate cancer screening decision; and to determine the relative importance assigned to Overdiagnosis by those who included it in their personalised aid.

Methods: The data are from the ‘Pick Your Own’ arm of an Australian community panel-based trial involving men aged 40-69 years without diagnosed prostate cancer. The 720 participants were asked to choose between 1 and 10 criteria for inclusion in their aid. With only Overdiagnosis spelled out here, the criteria, all preceded by ‘Avoiding’, were: LOSS OF LIFETIME; LOSS OF HEALTH; NEEDLESS BIOPSY; OVERDIAGNOSIS (and needless treatment) as a result of a PSA test detecting a cancer that would not have affected your life or health; URINARY PROBLEMS; BOWEL PROBLEMS; SEXUAL PROBLEMS; BURDEN of TREATMENT; BURDEN to CARERS; REGRET. Participants were asked to indicate the relative importance for their selected criteria by changing bar lengths on screen with their cursor. Their weights automatically adjusted to add to 100%.

Results: 77% (377) of study participants included Overdiagnosis, 57% (131) of those who excluded at least one of the 10 criteria. If 5 criteria were selected, 47% included Overdiagnosis, as did 41% who selected 4 or 6. Average weights assigned to Overdiagnosis amongst those providing a complete set of weights increased from 9% to 19% as the included number decreased. The highest weight for Overdiagnosis was 33%.

Conclusions: Overdiagnosis was prominent among the criteria selected from a menu by male members of the public participating in a trial of online multi-criteria decision aids for prostate cancer. Notably, over 40% of those who excluded 4 to 6 of the 10 criteria included Overdiagnosis in their aid. Moderate weights were attached to it, varying with the number of criteria selected.

Overuse of antiemetic drugs in cancer patients receiving chemotherapy with minimal and low emetic risk in Japan

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Introduction: As part of the Choosing Wisely initiative, the American Society of Clinical Oncology recommend that physicians do not to routinely prescribe antiemetic drugs in patients receiving chemotherapy with low emetic risk.

Aim: The aim of this study is to identify antiemetic prescription patterns in patients undergoing low or minimal emetic risk chemotherapy in Japan.

Method: A database linking hospital-based cancer registry data with health insurance claims data from 122 cancer treatment hospitals in Japan was used. The database contained patients who were diagnosed with one of the seven major types of cancer in Japan (breast, lung, colorectal, liver, stomach, cervical, and prostate cancer) in 2011, with information on the all medical services provided until the end of 2012. Data from patients who were 20 years old or older at the time of diagnosis who received intravenous chemotherapy with minimal or low emetic risk for their first time were extracted. The proportion of patients who received antiemetic drugs (NK1 antagonist or SHT3 antagonist with or without dexamethasone) was calculated.

Results: A total of 48,348 patients receiving minimal (n=11,638) or low (n=36,710) emetic risk chemotherapy was identified. NK1 antagonist was prescribed in 4.5% of minimal risk patients (95%CI, 3.5-5.7) and 4.9% of low risk patients (95%CI, 4.6-5.2). SHT3 antagonist was prescribed in 57.4% of minimal risk patients (95%CI, 54.8-60.0) and 88.4% of low risk patients (95%CI, 88.0-88.9). 42.1% of low risk patients (95%CI, 41.6-42.6) received both SHT3 antagonist and dexamethasone. Preliminary results from 48 hospitals are presented here. Result from all 122 Japanese hospitals will be presented at the conference.

Conclusion: This study identified the overuse of antiemetic drugs in minimal and low emetic risk patients in Japan. The judicial use of antiemetics has the potential to save the burden and extra costs for patients and the healthcare system.
#107 - Overuse of antibiotic prophylaxis among surgical oncology patients in Japan
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**INTRODUCTION:** Overuse of antimicrobial prophylaxis in surgical patients is observed when inappropriately broad antibiotics are used, or when antibiotics are administered longer than necessary in patients without signs of infection. Overuse of antibiotics could result in the development of drug resistant bacterial strains, adverse side effects in patients, and unnecessary financial burden on the healthcare system, and should therefore be avoided. However, the state of surgical prophylactic antimicrobial use in cancer patients has never been studied across a large population of surgical cancer patients in Japan.

**OBJECTIVE:** We aimed to investigate the overuse of prophylactic antimicrobials among patients receiving cancer resection surgery in Japan.

**METHODS:** We developed a database of health insurance claims data linked to hospital-based cancer registry data of patients diagnosed in 2011 from 123 cancer treatment hospitals. We analyzed the types of prophylactic antibiotics used and the duration of administration for 12624 breast, 6469 lung, and 8648 stomach cancer patients receiving their first surgical resection between January 2011 and December 2012. We calculated the proportion of patients that received broader-spectrum drugs or longer administration of antibiotics than those recommended by the American Society of Health-System Pharmacists (ASHP).

**RESULTS:** Among 27741 patients who received their first resection surgery, 11.1% of breast, 34.8% of lung, and 19.9% of stomach cancer patients received antibiotics that were broader than those recommended by the ASHP (e.g. third and fourth generation cephalosporin). Antibiotics were administered to 11.2%, 56.3%, and 49.8% of breast, lung, and stomach cancer patients even after two days of surgery, respectively.

**CONCLUSION:** Overuse of antimicrobial prophylaxis was commonly found in cancer surgery patients in Japan. Inappropriate choice of broad-spectrum antibiotics and prolonged postoperative administration were prevalent in all three cancers. Judicious use of antibiotics is needed in surgical oncology practices in Japan.

#110 - Mammography screening: Estimating over-diagnosis and dealing with denial and public incomprehension.
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The Canadian National Breast Screening (CNBSS) recently reported estimates of over-diagnosis after 25 year follow-up (34 years post study implementation) for invasive cancer. A second paper reported findings for cancers in situ. Analyses were based on data acquired from an initial period of active follow-up followed by linkage with cancer registries and national data-bases.

Physicians and the lay public should understand that

- identifying the over-diagnosed individual at the time of detection is not yet possible.
- large increases in the detection of early cancers, observed for some years, should have been associated eventually with a substantial reduction in advanced cancers. That this has not happened in population studies strongly supports the concept of over-diagnosis.
- long-term follow-up of randomized controlled trials provides good estimates of over-diagnosis provided screening stops in the screened group and is not taken up in the control group after trial closure. While the CNBSS has no specific data respecting this, we believe that screening behaviours after screening in the trial ended, would be similar in the two groups given their equal access to whatever modalities were available.
- In the 44,925 women assigned to mammography in the CNBSS, 484 invasive breast cancers and 105 cancers in situ (CIS) were screen-detected of which 100 and 106 respectively were in excess of the controls yielding 35% over-diagnosis. Screen-detection by mammography-only yielded 105 invasive and in situ cancers in women 40-49 and 189 in women 50-59 totalling 285 with a (206/285) 72% over-diagnosis rate. Our estimates are similar to estimates from Nordic countries, Australia, Spain and the US.

Two other studies, one from Sweden and another from Italy report 5 and 10% respectively, but their methodology was not optimal. Clearly if society is to understand completely the consequences of screening, effective communication and improved understanding of over-diagnosis is essential.
Objectives: Human Papillomavirus (HPV) vaccines have been widely adopted in high-income countries since 2007. HPV vaccines have proven to be highly effective at preventing HPV types 16 and 18 in randomised controlled trials and in recent population-based studies of vaccinated cohorts. HPV type 16 and 18 are the most common HPV types in cervical dysplasias and are believed to be responsible for approximately 70% of cervical cancers. Thus, primary prevention of cervical cancer now has the potential to make redundant the established secondary prevention strategy of screening. Nevertheless, the health authorities in several countries emphasise that screening should be continued.

