PREVENTING OVERDIAGNOSIS

Winding back the harms of too much medicine

2015 ORAL ABSTRACTS

0002 - **Recognizing Intervention Bias in the Practice of Medicine**

Andrew Foy, Edward Filippone

Bias is an inclination to present or hold a partial perspective at the expense of possibly equal or more valid alternatives. In the field of medicine, intervention bias or commission bias, describes the bias on the part of clinicians and the medical community to intervene, whether it is with drugs, diagnostic tests, non-invasive procedures, or surgeries, when not intervening would be a reasonable alternative. We sought to prove the existence of intervention bias in medicine by constructing a series of conditional arguments that go as follows: If intervention bias exists in medicine, then condition x will occur; condition x occurs therefore, intervention bias exits. Rigorous evidence exists to support the following four conditions and therefore, intervention bias exists: (1) clinicians, when presented with the option to intervene or not, more often choose interventions when not intervening would be a reasonable choice, (2) clinicians will adopt futile and potentially harmful interventions based on scientific theory alone, observational data, inappropriately designed trials and/or those using only surrogate endpoints, (3) interventions will persist on an individual and systemic level after their benefit has been seriously challenged or disproven, and (4) publication bias will exist in support of intervention. Potential causes for intervention bias include self-interest bias, confirmation bias, waning clinical skills, fear of malpractice, moral hazard from third-party coverage, and over-reliance on patient satisfaction surveys. The recognition of intervention bias in medicine is critically important given today's emphasis on providing high-value care and reducing unnecessary interventions that lead to overdiagnosis.

0003 - **Cardiac Stress Testing is Associated with No Benefit and Significant Overdiagnosis of Coronary Disease in Emergency Department Patients with Chest Pain: A Comparative Effectiveness Study**

Andrew Foy, Guodong Liu, William Davidson, Christopher Sciamanna, Douglas Leslie

Objective: To compare chest pain evaluation pathways based on their association with downstream testing, interventions, and outcomes for patients presenting to emergency rooms.
Methods: Retrospective analysis of health insurance claims data for a national sample of privately insured patients over the period January 1, 2011 to December 31, 2011. Individuals were selected who presented to the emergency department (ED) with a primary or secondary diagnosis of chest pain and were classified as either having a cardiac stress test or not. The main outcome measures included the proportion of patients in each group who received a cardiac catheterization, coronary revascularization procedure, future stress test, or who were hospitalized for an acute myocardial infarction (MI).
Results: In 2011 there were 693,212 ED visits with a primary or secondary diagnosis of chest pain which accounted for 9.2% of all encounters. After excluding patients with an MI or other obvious cause of chest discomfort, 421,774 patients were included in the final analysis and the mean length of follow-up was 190 days. Overall, the percentage of patients hospitalized with an MI during follow-up was very low (0.33%) and did not differ between those who had a cardiac stress test and those who did not (AOR, 0.99 [95% CI, 0.89-1.11]). However, patients who had a stress test were significantly more likely to receive cardiac catheterization (AOR, 1.76; [95% CI, 1.71-1.81) and revascularization procedures (AOR, 1.60 [95% CI, 1.51-1.70) as well as future stress tests (AOR, 2.01 [95% CI 1.97-2.05]).
Conclusions: Patients who present to the ED with chest pain and do not have a MI are at low risk of experiencing one in the near future. Contrary to current beliefs and practice standards, stress testing is not associated with lower risk of future MI but is associated with the overdiagnosis of coronary disease in this patient population.