Given that HPV-vaccination has the expected effect, the prevalence of cervical cancer will drop markedly as the vaccinated cohorts grow older. This will lead to a reduced positive predictive value of cervical cancer screening.

The mortality reduction of cervical cancer attributed to screening is well-proven. However, as is the case for all cancer screening programmes, there are also harms of screening, e.g. related to false-positive results, and these must be outweighed by the benefits for the screening programme to be justified. We lack knowledge about the balance between harms and benefits of cervical cancer screening for the individual woman in the post-HPV-vaccine-era.

Our primary objectives:
To model the consequences of screening in women vaccinated for HPV-16/18.
To estimate predictive values of cervical cancer screening results in HPV-vaccinated women.

Methods: We will use Denmark as a case. We will base our calculations on historical empiric data from the cervical screening programme obtained from the Pathology Data Bank, and best available evidence about HPV vaccination efficacy, obtained from a review of the literature. We will calculate future predictive values of cervical cancer screening under the expected incidence of cervical cancer precursors.

Results and conclusions:
Will be presented at the conference.
Objectives: We evaluated changes in breast cancer screening patterns by Medicare beneficiaries enrolled in Medicare Advantage (MA) or traditional fee-for-service Medicare (TM), before and after release of the 2009 US Preventive Service Task Force (USPSTF) updated guidelines. Earlier guidelines recommended at least biennial screening for all women 40+yo; the update recommended against routine screening for women 75+yo.

Methods: We examined 2007-10 biennial screening rates among 37,274 beneficiaries age 75-84yo in MA and 14,367 in TM, compared with 57,893 beneficiaries age 65-74yo in MA and 13,937 in TM respectively. All subjects lived in the same US counties. We used linear regression models with a patient-level fixed effect to estimate the change in proportion of subjects receiving screening, as well as linear random-effects models adjusted for race/ethnicity, socio-economic status, risk scores, cost-sharing, and county.

Results: Baseline screening rates were higher in MA compared with TM, e.g., 56.1% and 46.1% (2007, 75-84yo) in MA and TM respectively, though the 2007-08 trends were comparable. The unadjusted annual rates dropped by 7.6 points in MA and 3.2 percentage points in TM (2007-10) for 75-84 yo women, whereas the biennial rate changes among women 65-74yo were +0.3% for MA and -1.3% for TM.

In fixed-effects models with 65-74 yo women as concurrent controls, the new guidelines were associated with a decrease of 11.4% in the biennial screening rate among 75-84 yo women in MA compared with 65-74yo women (95%CI:-12.0 to -10.8), and a reduction of 5.4% (95%CI:-6.4 to -4.4) in TM. Changes in annual rates were comparable.

Conclusions: There were substantial reductions in screening rates associated with recent breast cancer guideline updates for women affected by the guideline change, and not for younger women. The guideline response appears to be larger in MA, which has greater incentives and more tools to influence practices compared with TM.
#114 - Taming Frankenstein’s monster: how doctors have begun talking about medicalisation
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The story of medicalisation can be told in four chapters, mirroring the story of Dr. Frankenstein’s monster. My epilogue diverges from Shelley’s story to suggest a happy ending: perhaps doctors can help to tame medicalisation, as this conference seeks to do, particularly if they avoid oversimplifying it.

1. Roots of medicalisation: the monster is built
In the 20th century the remit of medicine extended to encompass two different groups: people “at risk” of future illness, and people with problems which were “diagnosed” as illnesses.

2. Medical imperialism: other people start worrying about it before the doctor does
From the 1970s onwards, social scientists highlighted the many harms of these two kinds of medicalisation, and led a resistance movement against what many called medical imperialism.

3. Medicalisation escapes from doctors’ control
Three factors now drive medicalisation forward: its advantages are clear to many groups of lay people, including politicians; doctors pursue advances in their own field; and drug companies promote it.

4. Doctors start agreeing that medicalisation can do harm: a bid to tame Frankenstein’s monster
The headlines “overdiagnosis” and “too much medicine” suggest that there is an amount which is “just right”, and a numerical definition of overdiagnosis has appeared. This implies that it is doctors who get to play Goldilocks and choose, obscuring the fact that these choices rest on value judgements and that in making them, doctors have no special entitlement to the leading role. The monster can only be tamed by a more complex discussion with a wider range of participants.

Epilogue
Doctors have a vital role in debating the balance between the harms and benefits of medicalisation, but to avoid implying simple answers before the debate begins, they should rename their campaign “How much medicine?”

#118 - Predictive risk algorithms as a driver of overdiagnosis - current status and what next?
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Background: Many decision-making tools, e.g. guidelines for primary prevention of cardiovascular disease (CVD) involve risk prediction algorithms. These calculators typically involve a few, well-documented risk factors and rely on regression analyses from large population studies. The formulas appear authoritative, non-transparent and indisputable to the non-expert. The underlying assumptions may however be disputable. One example is the assumption of a general, linear association between a risk factor (e.g. cholesterol or BMI) and the end-point in question (disease or death). It is often advocated to calibrate algorithms to the baseline risk of a given target population. In practice, however, the discriminatory power of risk algorithms remains limited. Flawed risk algorithms might thereby drive overdiagnosis.

Objectives: To investigate the performance of risk calculators in recent or current predictive CVD algorithms and discuss future perspectives.

Methods: A theoretical analysis of how risk algorithms are made, calibrated and applied, supported by empirical findings from various studies, including our own.

Results: Several current CVD risk algorithms have been shown to overestimate risk and thereby imply a tendency towards misclassification, overdiagnosis and overtreatment. This fact receives increasing international attention. It is important to monitor the response of affected stakeholders.

Conclusions: Immediate and partially effective solutions might include interrogation of current algorithms in terms of possible non-linear (e.g., J-shaped) associations between relevant risk factors and end-points. Furthermore, to explore inclusion of less traditional risk factors, such as multimorbidity and psychosocial factors. More extensive use of modelling and feasibility studies could enhance the validity of conventional guidelines. Internationally, however, we are witnessing the emergence of so-called “Systems Medicine”. A core element of Systems Medicine is highly complex predictive algorithms with billions of variables intended for surveillance of health and disease in a life-course perspective. This might revolutionize preventive medical thought and practice, for better or worse.
Five barriers to communicating overdiagnosis topics to health consumers and evidence-based strategies to overcome them.

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Today’s healthcare environment poses a daunting set of challenges to those who communicate information to health consumers. Medical decision-making has grown more complex and patients are apt to draw information from many sources—not all of them reliable. At the same time, entities with strong financial incentives in tests and treatments have devised more sophisticated ways of promoting them to both providers and consumers. As a result, people are not getting the information they need nor having the healthcare experience they desire. The vast majority of patients say they want their provider to listen to them, they want to hear the full truth about their diagnosis, and they want to understand the risks of treatment, according to a 2012 report from the U.S. Institute of Medicine. But many say they do not get those things from interactions with their healthcare providers.

Consumer Reports, a U.S.-based nonprofit publisher, reaches 20 million readers monthly through print, the web, television and video, and mobile applications. To gain insight on how to most effectively reach consumers with healthcare messages, we undertook a review of the cognitive psychology literature, conducted our own surveys and focus groups, and examined lessons learned through 78 years of health reporting. From this review, we identify five key barriers to reaching health consumers. We pinpoint where traditional communication methods break down and what our evidence shows are the most successful strategies to overcome these obstacles. Finally, we provide real-world examples in the form of brochures that translate articles from the British Medical Journal’s “Too Much Medicine” series into consumer-friendly language with actionable advice.
#123 - Development of an online tutorial to train doctors in shared decision making with patients considering colon cancer screening

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**Background and objectives:** The concept of shared decision making has recently been incorporated into the “Krebsfrüherkennungs- und –registergesetz” of 2013. In 2016 invitation to colon cancer screening will be implemented in regular health services in Germany. The Bavarian Ministry of Health, Techniker Krankenkasse (sickness fund) and the regional Association of Statutory Health Insurance Physicians of Bavaria commissioned the development of a 45 minutes evidence based online tutorial to guide doctors in colon cancer screening counselling aiming at facilitating informed patient decisions.

**Methods:** Selection of relevant information and presentation formats were agreed upon in an expert panel. A new graphic format has been developed to facilitate risk communication in screening scenarios. The tutorial comprises information on scientific evidence and on counselling in terms of the SDM concept, and a set of seven video based training tracks elucidating typical barriers to patient involvement in doctor patient consultations. Moreover, a CME test of specific risk communication competences is included. To evaluate feasibility, acceptance and comprehension, a draft of the tutorial was piloted in a theoretic sample of physicians using in depth interviews. The draft was also reviewed by the expert panel.

**Results:** Although most participants of the pilot test reported strong attitudes in favour of screening, the tutorial was assumed to meet the intended educational goal to acquire SDM counselling skills. The training tracks and the underpinning didactic concept to present suboptimal and optimal examples of shared decision making and risk communication linked by a short coaching sequence were highly appreciated by all participants.

**Conclusions:** The newly developed tutorial for doctors is a promising intervention to teach doctors necessary communication skills. The comprehensive version of the tutorial will consider the findings of the feasibility study and will be subject to further evaluation as a complex intervention.

#130 - The use of cardiac troponin measurements in the clinical setting and development of an algorithm to diagnose ischemic cardiac events.

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**Objectives:** The diagnostic approach to ischemic cardiac events is well described in the recent literature. In the clinical setting however cardiac markers are often used excessively. Our aim in this study was to evaluate the use of high sensitive troponin T(hsTropT) in the clinical setting. Furthermore we aimed to provide a standardized approach for the diagnosis of an ischemic cardiac event.

**Methods:** This is a single-center, retrospective study based on the records of 779 patients hospitalized and discharged at the University Department of Cardiology and Intensive Care of the Paracelsus Medical University Hospital, Salzburg, Austria over a time period of three months. Demographic data, discharge diagnosis, duration of hospital stay, and troponin measurements were gathered. For the development of the diagnostic algorithm the current literature and guidelines were sifted.

**Results:** In 98.9 % of all hospitalized patients, hsTropT was analyzed at least once. Median cardiac troponin measurements in these patients were 0.5 (Range: 0-6; 5th percentile, 0.1; 95th percentile, 2) per day per patient and 2 (Range: 1-39; 5th percentile, 1; 95th percentile, 10) per patient hospital stay respectively. Only 43.3 % of these patients had a relevant cardiac diagnosis (Ischemic heart disease 32.9%, chest pain 6.3% and dyspnea 4.1%) We developed an algorithm to diagnose an ischemic cardiac event using cardiac markers. The recommendations in the current guidelines had to be modified slightly to fit the circumstances and possibilities of our clinics without changing the essence of the statements.

**Conclusions:** Cardiac troponins are used excessively in the clinical setting. The implementation of a diagnostic algorithm to diagnose ischemic cardiac events using cardiac markers, as developed in this study, seems useful to reduce medical overdiagnosis and the economic burden. However, when developing such an algorithm it has to be modified to imply the local settings.
#132 - Adding value to health care through discontinuation of low-value practices: ESSENCIAL Project in Catalonia
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**Background:** Discontinuation and disinvestment from ineffective, unsafe or inappropriately used clinical practices is a growing priority in healthcare systems worldwide. ESSENCIAL Project was launched in Catalonia in March 2013 and is being implemented as a policy-based initiative which promotes and supports these processes.

**Objectives**

1. To identify low-value practices and promote their discontinuation through recommendations for the clinical practice.
2. To encourage health professionals’ involvement in the identification and change management process.
3. To rise awareness of overuse-, misuse- and waste-avoidance in healthcare.

**Methods:** The process is explicit and transparent, comprising 3 phases:

a) Identification of low-value practices: scientific evidence (clinical practice guidelines, technology assessment reports and publications) and nominations from clinical and non-clinical stakeholders knowledgeable of the context. Prioritization and elaboration of recommendations.

b) Dissemination to key stakeholders (web, videos, communications, social media) and implementation activities (training, decision-support systems, provider-specific performance measures).

c) Impact evaluation in terms of processes and outcomes via quantitative and qualitative methodologies.

**Results:** By now, 21 recommendations have been elaborated and disseminated: 5 on diagnosis, 11 on treatment, 2 on screening, 2 on prevention and 1 on rehabilitation, with approximate savings potential of 20M euro (data partially available). Specific multichannel communication programs are ongoing and strategy for impact analysis is under definition.

**Conclusions:** Clear priorities, detailed planning and early involvement of target professionals are key to continuity and success of such initiatives. Multiple sources for identification of low-value practices and good knowledge of the context are needed to ensure the relevance of promoted recommendations. Total discontinuation is rarely recommended and an accurate definition of the conditions in which the practice is considered as “low-value” needs to be elaborated. The success of the implementation could be improved by a priori investigation of the potential barriers and facilitators and by a broad stakeholder commitment for collaboration.

PREVENTING OVERDIAGNOSIS
Winding back the harms of too much medicine
Overdiagnosis of mammographic screening studied in birth cohorts

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Background: The excess-incidence approach is often used to estimate overdiagnosis from mammography in a specific period. However, this approach fails to take into account that the magnitude of the drop in incidence after the upper age limit of screening depends on how long women participated in the screening programme. This study aims to relate the extra incidence during screening to its corresponding drop after screening by quantifying overdiagnosis of invasive breast cancer and ductal carcinoma in situ in birth cohorts.

Methods: Data of the female population and breast cancer incidence data was obtained from Statistics Netherlands, ‘Stg. Medische registratie’ and the National Cancer Registry in the Netherlands for women aged 0-99 years. Data on screening participation was obtained from the screening organizations. An age-cohort analysis including variables representing the initial and subsequent screening rounds and a 10-year period after leaving screening was used to estimate overdiagnosis as result of mammographic screening.

Results: Overdiagnosis estimates in birth cohorts are, in general, lower than overdiagnosis estimates in a specific period. In birth cohorts screened from age 49-74, overdiagnosis of invasive breast cancer is 8.8% and overdiagnosis of all breast cancers is 14.6% when expressed as a percentage of breast cancers detected during a lifetime (0-99 years) in the absence of screening. In 2005-2009, the lifetime estimates of overdiagnosis are 12.6% and 17.9% for invasive and all breast cancers, respectively. Estimates of overdiagnosis expressed as the percentage of breast cancers detected during the screened age range were higher.

Discussion: When using the excess-incidence approach, we recommend to study overdiagnosis in birth cohorts to prevent overestimation of overdiagnosis. In the future, we will compare our estimates from the excess-incidence approach with estimates from the lead time approach (using Micro-simulation Screening Analysis Model, MISCAN) to get more insight in the best method to estimate overdiagnosis.

Update in Medical Overuse

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Introduction: There is an increasing attention focused on overdiagnosis and overtreatment in healthcare. Staying abreast of this expanding body of literature can be challenging.

Methods: A systematic review of the literature published in 2013 related to overdiagnosis and overtreatment is being completed. The goal is to identify high-yield papers that will influence practice patterns of clinicians. Articles selected were from a systematic review of medical overuse using MeSH term “health services misuse” and Embase “Unnecessary procedure”as well as searches for the words “overuse”, “overutilization”, “overdiagnosis”, “inappropriate”, and “unnecessary” in the title of any articles. All articles published in eight major general medical journals were also reviewed.