0008 - **Overdiagnosis of Infant Swallowing Abnormalities by Videofluoroscopic Swallow Studies**

Eric Coon, Rajendu Srivastava, Gregory Stoddard, Sheena Reilly, Christopher Maloney, Susan Bratton

Background: While swallowing abnormalities are frequently detected among infants tested with a videofluoroscopic swallow study (VFSS), it is unknown if infants are benefiting from this diagnosis. The present study seeks to measure the degree to which: (1) infant swallowing abnormalities are associated with increased risk of subsequent acute respiratory illness (ARI) and (2) ARI risk is moderated by commonly performed interventions. Beliefs in (1) and (2) are the purported benefits of diagnosis and drive rising use of VFSS.
Methods: Retrospective cohort study of all infants (< 12 months) tested with VFSS (outpatient and inpatient) at a children's hospital between January 1, 2010 -2012. Hospital ARI encounters (emergency, observation, inpatient) in a 22 hospital integrated health care delivery system, between the first VFSS and age 3 years, were measured. ARI was

defined by ICD-9 codes: bronchiolitis (466), asthma (493), pneumonia (480-486), and aspiration pneumonia (507). Time to first ARI was modelled with Cox regression, while total episodes of ARI were modeled with Poisson regression.
Results: Overall, 199/576 infants demonstrated oropharyngeal aspiration (OPA+). Feeding interventions were recommended for 39%, 65%, and 93% of OPA-, intermediate, and OPA+ infants, respectively. Infants experienced an average of 1-2 ARIs during follow up and 60% of infants did not receive any hospital care for an ARI. None of five swallowing abnormalities were significantly associated with decreased time to first ARI or total number of ARIs. No intervention was associated with decreased risk for ARI.
Conclusions: Diagnosed swallowing abnormalities were not associated with an increased risk of subsequent ARI in the first 3 years of life and commonly performed interventions for swallowing abnormalities were not associated with a decreased risk of ARI. The clinical benefit to diagnosing and intervening upon abnormal infant swallowing based on VFSS testing is unclear, making it high risk for overdiagnosis.

0009 - **Is the origin of unwarranted variation in the primary health doctor`s office? (variations at a local municipal level in rural Norway).**

Hans Johan Breidablik

Modern medicine has the legitimacy for great and potential harmful interventions. An exaggerated belief in the benefit combined with a general opinion that more is always better are drivers for overdiagnosis/-treatment. Few reflects over Donabedians optimal level, and the fact that harms can outweigh the benefits. One important approach to this field is by presenting variation, and several "Atlases" have been established inspired of the pioneers in Dartmouth. In Norway a national atlas presenting regional variations is established this year. Variations here are probably reflecting different cultures especially in specialized hospital medicine, but the role of primary health doctors in their role as gatekeepers (input) to the specialists needs to be scrutinized.
We therefore looked at variations at a more local level in the Norwegian rural county of Sogn & Fjordane, (109 000 inhabitants) spread over 26 small municipalities. Here we looked at the ENT-procedures tonsillectomies and hearing-aids, the psychiatric diagnostics of ADHD and the rates of admissions from the primary health doctors to the local hospital trust (Helse Førde). Norwegian primary health doctors are responsible and have a coordinator role for an unselected segment (typically around 1200) of the local population in the municipalities, and many of these have only one sole local medical office with a few doctors in each.
We find a clearly greater variation of admissions to hospitals among individual doctors than between the 26 municipalities, indicating different cultures also among doctors in the same office. The variation of diagnoses and procedures are also greater at the local level than at the regional, and also the geographical distance to the institution seems important. There is a significant correlation between level of admissions and diagnosed patients.
Our conclusion is that this is a treat to the strong principle of equal right to health services in Norway and the risk of both over- and undertreatment.

0011 - Overdiagnosis or real patient benefit: How to evaluate new diagnostics that challenge existing disease definitions

Joris de Groot, Christiana Naaktgeboren, Johannes Reitsma, Karel Moons

A major contributor to the rising problem of overdiagnosis, with the subsequent risk of overtreatment, is the development of highly sensitive diagnostic tests that challenge prevailing disease definitions and reference standards. Examples include biomarkers like troponin for diagnosing myocardial infarction and high-resolution imaging techniques like PET-CT for diagnosing various tumors and their metastases. On-going technological advancements in medicine will only further increase the development of tests that detect new abnormalities or in earlier stages.
The prevailing standard diagnostic accuracy approach, in which a new diagnostic test is being compared to the current best reference standard (i.e. the method or combination of methods that in current practice is the best way to establish whether the target disease is present or absent), is not well suited to evaluate the actual patient benefit of new highly sensitive tests. The new test may be better than the existing reference standard.
The methodology for assessing the performance of such highly sensitive diagnostic tests that challenge prevailing reference standards should catch up and keep pace with present-day technological developments. We will describe why prevailing diagnostic study approaches are unfit to make the judgement of potential overdiagnosis or overtreatment by the new test, and summarize various research designs and analysis approaches to meet these challenges.

0014 - BREAST CANCER OVER-SCREENING AT AN ACADEMIC MEDICAL CENTER IN LATIN AMERICA

Maria Salgado, Karin Kopitowski, Valeria Vietto, Mariela Barani, Sergio Terrasa

Context: Overuse of screening mammography and its consequence, overdiagnosis, can lead to aggressive treatments. Breast cancer screening in the general asymptomatic population is not recommended in women younger than 40 years old, and it is controversial among women 40 to 49 years old.
Objective: To report the proportion of mammograms that were performed for breast cancer screening among women younger than 50 years old enrolled in a private Health Insurance Plan in Buenos Aires, Argentina.
Methods: Cross-sectional observational study. Among women aged 18 to 39 and 40 and 49 years old enrolled in a private health plan, those with a mammogram made in 2012 were identified. Of them, 200 in each age group were randomly selected. Their medical charts were reviewed to determine if the mammography was performed for breast cancer screening purposes.
Results: During 2012, 1533 women aged 18 to 39 years old had a mammogram conducted. Of them, 200 charts (13.0%) were reviewed, 96 of which were determined to have a screening mammography (overuse proportion: 48%, 95% CI 40.9%-55.2%). A second study or procedure was conducted as a consequence of this mammogram in 11 patients (11.5%).
Among women aged 40 to 49, 4432 had a mammography performed during 2012. The chart of 199 of these women

were reviewed. The mammogram was conducted for screening purposes in 105 cases (overuse proportion: 52.8%, 95% CI 45.6%-59.9%). A follow-up study or procedure was performed in 15 women (14.3%) as a consequence of this mammography.
To date, a diagnosis of cancer (in situ or invasive) has not been made as a result of these screening mammograms.
Conclusions: roughly half of women in each group had a screening mammography. This high over-screening proportion is particularly concerning among the younger women and highlights the difficulty physicians may have to adopt the most updated guidelines.

0015 - **The overdiagnosis of Attention-Deficit/Hyperactivity Disorder: An ideological perspective or cause for concern?**

Sheelah Mills, Kevin Ronan

Objectives: Australian government databases recorded a 300% increase in methylphenidate prescriptions between 2002 and 2009. The appropriateness of such rates may in part be determined by an individual's perspective. Proponents of ADHD believe the increase is due to better identification and improved medication. Critics consider ADHD to be overdiagnosed and overmedicated. The aim of this paper is to bring clarity to the opposing views by identifying the scientific underpinnings of the disorder.
Methods: An International Consensus Statement that was released in 2002 with 86 supporting signatories is examined. The statement is unequivocal about the nature of ADHD being a serious disorder in need of diagnosis and treatment. Claims in a subsequent paper state that ADHD has been verified as a disorder via Wakefield's Harmful Dysfunction (HD) analysis. As such a failed biological and evolutionary mechanism relative to ADHD has been identified. In an attempt to verify this claim, the 1997 theory of the first signatory Russell Barkley is examined. This currently has 5167 citations indicative of widespread acceptance as a plausible theory.
Results: Barkley attributes his model of dysfunction to the work of the late Jacob Bronowski; specifically a theory examining the differences between animal and human language. This theory is not listed on any scholarly data base and by Bronowski's own admission is the view of an amateur. Barkley's linking of everyday behaviours to Bronowski's work is not supported, nor is his claim that Bronowski attributed these behaviours to the prefrontal cortex. As such no failed biological mechanism is identifiable.
Conclusions: Prescription rates relative to ADHD may be partially due to the belief that ADHD is a validated disorder. This analysis suggests otherwise. Several of the signatories of the consensus statement have undeclared conflicts of interest, raising questions as to the real purpose of the statement.