Results: The systematic review identified 1089 articles, of which 711 addressed overuse. Excluding editorials (279), case reports/review articles and pediatric articles (41), we reviewed 390 articles. Of these, 93 (24%) were ranked top priority based on quality of methodology, strength of results and potential impact on patient care (especially # of patients affected). Of these articles, the 10 most interesting articles are being selected; the clinical message from these will be extracted and concisely summarized. A list of the next 25 “honorable mention” articles will be included to serve as a resource for those interested in immersing deeper into this field.

Conclusions: In carefully reviewing the 10 best recent articles related to overuse, healthcare providers will not only have this information at their fingertips in a single paper, but they may be able to extrapolate some of the recurrent messages to other clinical scenarios. (Alternately, if format permits, some of the 25 honorable mention articles will be discussed).
How much overdiagnosis are people willing to accept in screening for breast cancer, prostate cancer and colorectal cancer?

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Objectives: Overdiagnosis, the most important adverse effect of cancer screening, is estimated at 22-24% of screening-detected breast cancers, and 23-44% of screening detected prostate cancers. Little is known about people’s willingness to accept overdiagnosis, which may vary and depend on several factors, in particular the consequences of overdiagnosis from immediate and long-term burden of treatment. As such, overdiagnosis acceptability may differ for breast cancer, colorectal cancer or prostate cancer. We aimed to describe the level of overdiagnosis people would find acceptable for a given benefit in relation to cancer-specific harms from overdiagnosis. Moreover, we hypothesized that the general population, cancer patients, and clinicians might differ in their willingness to accept overdiagnosis.

Methods: We surveyed a representative sample of the general population stratified according to age, gender, educational level and ethnicity. In addition, clinicians were sampled purposively targeting primary care clinicians, gynaecologists, urologists and oncologists. Separate surveys were sent for breast cancer, prostate cancer and colorectal cancer. The survey was piloted to check wording and clarity. Participants were presented with information on overdiagnosis and its consequences specifically for the cancer they were surveyed about. Subsequently they were asked to indicate how many cases of overdiagnosis they were willing to accept for a given benefit. Questions were accompanied by graphics to facilitate understanding of the concepts and numbers. To test for a non-linear relationship between benefit and willingness to accept overdiagnosis, different scenarios for benefit were presented. Sample sizes of 263 respondents per stratum were calculated assuming 50% of respondents would be willing to accept a maximum of one case of overdiagnosis per cancer death averted.

Results: At the time of writing, the survey was ongoing. Results are expected to be available by July 2014.

Conclusions: The results of this study will help policy makers and clinicians in their communication about screening.

Doctor, could this be “pink eye”? How a disease label influences parents’ interest in antibiotics for treatment of conjunctivitis in children

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Objective: Conjunctivitis is a common reason children visit the doctor. For pediatricians, the words “conjunctivitis,” “pink eye” and “eye infection” are synonymous, and often indicate a viral infection that does not require antibiotics. However, to the lay public, these labels may have vastly different implications. The present research examined whether using the label “pink eye” influences parents’ expectations for antibiotics.

Methods: 151 parents in the waiting room of a general pediatrics clinic were asked to read a brief scenario that described a 2 year old with a red eye, watery eye discharge and no fever. The pediatrician in the scenario indicated that the infection was likely viral. Critically, the pediatrician either referred to the infection as “pink eye” or an “eye infection.” In addition, parents were either explicitly told that antibiotics would probably be ineffective, or not (a 2x2 randomized design). We assessed whether parents would give their child antibiotics, and the degree to which parents thought that the infection was contagious.

Results: Parents who were told that antibiotics were likely ineffective were less interested in giving their child antibiotics, relative to those who were not given this information. However, parents who received the “pink eye” label were interested in antibiotics, regardless of what they were told about effectiveness. Moreover, the pink eye label caused parents to believe that the infection was much more contagious than what would otherwise have been the case.

Conclusions: Labeling an eye infection as “pink eye” caused parents to ignore information about the ineffectiveness of antibiotics, and increased their perception of the contagiousness of the infection. These findings suggest that physicians’ casual use of labels such as “pink eye” may increase parents’ perceptions that antibiotics are useful and necessary.
Clinical context: In the ever-growing elderly population, hip fractures are devastating injuries for individual quality of life and impose an enormous burden on health care resources globally.

Diagnostic change: Introduction of bone densitometry (late 1980s) made clinical assessment of bone mineral density (BMD) widely feasible. The BMD-based definition of osteoporosis in 1994 promoted a wide-scale prevention of ‘fragility fractures’ with bone-targeted pharmacotherapy. In recognition of the limited performance of mere BMD-based fracture prediction in 2000s, the need for multifactorial case-finding strategy of individuals at high risk of fracture became obvious and fracture risk calculators have been developed thereafter.

Rationale for change: Fracture risk calculators can identify older people at high risk of hip fractures and bone-targeted pharmacotherapy can prevent fractures effectively.

Leap of faith: Hip fractures are primarily caused by bone fragility and thus merely amenable to bone-targeted drug therapy. Risk calculators provide a cost-effective means for targeting of drug therapy.


Evidence of overdiagnosis: Application of recommended thresholds of 10-year risk of hip fracture of 3% to a large population-based sample renders at least 72% of women aged >65 years and 93% of those aged >75 years candidates for drug therapy.

Limitations of evidence: The only existing evidence on bone-targeted pharmacotherapy shows a roughly 25% anti-hip fracture efficacy in women aged 65 to 80. However, in women over 80 years of age, the evidence convincingly proves no preventive effect. Further, any proof on anti-fracture efficacy in men at all ages is completely lacking. Most important, even the limited anti-hip fracture efficacy vanishes in real-life.

Conclusion: Recent, highly endorsed fracture prevention strategy fails to provide a clinically relevant improvement in care while concurrently leading to unnecessary costs and use of health care resources.
Objectives: To inform efforts to reduce over-diagnosis of prostate cancer, this qualitative study characterized patient perspectives on the benefits and harms of prostate cancer screening, and assessed patient reactions to the new United States Preventive Services Task Force guidelines recommending against prostate cancer screening.

Methods: The study sample was drawn from men age 50-85 who received a Prostate Specific Antigen (PSA) test for prostate cancer screening in the past two years at the Minneapolis Veterans Affairs Medical Center. To characterize patient perspectives on the benefits and harms of prostate cancer screening, we conducted 26 individual qualitative interviews (10 with African American men;16 with non-African American men). To assess patient reactions to new guidelines, we conducted four focus groups (two with men age 50-69; two with men 70-85) in which patients discussed their reactions to information about the new guidelines. Interviews were recorded and transcribed. Analysis used qualitative software (NVivo 8.0) to identify key themes and exemplary quotes, and to explore variation in themes by patient race and age.

Results: Key findings from the individual interviews included that patients overestimate the clinical benefit of prostate cancer screening and do not see a connection between PSA screening and the potential downstream harms of diagnostic testing and treatment. Key findings from the focus groups included varied reactions to the new guidelines (ranging from receptive to skeptical), and the desire for an alternative means of protecting against prostate cancer death if PSA screening is discontinued. Analyses by race and age are in process.