0022 - **Selective cutoff reporting in studies of diagnostic test accuracy of depression screening tools: Comparing traditional meta-analysis to individual patient data meta-analysis**

Brooke Levis, Andrea Benedetti, Brett Thombs

Background: Selective outcome reporting in clinical trials is well understood, but has not been assessed systematically in studies of diagnostic test accuracy, where authors often report results for a small range of cutoffs around data-driven "optimal" cutoffs maximizing sensitivity and specificity.
Objectives: To compare traditional meta-analysis of published results to individual patient data (IPD) meta-analysis of results from all cutoffs, to: (1) assess the degree to which selective cutoff reporting exaggerates accuracy estimates, and (2) identify patterns of selective cutoff reporting.
Methods: Bivariate random-effects models were used to compare results of traditional and IPD meta-analysis, using studies included in a published meta-analysis of the Patient Health Questionnaire-9 (PHQ-9) depression-screening tool (Manea et al., CMAJ, 2012).
Results: 13 of 16 primary datasets were obtained. For the "standard" cutoff of 10, most studies (11 of 13) published accuracy results. For all other cutoffs, only 3-6 of the 13 studies published accuracy results. For all cutoffs, specificity estimates in traditional and IPD meta-analyses were within 2%. Sensitivity estimates were similar for cutoff 10, but differed by 5-15% for all other cutoffs. In samples where the PHQ-9 was poorly sensitive, authors reported results for cutoffs around the low optimal cutoff. In samples where the PHQ-9 was highly sensitive, authors reported results for cutoffs around the high optimal cutoff. Consequently, in the traditional meta-analysis (but not in the IPD meta-analysis), sensitivity increased as cutoff severity increased for part of the range of possible cutoffs. Comparing cutoff 10 across all studies, sensitivity was heterogeneous ($\tau^2 = 1.95$). Comparing optimal cutoffs, however, sensitivity was more homogeneous ($\tau^2 = 0.68$), but cutoff values ranged from 5-15.
Conclusion: Selectively reporting well-performing cutoffs in small samples leads to biased estimation of accuracy in traditional meta-analyses. To reduce bias in meta-analyses, primary studies should report accuracy results for all cutoffs.

0025 - Initiation of statin therapy for primary prevention according to gender and age: Overprescribing in postmenopausal women with 'hypercholesterolemia'?

Helle Wallach-Kildemoes

Objectives**:** Statins are among the most prescribed medications globally and are increasingly used to prevent cardiovascular disease (CVD) in people without CVD or diabetes ('primary prevention').
The objective was to
1) explore incident statin-prescribing for primary prevention according to gender and age
2) estimate the fraction of statin prescribed for primary prevention.
Methods: All Danish inhabitants were followed for incident statin use in the individual-level registries during 2005-2009 - provided full historic information since 1996 (N=4,424,818). Eight register-proxies (in-hospital and prescription information) for prescribing indications were defined, covering secondary prevention (a range of CVD condition), diabetes and primary prevention, i.e. primary hypertension or presumably hypercholesterolemia as only risk-factor.
Poisson regression analysis was applied to explore gender differences (men reference-group) in incident statin-prescribing for primary prevention, calculating incidence rate ratios (IRR) with 95% confidence intervals (CI). The age

adjusted analyses were stratified into ages below and above 65.
Results : Among individuals aged below 65 with primary hypertension prescribing incidence was lower in women than in men (0.73; 0.72-0.74), but at ages above 65 the incidence was higher in women (1.11; 1.09-1.14). In individuals with hypercholesterolemia as only risk factor, the incidence was higher in women in both age strata, but most pronounced at aged 65+ (1.36; 1.32-1.40). Among incident statin users aged 55-64 years, the proportion being prescribed for statin for primary prevention was 60% in women and 46% in men. For those aged 85+, the percentages were 13% in women and 7% in men.
Conclusions: The higher incidence of statin prescribing in healthy postmenopausal women compared to same-aged men may be a consequence of the increasing cholesterol levels around menopause, although the evidence supporting in this group is inconclusive and the CVD-risk is lower in women. In light of available evidence on both beneficial and harmful effects, the observed statin-prescribing pattern indicates overprescribing.

0027 - Small Renal Masses Discovered on Low-dose CT Scans of the Thorax in the National Lung Screening Trial (NLST)

Paul Pinsky, Barbara Dunn, Barnett Kramer, David Gierada, P. Hrudaya Nath, Lincoln Berland, Reginald Munden

Given the wide variation in aggressiveness of renal cell carcinomas, any increase in the use of CTs with imaging that encompasses the kidney is likely to dip into the reservoir of preclinical lesions at the indolent end of this spectrum. This supposition is supported by evidence for increasing renal cell carcinoma (RCC) incidence in the face of stable mortality (Welch 2010), strongly suggestive of overdiagnosis. Increasing incidence, in turn, is associated with upward trends in use of cross-sectional imaging and improvements in contrast resolution, which unearth clinically asymptomatic lesions, often unrelated to the primary purpose of the examination. Small renal masses, comprising a reservoir of preclinical lesions, are commonly discovered as "incidentalomas" on abdominal CT scans. We hypothesized that other regionally focused imaging, specifically low-dose CTs (LDCTs) of the thorax, which on average encompass the upper 30% of the kidney axis, may contribute to the rising numbers of renal findings. Specifically, we examined incidental findings from the LDCT arm of the National Lung Screening Trial (NLST). The NLST showed an approximately 16% lung cancer mortality reduction in high-risk current and former smokers ages 55-74 at enrollment with LDCT compared to chest X-ray. LDCT arm subjects in NLST received 3 annual LDCT screens. NLST screening forms denoted one category of non lung-cancer related incidental findings generically as "abnormalities below the diaphragm" (ABD). Among 75,125 LDCT screens in 26,455 subjects, 4.1% had an ABD recorded. However, among those screens followed within one year by a RCC diagnosis (n=46), 39% had an ABD recorded ($p < 0.0001$). This demonstrates the potential of LDCT to detect RCC. With likely future increase in LDCT usage, based on recently promulgated guidelines, this may increase RCC diagnosis and as a result RCC overdiagnosis.

0028 - **W(h)ither expertise: choosing wisely in brain imaging**

Peter Whitehouse

Choosing Wisely ® is a patient and provider education series developed in North America about selecting diagnostic tests for various conditions. The goal is to avoid unnecessary, potentially expensive and dangerous testing. The involved professional and consumer groups in America and Canada were different leading to overlapping outcomes and both countries addressed older patients. The Canadian Geriatrics Society and American Geriatrics Society recommendations both focus on avoiding unnecessary testing and treatments in people with dementia, including the use of tranquilizers and feeding tubes. Several professional groups jointly promoted avoiding neuroimaging in uncomplicated headache. The Society of Nuclear Medicine and Molecular Imaging (but not any clinical society and only in the American process) developed guidelines asserting "Don't use PET imaging in the evaluation of patients with dementia unless the patient has been assessed by a specialist in this field." They state "without objective evidence of dementia, the potential benefit of PET is unlikely to justify the cost or radiation risk. Dementia subtypes have overlapping patterns in PET imaging. Clinical evaluation and imaging often provide additive information and should be assessed together to make a reliable diagnosis and to plan care. For β-amyloid PET imaging, it is not currently known what a positive PET result in a cognitively normal person means; this method is not established for an individual prediction."
So is it wise to have a guideline about neuroimaging diagnostic tests that only belong in research? Is it even acceptable to have such a test if you see a "specialist?" Who gets to define specialist? Is this effort of a neuroimaging and molecular diagnostic society actually subtle marketing towards the premature introduction of research in the clinical space? In Choosing Wisely how do we evaluate and respond to the conflicts of interests of individual providers and professional societies?