Conclusions: Patients have misunderstandings about the benefits and harms of prostate cancer screening and varied reactions to discontinuing PSA screening. Reducing prostate cancer over-diagnosis may require renewed efforts to educate patients about the benefits and harms of prostate cancer screening, and to address patient questions and concerns about new guidelines.
#142 - The Effects of Shared Decision Making on Cancer Screening: A Systematic Review
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**Objectives:** Cancer screening can reduce morbidity and mortality, however not all patients undergoing screening achieve this benefit. Patients also face harms associated with screening including false-positive tests and overdiagnosis, and the subsequent unnecessary testing and overtreatment. Shared decision making (SDM) is a collaborative way to combine informed patients’ preferences and clinical evidence into decision making under conditions of uncertain or preference-sensitive risks and benefits, such as cancer screening. We sought to summarize the existing literature on SDM interventions in cancer screening.

**Methods:** We conducted a systematic review to examine the effects of SDM interventions on cancer screening. MEDLINE, CINAHL, PsycINFO, and relevant journals were searched from January 1995 to December 2013 for randomized controlled trials (RCTs) of cancer screening SDM interventions with an adult population in a clinical setting. The search strategy included MeSH terms and keywords for decision making, cancer, and screening.

**Results:** Twenty-two eligible RCTs were identified, evaluating shared decision making interventions in breast (n=2), colorectal (n=3), and prostate (n=17) cancer screening. We will summarize included RCTs qualitatively and present key characteristics of:
1) the target population (e.g. age, sex, previous cancer screening); 2) the SDM intervention content (e.g. delivery mode, values clarification exercises, risk communication methods); 3) the study design (e.g. follow-up duration, setting); and 4) outcomes of interest.

Outcomes of interest were drawn from Ottawa Decision Support Framework and include decision quality (informed, values-based, patient role in the decision), decision action (screening preference, screening outcome), and decision impact (decisional conflict, use of health services, decision satisfaction, decision regret).

**Conclusions:** Often, the decision about whether or not to pursue early cancer detection involves a delicate balance between the benefits and harms of screening. Our findings will guide the future development of SDM interventions to act as tools that help patients become informed participants in this trade-off.

#144 - Information on overdiagnosis in breast screening: a survey study of women’s responses
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**Objectives:** Qualitative research in the UK and Australia has found that women in the eligible age-range for breast screening are surprised by information on overdiagnosis but are generally not deterred from future screening attendance. We aimed to extend these findings using quantitative methods to measure responses to overdiagnosis among women too young to have yet been invited for breast screening, as well as older, age-eligible women with experience of the screening programme.

**Methods:** We carried out a cross-sectional survey, using an experimental design to assess women’s intentions to take part in breast screening before and after exposure to information on overdiagnosis presented in one of three formats. Participants were women from the general population aged 25-46 years (not yet eligible for screening) or 53-70 years (with experience of being invited for breast screening); total n=2317. Data were collected as part of a TNS-International omnibus survey, using random location sampling and face-to-face computer-assisted interviews. The main outcome measure was intention change (coded as decrease vs. no decrease).

**Results:** Almost 90% of participants showed no change in intention to take part in mammography screening following exposure to overdiagnosis information, but 7% (n=150) reported a decrease. Decreased intention was associated with being in the younger (pre-screening) age-group and being exposed to information in the form of a ratio of overdiagnoses to lives saved by screening. Overall, prior awareness of overdiagnosis was relatively low (52%) and after exposure to the information, only 56% of participants understood that women who attend breast screening are more likely to be diagnosed with cancer than those who do not.

**Conclusions:** Our findings suggest that brief written information on overdiagnosis may have little impact on women’s decision-making about breast screening. Women who are naïve to the breast screening programme may find overdiagnosis information more off-putting than those with established attitudes.
### #147 - Attitudes and preferences towards screening for dementia: a systematic review of the literature

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**Background:** The early detection of dementia is both a clinical and research priority. Systematic population screening has been suggested as a mechanism to enable earlier detection; however there is no consensus on the acceptability of a screening program in the general population or health care professionals.

**Objective:** Examine the attitudes and preferences of the general public, health care professionals, people with dementia and their carers towards population screening for dementia.

**Search methods:** A comprehensive international literature review using a systematic review methodology was undertaken. Fifteen electronic bibliographic databases were searched, hand searches of key journals was also undertaken.

**Data collection and analysis:** Quantitative and qualitative study designs were included. Findings from the papers were narratively synthesised and assessed.

**Results:** 29,910 papers were identified of which 30 met the inclusion criteria. Seventeen barriers and facilitators to the acceptance of screening were identified. Seven themes emerged in relation to the patient, carer and general population: 1) existing health state 2) lifestyle and life view 3) awareness of dementia 4) role of clinician 5) communication 6) benefit 7) role of the family. Ten themes emerged in relation to the clinician and healthcare professional: 1) patient’s existing health and comorbidities 2) awareness of dementia 3) confidence 4) duration of patient contact 5) the screening tool 6) cost 7) disclosure 8) time 9) treatment and prognosis 10) stigma.

**Authors’ conclusions:** Attitudes and preferences to population-level screening for dementia are complex and multi-factorial. Screening for dementia in asymptomatic people raises complex issues around preference and choice for both clinicians and the public, and it is unclear from the literature what specific factors have greater magnitude of effect for promoting or reducing screening acceptance. Our findings however suggest that screening in current practice may not be acceptable either to the general public or health care professionals.

### #148 - Blockbuster diagnostics? The pharmaceuticalisation of the IVD industry.

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**Objectives:** In recent years pharmaceuticalisation has emerged as an alternative to medicalisation, shifting attention from the collective authority of the medical profession to the corporate power of the pharmaceutical industry. In the light of this turn to industry it is perhaps puzzling that the nascent sociology of diagnosis has thus far paid little attention to the influence of the diagnostics firms as “corporate engines of medicalisation”. For instance, the index to Jütel’s seminal monograph *Putting a name to it* contains 14 citations for the pharmaceutical industry but none for the diagnostics industry. To begin to address this notable lacuna, this paper describes a number of trends in the in vitro diagnostics (IVD) industry which are worthy of sociological analysis and which collectively might be understood as themselves constituting a form of pharmaceuticalisation, used here to describe the translation of pharmaceutical industry business practices to the IVD industry.

**Methods:** Draws variously on a decade of research on the molecular diagnostics sector in Europe and North America including 200+ semi-structured expert interviews with industry, clinicians, scientists, regulators, participation in industry conferences and regulatory policy work.

**Results:** Pharmaceuticalisation includes: the adoption of business models based on biomarker patents; the use of pharmaceutical marketing strategies, such as enrolment of Key Opinion Leaders, physician detailing and consumer advertising; the search for ‘blockbuster diagnostics’, and the corporatisation of R&D. Pharmaceuticalisation is clearly apparent in the molecular diagnostics sector, but it is not limited to it, moreover, much of molecular diagnostics sector operates with a traditional business model.

**Conclusion:** Pharmaceuticalisation is an interesting industry trend, but it is yet to become a dominant paradigm. Rather it is partial, contingent and contested; a process of uneven development about which much of the diagnostics industry remains ambivalent.
Natural history of Breast Cancers Detected in the Danish Mammography Screening Programme: a Cohort Study

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Objective: Analyses of the incidence changes during the introduction of organized mammography screening in Sweden and Norway 20-30 years ago suggested that the natural history of many screen-detected invasive breast cancers is spontaneous regression. In Denmark 20% of the population has been invited to mammography screening for 20 years, while the remaining 80% were invited to a first time screening in 2007-10. In Midt-Jylland women aged 50-69 years were invited to a prevalence screening in 2008-9 and then followed-up with biennial screening. Here we study the potential of regression of breast cancer in a population where organized screening has recently been introduced.