0030 - A Checklist for modifying disease definition: a method to reduce overdiagnosis

Jenny Doust, Per Olav Vandvik, Reem Mustafa, Robyn Ward, Rita Horvath, Lubna Al-Ansary, Patrick Bossuyt, Holger Schünemann, Allen Frances, Ina Kopp, Amir Qaseem, Laragh Gollogly, Paul Glasziou

Objectives: A recent study has highlighted that guideline writers generally widen disease definitions, causing ever increasing proportions of the population to be labelled as unwell. Our objective was to develop a checklist of issues and guidance for guideline writers and others to consider prior to modifying a disease definition.
Methods: We assembled a multi-disciplinary, multi-continent working group of 14 members, including members from the Guidelines International Network, GRADE, and WHO. We undertook a 5-step process to develop the checklist: 1) a literature review of issues to be considered; 2) a draft outline document; 3) a delphi process of feedback on issues; 4) a 1-day face-to-face meeting and 5) further modification of the checklist.
Results: The literature review identified 12 potential issues to be considered when modifying disease definitions. From these, we developed a 7-item checklist, since expanded to 8 items. The checklist includes an explanation of each item and the types of evidence that would be required prior to modifying a disease definition. The use of the checklist is illustrated with an analysis of a recently proposed change in the definition of gestational diabetes mellitus.

Conclusions: We propose that the checklist be used by guideline committees and others prior to modifying disease definitions, and that the checklist be piloted and validated by groups developing new guidelines.

0031 - **The early detection epidemic in health care**

Bjørn Hofmann, John-Arne Skolbekken

Background: One of the driving forces behind overdiagnosis is the unreflected eager to detect diseases early. No doubt, early detection has potential benefits. However, they seem to be hyped compared to the corresponding risks, such as overdiagnosis and overtreatment.
Objectives: The objective of this study is to investigate the extension and content of the hype of early detection and the awareness of potential harms.
Method: Literature search in PubMed for "early detection" (and synonyms) from 1940-2014. These searches were compared to and combined with searches for "benefits" (and synonyms) and "harms" (and synonyms).
Results: While there were 368 articles discussing "early detection" 1940-9 there were 130997 in 2000-9 and 120645 2010-14. That is 1253, 20181, and 25246 per million registered publications respectively. That is an over 4000% increase per year from the 1940s till the 2010s (per million registered publications). Of those articles discussing the benefits of early detection there is an increase from one per million registered publications in the 1950s till 263 per million publications in 2010-4. Articles discussing the harms of early detection increased from one per million publications in the 1950s to 160 per million registered publications in 2010-4. Articles discussing both benefits and harms have increased from 0,7 per million publications during the 1990s till 6,5 per million registered publications during 2010-4.
Conclusion: There has been an exponential increase in number of publications about "early detection." Twice as many articles discuss the benefits as discuss the harms. However, there has been a recent increase in the numbers of articles discussing both benefits and harms. The bias of benefits may be diminishing, as awareness of harms of early detection is increasing.

0032 - **Size of breast cancers and level of overdiagnosis with breast screening in Denmark**

Karsten Juhl Jørgensen, Peter C. Gøtzsche, Mette Kalager, Per-Henrik Zahl

Background: To provide benefit, breast screening must reduce the incidence of advanced cancers. Denmark has a unique control group as organised breast screening was only offered in 20% of the country through 17 years.
Methods: Incidences of breast cancers up to 20mm (non-advanced) and above (advanced) were obtained from the Danish Breast Cancer Group and the Danish Health and Medicines Authority for 1980 to 2010. Screening is offered between ages 50 to 69 years but covered only 20% of the Danish population in this age group from 1991 to 2007.
We used Poisson regression analyses to compare incidence rates of non-advanced and advanced cancers in screening and non-screening areas. We quantified overdiagnosis using two methods. One compared incidence of advanced and non-advanced cancers in the age group 50 to 84 years; the other considered trends in incidence for the age-groups 35-49, 50-69, and 70-84 years. Both methods compared screening and non-screening areas.
Findings: Accounting for differences between regions unrelated to screening, screening was not associated with a declining incidence of advanced cancers. As expected, the incidence of non-advanced cancers increased; the hazard ratio was 1.50 (95% CI 1.45 to 1.55) compared to the pre-screening period. There was no clear compensatory drop in women above the screening age, and using our first method, 270 invasive breast cancers and 180 ductal carcinoma in situ (DCIS) lesions were overdiagnosed in Denmark in 2010. The overdiagnosis was 24.4% (including DCIS) and 14.7% (invasive cancers only) using the first method, and 45% (including DCIS) using the second method and the observed incidence for women aged 50 to 69 years in non-screening areas as the denominator.
Interpretation: Breast screening did not reduce incidence of advanced breast cancer, but led to substantial overdiagnosis; one in three of the cancers and DCIS in the screened age group were overdiagnosed.