Methods: We compared cumulative breast cancer incidence in age-matched cohorts of women residing in Midt-Jylland before and after the initiation of public screening. A screened group including 120,500 women aged 50-64 years was followed for 6 years after the first invitation to the program. A staggered control group including 114,000 women in the same age range 50-64 years was also followed for 6 years; 4 years without screening and 2 years when they entered the screening program. Screening attendance was 77%. Data were obtained from the Danish Cancer Registry.

Results: Cumulative risks of breast cancer were 1897 (screened group) and 1175 per 100,000 (control group) after 4 years of follow-up (62% more cancers in the screened group). After 6 years follow-up and a prevalence screening of the control group, the cumulative cancer incidences were 2760 vs. 2417 per 100,000 women, respectively; RR=1.14; (95% CI, 1.08-1.20). The differences in cumulative rates were 722 and 343 per 100,000,000 women after 4 and 6 years.

Conclusions: About 50% of all incidence increase during the first 4 years with screening are cancers which normal fate is spontaneous regression within 2 years. Many of the remaining 50% may regress later.

A Systematic Review of the Psychological Harms of Screening: The Evidence We Need vs. the Evidence We Have

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Objectives. Systematic reviews for the US Preventive Services Task Force have found less high-quality evidence on psychological than physical harms of screening. To understand the general availability of evidence on psychological harms, we characterized the evidence for 5 screening services, noting gaps in the literature and making recommendations for future research.

Methods. We searched PubMed, Psychinfo, and CINAHL from January 2002 to December 2012 for articles reporting studies, of any research design, that assessed the burden or frequency of psychological harm associated with screening for 5 conditions: prostate and lung cancers, osteoporosis, abdominal aortic aneurysm (AAA) and carotid artery stenosis (CAS). We also searched for articles that estimated rates of overdiagnosis (a marker for unnecessary labeling). We included articles published in English and used dual review to determine article inclusion and to abstract information on study design, types of measures, and outcomes studied.

Results. Seventy-one articles assessing psychological harms met our criteria: 62% (44/71) concerned prostate cancer and 17% (12/71) concerned lung cancer. Evidence was scant for the other 3 conditions. The potential usefulness of the evidence was highly variable across screening condition. Overall, only about one-third of the articles used both longitudinal designs and condition-specific measures (ranging from 0% for AAA and CAS to 80% for lung cancer), which can provide the best evidence on harms. We found no articles for the non-cancer conditions that estimated rates of overdiagnosis.

Discussion. Evidence on psychological harms varied markedly across screening conditions in number and potential usefulness. We found important evidence gaps for all 5 screening conditions. The evidence that we have is inadequate in number of studies, and in research design and measures, to adequately characterize the psychological harms of these 5 screening services. Future research should focus more clearly on the evidence that we need for decision making about screening.
Overdiagnosis when monitoring chronic disease can be the detection of increased risk in patients who never go on to experience the predicted harm. In chronic kidney disease (CKD), current guidelines suggest annual monitoring of glomerular filtration rate (GFR) in at-risk groups, including people with diabetes. Those identified with progressive CKD should be offered renal ultrasound or specialist referral. However, due to high within-person standard deviation in eGFR (~5ml/min/1.73^2), changes in consecutive measurements may not represent true deterioration in renal function. Many people are therefore likely to be overdiagnosed, especially given the low rate of end-stage disease and the competing risks from other causes.

**Methods:** Using previously published estimates of kidney disease progression, we simulated a cohort of people with diabetes and micro-albuminuria undergoing annual monitoring. We estimated the number of people in which the observed change in eGFR over one year was > 5ml/min/1.73^2 and tracked their predicted true GFR up until their death.

**Results:** The total observed incidence of severely reduced renal function (stage 4 CKD or worse) was 4.8%, equivalent to a rate of 2/1000 person-years. In our simulation, 87% of people had at least one occasion in which eGFR declined by >5ml/min/1.73m^2. Of those identified as progressing in one year, 47% did not have progressive CKD and 47% had progressive CKD but died before reaching stage 4. Of those remaining, 4% progressed to stage 4, and 2% stage five.

**Conclusion:** The high within-person standard deviation in eGFR means that recommended methods to identify progressive CKD are inappropriate. Many people could be sent for investigation or specialist referral unnecessarily. Guideline recommendations for the detection of progressive kidney disease should take this into account.

**Overdiagnosis of borderline ovarian tumours in ovarian cancer screening: the UK Collaborative Trial of Ovarian Cancer Screening (UKCTOCS) experience**

**Objectives:** It has been suggested that in ovarian cancer screening, principal reason for overdiagnosis could be overdetection of primary borderline epithelial ovarian tumours (BOT) that may never present clinically in the lifetime of the woman. We explored diagnosis of BOT in the control(C) and screen(S) groups of the United Kingdom Collaborative Trial of Ovarian Cancer Screening (UKCTOCS).

**Methods:** Between April 2001 and October 2005, 202,638 apparently healthy postmenopausal women aged 50 to 74 were recruited from England, Wales and Northern Ireland and randomised to control(C, n=101,359) or annual screening(S, n=101,281) with either serum CA125 interpreted using previously published e algorithm(MMS; n=50,640) or transvaginal ultrasound(USS; n=50,639). Women were screened till Dec 2011. All are followed up through the ‘Risk of Ovarian Cancer’ algorithm(MMS; n=50,640) or transvaginal ultrasound(USS; n=50,639). Women were screened till Dec 2011. All are followed up through the ‘Risk of Ovarian Cancer’ (latest update Jan 2014) and postal questionnaires. An independent Outcomes Review Committee confirmed diagnosis of BOT.

**Results:** Between April 2001 and December 2012, 119 women were diagnosed with BOT. 33 presented clinically in the control group and 86 (50 USS; 36 MMS) were diagnosed in the screen group. 94.0% (47/50) and 63.9% (23/36) were screen detected in the USS and MMS arms respectively. There was an overrepresentation of the serous histological subtype (71%(61/86) S/36%(12/33) C) in the screened group while other subtypes were similar between the two arms (mucinous 22S/20C; endometrioid 3S/1C). Higher proportion (86.9% (53/61) S v. 58.3% (7/12) C) of serous BOTs were Stage I/II (p=0.078).

**Conclusions:** There was a doubling of the number of women diagnosed with BOT in the screen group compared to the control. Until mortality data is available, it is difficult to conclude whether this truly represents overdiagnosis or whether screen detection of BOT may have a mortality impact in view of stage difference and the fact that some of these tumours have been shown to progress to invasive ovarian cancer.
Interpretation through Hypostatization? Dealing with the challenge named Medically Unexplained Symptoms (MUS)

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The phenomenon named Medically Unexplained Symptoms (MUS) unquestionably represents a major challenge for the health services in our time. The response from the medical and psychiatric research community to this challenge mainly submits a “technicity” paradigm. Consequently, one attempts to clarify the supposed etiology involved by applying the bio-psycho-social (multifactorial) model; one tries to capture the supposed and almost incomprehensibly complicated mechanisms involved through Psycho-Neuro-Endocrino-Immunological (PNEI) modeling (e.g. allostatic load) and on the basis of counting symptoms; one composes symptom-clusters and creates new acronyms (such as CSS, BDD, SHC), which are supposed to clarify the non-clarified; one introduces systems medicine derived from systems biology, for managing unlimited amounts of data. Finally, one has provided the evidence basis, which secures a systematic and structured intervention, the panacea named cognitive behavioral therapy (CBT). In a fairly different context, our life-world, we find the patient who expects being received according to an “interpretative” paradigm. Although “being received, heard and understood” are the main issues for the suffering MUS-patient, his/hers way of thinking is influenced by a medicalized language and the prevailing “technicity” paradigm. Consequently, the patient is already part of what we consider a hypostatization-process (i.e. ascribing abstract elements independent reality). Thus, the patient both suffers – and worries. Finally, and in the midst of this extremely challenging landscape, we find the GP. How is he/she supposed to think? Is it at all possible to arrive at thinking? Given that the GP’s main task is not to keep the patient within medical paradigm - but rather to guide her or him out of it, this requires two central premises: first, to appraise experience based knowledge, and second, to rethink the theoretical basis of medicine.