0037 - Preoperative Testing Prior to Low-risk Surgical Procedures

Kyle Kirkham, R. Sacha Bhatia, Duminda Wijeysundera, Andreas Laupacis, Jack Tu, Michael Schull, Ciara Pendrith

Objectives: There is growing concern regarding increasing utilization of low value health care services. We assessed temporal trends, explanatory factors, and institutional and regional variation in the utilization of preoperative tests prior to low-risk surgical procedures.
Methods: Using linked population-based administrative databases, we identified patients aged 18 years and older who underwent low-risk procedures between 2008/09 and 2012/13 in Ontario, Canada. We assessed receipt of four preoperative tests within 60 days before procedure index date: electrocardiography, echocardiography, cardiac stress test, and chest X-ray. Patient- and institution-level factors associated with receipt of preoperative testing were assessed using hierarchical logistical regression models.
Results: We identified 1,546,223 patients undergoing 2,224,070 procedures (40.1% endoscopy, 34.2% ophthalmologic surgeries, 25.7% low-risk surgeries) at 137 institutions. Electrocardiograms and X-rays were done prior to 31.0% and 10.8% of procedures, respectively. Preoperative echocardiograms and stress tests were less frequent (<3%). Across institutions, the frequency of preoperative electrocardiography ranged from 3.4% to 88.8%. Preoperative electrocardiography and X-ray were significantly associated with increasing age, procedure type, and preoperative anesthesia consultation (electrocardiography odds ratio [OR] 8.7, 95% confidence interval [CI], 8.5-8.8; X-ray OR 2.2, 95% CI, 2.1-2.2). The median odds of receiving preoperative electrocardiography and X-ray were 2.3 and 1.6 times higher, respectively, if a patient had surgery at one randomly selected institution compared to another.
Conclusions: Despite recommendations to limit testing before low-risk surgical procedures, preoperative electrocardiograms and chest X-rays frequently occur, while echocardiograms and stress tests are less common. Significant variation exists across institutions even after adjusting for patient- and institutional-level factors.

0040 - Tackling overtreatment in musculoskeletal condition area in UK private settings

Epaminondas Sourlas, Milan Mrekaj
Bupa is commited to be the most customer centered organisation in health & wellbeing world. Meeting patient's individual care needs is right at the heart of this comittment. As a result, in musculoskeletal condition area initiatives such as MSK Physician and MSK self-referral were developed. These help deliver the right care at the right time and reduce unnecessary treatment.
Objective: Develop initiatives which deliver patient care more suitable to patient's individual needs. It also means more cost-effective pathways and preventing overtreatment.
Methods: MSK self-referral initiative offers patients an appointment made by a specialist adviser to speak to a physiotherapist by telephone. The physiotherapist can then support patient to manage their condition themselves or refer the patient on as appropriate. The MSK physician initiative utilises non-surgical specialists, skilled in the diagnosis and treatment of a range of MSK conditions, to review and recommend alternative options to often invasive surgery. To evaluate both initiatives propensity score modelling and matching was used to find a comparable control group in terms of risk to about 15,000 impacted PMI members. Then claiming behaviour in MSK condition area was tracked for 12 months since the engagement in the initiative. Their medical utilisation was compared to estimate the volume of unnecessary treatment.
Results: MSK initiatives reduced unnecessary or led to less invasive treatment. Patients' claiming behaviour also showed reduction in medical costs up to 30%. Both initiatives proved to be instrumental in managing patients' needs before they actually enter consultation rooms. The evidence suggest that about 8% of mild MSK cases would self-manage with tips given to them by physiotherapist over the phone and more members would require only therapist support rather than seeing a specialist.