Total health: The holistic overdiagnosis of Systems (P4) Medicine

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Genomic or “personalized” medicine has previously been proposed as a remedy for the shortcomings of population-based risk prediction algorithms which have been linked to overdiagnosis. However, genomic medicine has in turn been criticized as the most extreme form of overdiagnosis because it defines everyone as “at risk” and because the strategy of predicting phenotypes from genomes alone lacks predictive power and may therefore result in uncertainty and overtreatment. Now the concept of Systems Medicine (SM), the medical application of systems biology, is set to take what genomic medicine started to a new level. Its mainstream form, proposed as a new, primary care-centered strategy for medicine globally, is so-called P4 (Personalized, Predictive, Preventive and Participatory). Its proponents fully recognize the lack of predictive power in using genomes alone. SM is therefore proposed as being “personalized” in a new and “holistic” way: It considers patients as “wholes”, or dynamic systems. In practice, this means a) the “holistic” measurement of not only genomes, but virtually all molecular components as well as individual phenotypical and environmental data, and b) that these measurements are performed repeatedly or continually through life. The resulting billions of data-points are then proposed as “big data” raw material for computational models (“digital patients”) that enable risk prediction (“quantification of wellness”) and preventive “precision engineering” of health. In achieving this, P4 medicine is “participatory” in that people are envisioned as providing the necessary “billions of datapoints” themselves through self-quantification and an imperative of data-sharing. SM is proposed to solve the imprecision problems of population-based and genomic medicine and, as a result, to lessen overdiagnosis. However, we argue that it will likely entail a new extreme of “holistic” overdiagnosis and near-total medicalization through 1) more measurements 2) continual measurements over time 3) “do-it-yourself” risk-focus and 4) blurring of the sick-well boundary.
#166 - A qualitative study of GP attitudes towards discontinuing statins
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Medication adverse events are among the leading causes of death, disability and cost in healthcare. This suggests that a large number of patients are prescribed unnecessary medication. Discontinuing medication is one tool for addressing these problems. However, very little is known about discontinuing medication from a general practitioner’s perspective. Therefore the aim of this paper is to examine the examine general practitioner’s experience of and barriers to discontinuing medication.

I use statins as a case because they are one of the most widely prescribed drugs, affecting a large number of people, and there is considerable debate over who should be on a statin. The data consists of qualitative interviews with 24 Danish physicians and consultation observations in three general practices. The data was inductively coded and analysed thematically.

The analysis revealed that there are four different barriers in discontinuing medication: 1) prioritizing drugs to discontinue from a long medication list, 2) dealing with the ambiguity of worse health outcome due to discontinuation, 3) the issue of discontinuing another physician’s prescription and 4) the challenge of achieving shared decision making with the patient. Those GPs that reported discontinuing statins more often dealt with these barriers in similar ways. They were more willing to prioritise the most important medication for the patient. When unsure they more often dared to trial discontinuation in order to assess its clinical appropriateness.

They believed strongly in their own expertise in the patient and they proactively elicited the patient's experience of taking the statin.

These findings suggest that developing tools for supporting GPs in dealing with ambiguity, e.g. standalone guidance on discontinuation is crucial for overcoming the barriers to discontinuation.

#167 - Patients’ Knowledge about Screening and Overdiagnosis
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Introduction: Despite a growing discussion about overdiagnosis in the medical community, little research has examined patients’ knowledge of overdiagnosis in the context of preventive screening.

Objectives: To determine patients’ understanding of key screening concepts, including overdiagnosis, and examine differences across demographic groups.

Methods: We analyzed baseline data from 669 patients enrolled in a randomized controlled trial at four primary care practices in a North Carolina practice-based research network. Eight questions assessed knowledge about the definition of screening, false positives, false negatives, conditions for benefit (e.g. effective treatment), and the possibility of overdiagnosis and harm.

Results: Patients’ mean age was 66 (range: 50-85); 69% were white and 26% were black; 91% had at least some college education; and 79% had been previously screened for one of three conditions (i.e., prostate cancer, colon cancer, osteoporosis). Overall, only 11% of patients answered all questions correctly. 60% knew that “some diseases detected by screening won’t cause any problem in a person’s lifetime”; 61% knew that “in some cases screening can lead to treatment that is not necessary.” 50% of patients knew that “screening can only decrease your chances of getting sick or dying if you live long enough for treatments to work” and 52% thought that “screening never harms anyone.” The mean number of correct answers was 5.43 (out of 8). Knowledge was meaningfully (>1 item) lower among black than white patients (4.46 vs. 5.84 correct; p<0.001), those with a high school education rather than professional degree (4.43 vs. 5.91 correct; p<0.001), and those with interrupted rather than continuous health insurance coverage (3.82 vs. 5.47 correct; p=0.004).

Conclusions: Patients may lack critical knowledge about key screening concepts, including overdiagnosis and the possibility of harms from screening. Future studies should examine the impact of inaccurate screening knowledge and explore possible health education strategies.
#168 - Health economics of screening programmes: failing to include harms from overdiagnosis and overtreatment?

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**Background:** Over diagnosis and overtreatment refer to cases which if not investigated and treated would not have caused harm. This differs from “false positives” in that overtreatment applies to “true positives”.

**Aim:** to review the economic evaluations of 5 key adult UK screening programmes with an emphasis on the extent to which harms to do with overtreatment were included, and the extent to which their inclusion affected the results.

**Methods:** identification and review of key economic evaluations and systematic reviews of 5 UK adult screening programmes: (breast cancer, bowel cancer, abdominal aneurysms, cervical cancer, diabetic retinopathy).

**Results:** harms were either not included or only cursorily in each of the five programmes. The scope and extent of harms from overtreatment varied considerably by disease, being highest with screening for breast cancer and abdominal aortic aneurysm screening. More recent reviews of some programmes indicate that while inclusion of harms would have increased the relevant incremental cost effectiveness ratios, they would not have exceeded NIcE’s threshold of £30k/QALY. Results were sensitive to discount rates.

**Discussion:** economic evaluation of screening programmes need to explicitly include potential for harm due to overtreatment.

**Conclusion:** economic evaluation of screening programmes has largely failed to include the potential for harms due to overtreatment

#169 - Information about the benefit and harms of mammography screening provided to women

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**Background:** Presenting objective information about the benefit and harms of mammography screening to women invited to screening is recommended so that they can make informed decisions.

**Aims:** To make an international comparison of the quantitative information presented to women to assist with informed decision making about screening for breast cancer.

**Methods:** We conducted a systematic search for information booklets on mammography screening for breast cancer for women aged 50 to 75 years that were written in English. We rated them against the IPDASi qualifying criteria for decision aids and compared key quantitative outcomes presented to women. Information included estimates of mortality benefit, risk of overdiagnosis, false positives, and the ratio of benefit to harm.

**Results:** 7 English language information booklets for mammography screening were identified that met the IPDASi qualifying criteria for decision aids. Different event rates were used within and between booklets. Risk estimates of the benefits and harms of mammography screening varied internationally, though most were based on the same international estimates derived from a meta-analysis of 7 randomized control trials. These estimates were partially dependent on the population, screening strategy and time frame presented. Screening strategies included biennial, triennial and “regular screening”. Time frames ranged from 10 to 25 years. The choice of risk denominators ranged from 100 up to 2000 women screened. Ratios of benefit to overdiagnosis were as low as 1:1 and as high as 1:10. Cumulative estimates of false positives, where provided, ranged from 200 up to 529 women.

**Conclusions:** The information presented to women in different information booklets varies between countries, and, where it can be assessed, within country. Reasons for variations warrant exploration.
Making sense of diagnostic uncertainty after newborn screening for cystic fibrosis
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Objectives: Newborn screening (NBS) has been one of the most successful population-screening initiatives, yielding profound clinical benefits through pre-symptomatic diagnosis and treatment of infants with rare conditions. For most cystic fibrosis (CF) screen positive cases, diagnostic testing differentiates those with and without disease; however for some, the nature of the diagnosis remains uncertain and surveillance proceeds indefinitely. We explored the family experience of diagnostic uncertainty arising from population screening for CF in newborns.

Methods: Drawing from a mixed methods prospective cohort study of screen positive and screen negative control infants recruited through Ontario’s NBS program, we report on qualitative interviews and surveys with parents of children who received inconclusive results for CF after NBS and follow-up testing. We used qualitative description and descriptive statistics to analyze the data.

Results: We conducted 22 interviews with 17 parents of infants with uncertain diagnoses, ranging from 3 months - 4 years in age. Five parents completed interviews at two time-points, separated by one year.

We learned that parents gain support through research-based monitoring, but struggle with the meaning of an uncertain diagnosis in the face of an apparently healthy newborn, worry about their infant’s health-related vulnerability, and fear labeling and over-medicalization from continued medical surveillance. Descriptive statistics on 17 survey respondents to date suggest lower levels of anxiety (X uncertain=32.81; X true +ve=45.33; p=.01) but similar levels of vulnerability compared to parents of true positive infants (X uncertain=7.76, X true +ve =7.44; p=.88).

Conclusion: The experience of diagnostic uncertainty is deeply challenging for some families, particularly in the early newborn period. As screening protocols continue to evolve, these results should inform decisions by NBS programs and clinical teams about how to balance the benefits and risks of screening and how to optimize the support and education offered to families who receive inconclusive results.

No Practitioner of Medicine Should Be without a Sphygmomanometer: One Hundred Years of Hypertension
Stephen Martin
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Hypertension is an iconic disease in modern medicine. When the condition is moderate or severe, effective pharmacologic treatment can have a positive impact. But hypertension also represents a set of characteristics that make it susceptible to diagnostic creep: a highly prevalent, largely asymptomatic condition marked for intervention by a wide set of powerful institutions – medical specialties to governments, volunteer medical associations to insurers; blood pressure itself is easily (though often poorly) measured; and improvements in this surrogate marker are readily conflated with improvements in health.

Over a hundred years ago, an influential report on hypertension and its complications concluded that “the height of the blood-pressure [is] a minor factor in determining the expectancy of life.” This flawed interpretation rightly evolved over the course of the twentieth century. Actuarial studies and meta-analyses have showed vascular mortality to be directly correlated with a blood pressure as low as 115/75 mm Hg. This epidemiologic correlation, however, has led to a related set of therapeutic excesses over the past half century. Beginning with the introduction of Diuril [chlorothiazide], virtually every recommendation for hypertensive treatment preceded adequate trials. While agents did lower blood pressure, later trials often showed no health benefit or even harm (e.g., nitrates, alpha-blockers, certain calcium channel-blockers). By then, however, clinical practice had developed tradition and inertia. By providing a compelling introduction to the history of hypertension, this presentation provides insight into a set of circumstances and rationales that repeatedly enable overdiagnosis and related overtreatment.
Communication style and models of decision-making within the clinical consultation: contributors to overdiagnosis?

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Overdiagnosis may be driven by factors both within and outside the doctor-patient consultation. Those outside the consultation setting are now receiving due attention. However there are factors intrinsic to the consultation that deserve further examination as important potential drivers of overinvestigation, overdiagnosis, inappropriate treatment and patient harms. Since the consultation is the final common pathway onto which all the external drivers converge, its specifics have the capacity to moderate, amplify or otherwise skew their effects.

We will examine the doctor-patient relationship as it is played out in consultations, and how elements of it may shape overinvestigation or overtreatment. Models of doctor-patient communication and decision-making will be reviewed and possible mechanisms relevant to overdiagnosis discussed. We consider how the ideal of shared decision-making between a highly informed, independently researched consumer/patient and a health professional/doctor may, paradoxically, impede good practice and contribute to overdiagnosis and patient harms.

Psychopathology and dynamics within the doctor-patient dyad - their potential as drivers of overdiagnosis.

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Overdiagnosis stems from biases in decision-making that may be driven by factors both within and outside the doctor-patient consultation. Those outside the consultation setting are now receiving due attention. However, there are factors intrinsic to the consultation itself that deserve further examination as important potential drivers of over investigation, overdiagnosis, inappropriate treatment and patient harms. Since the consultation is the final common pathway onto which all the external drivers converge, its specifics have the potential to diminish, enhance or otherwise skew their effects.

As psychiatrists, we have examined the patient-doctor consultation and identified potential doctor-related, patient-related and dyadic (ie pertaining to the doctor-patient relationship and communication) elements that may substantially bias decision-making about investigation, diagnosis and treatment. Specific personality traits or psychopathology within either party has the potential to contribute. We consider how the presence of narcissism, excessive obsessiionaly, depression, anxiety or a sense of inadequacy in the doctor might drive overinvestigation and overdiagnosis, and the mechanisms whereby any of the same attributes in the patient may act similarly. We examine how the mismatch or dynamic interaction between specific characteristics in each of the two players might further contribute.

PREVENTING OVERDIAGNOSIS

Winding back the harms of too much medicine
#176 - A Population-Based Nationwide Cross-Sectional Study on Preventive Health Services Utilization in Portugal—What Services (and Frequencies) Are Deemed Necessary by Patients?

Carlos Martins

Family Medicine Unit, Social Sciences and Health Department of the Faculty of Medicine of Porto, Porto, Portugal

**Objectives:** Most of the strategies to induce a more rational use of preventive health services are oriented to the medical side of the doctor-patient relationship. However, the consultation model has changed, and patients now have a more important role in medical consultation. The aim of this study was to assess which healthcare services are deemed necessary, and with what frequency, by adults from the general Portuguese population.

**Methods:** Design: Population-based nationwide cross-sectional study

Setting: Portuguese population

Participants: One thousand Portuguese adults, surveyed by computer-assisted telephone interviewing and selected by a stratified cluster sampling design.

Measurements: Proportions and population prevalence estimates were determined for each healthcare service, taking into account whether respondents considered them necessary, and with what frequency.

**Results:** Respondent ages ranged between 18 and 97 years, and 520 of 1000 (52%) respondents were women. Among Portuguese adults, 99.2% (95% confidence interval (CI): 98.5 to 99.6) believe that they should undergo general routine blood and urine tests, to be repeated every 12.0 months on average (95% CI: 11.4 to 12.6); 87.4% (95% CI: 85.3 to 89.3) of the respondents reported having actually performed these tests. Of the 15 services surveyed, 14 were considered periodically necessary by more than 60% of respondents. Among the respondents, 37.7% (95% CI: 34.5 to 41.1) reported using healthcare services by their own initiative.

**Conclusions:** The majority of Portuguese adults believe that they should utilize a great number of healthcare services, on a nearly annual basis; most actually follow this schedule. Our findings indicate a tendency towards the overuse of resources. Adequate patient-oriented strategies regarding the use of medical tests and preventive interventions—with appropriate information and discussion of risks and harms—are urgently needed, and crucial for achieving a more rational use of healthcare services and for preventing the consequences of over-testing.
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