0042 - A Patient Centered Choosing Wisely list for Orthopedics

James Rickert, Alexandra Page, Tom Boniface, Rob Rutherford, Augusto Sarmiento
Objective: Our objective is the creation of an orthopedic Choosing Wisely list that is both patient centered and meaningful to patients with common musculoskeletal problems. To date, specialty societies have been widely criticized for publishing Choosing Wisely lists that lack relevance to patients.
Methods: We reviewed the musculoskeletal literature for medical evidence of the efficacy of orthopedic procedures for common patient problems. We identified procedures where the medical evidence shows either no treatment benefit or where the procedures are commonly done on subsets of patients where the evidence does not support their use. We developed our list accordingly.
Results:
Vertebroplasty: Randomized controlled trials showed no benefit to this procedure when compared to sham surgery
Partial Meniscectomy (Meniscal Debridement) of degenerative meniscal tears in knees without mechanical symptoms: These meniscal tears are part of the natural aging process and randomized trials have shown that debridement yields no benefit to patients when compared to physical therapy or sham surgery.
Open Reduction and Internal Fixation of Displaced Adolescent Clavicle Fractures: There is no evidence of efficacy of the procedure in this patient population, and studies show that malunion of clavicle fractures results in no functional deficits in adolescents, including individuals playing sports. Conservative care of these fractures yields uniformly excellent results.
ACL Reconstruction in Low Demand or Elderly individuals: Significant research shows that this procedure yields limited or no benefit to low demand individuals while carrying significant surgical risk.
Rotator Cuff Repair in Elderly Individuals without symptoms referable to rotator cuff tearing: Cadaver and other anatomic studies show that rotator cuff tears are a very common age related change. MRI studies show that they are usually asymptomatic. Therefore, routine repair should be avoided.
This list is both meaningful to patients seeking care for common musculoskeletal problems, and it focuses on patient centered results.

0045 - Reducing inappropriate PSA-based prostate cancer screening in men ≥ 75 years old with a highly specific computerized clinical decision support tool

Jeremy Shelton, Lee Ochotorena, Carol Bennett, Paul Shekelle, Lorna Kwan, Ted Skolarus, Caroline Goldzweig
Objectives: We sought to reduce inappropriate PSA-based prostate cancer screening among men age 75 and older in response to a request from the Veterans Health Administration's (VHA) in 2012 that medical centers reduce overuse of preventive services, including PSA-based prostate cancer screening among older men.
Methods: We developed a highly specific computerized clinical decision support (CCDS) alert to remind providers at the moment of screening PSA order entry of current guidelines and institutional policy. We implemented it in a prospective interrupted time-series study design over 15 months, and compared the trends in monthly PSA screening rate as well as the screening rate ratio at baseline vs. alert on and off periods.
Results: 30,150 men were at risk, or eligible, for screening and 2,001 men were screened. The mean monthly screening rate during the 15-month baseline period was 8.3%, and during the 15-month intervention period was 4.6%. The screening rate declined by 38% during the baseline and by 40% and 30% respectively during the two periods when the CCDS tool was turned on. The screening rate ratio during the baseline and the two periods when the CCDS tool was on was 0.97, 0.78 and 0.90, respectively, with a significant difference between baseline and the first CCDS-on period ($p<0.0001$), and a trend toward a difference between baseline and the second CCDS-on period ($p=0.056$).
Conclusions: Implementation of a highly specific CCDS tool alone significantly reduced inappropriate PSA screening in men age 75 and older in a reproducible fashion. With this simple intervention, evidence based guidelines were brought to bear at the point of care for the precise patients and providers for whom they were most helpful, resulting in more appropriate use of medical resources.

0046 - **New PR tactics promoting drugs for "female sexual dysfunction"**

Leonore Tiefer

2014 saw the development of new strategies and tactics by the pharmaceutical industry and their physician allies on behalf of drug treatments for "female sexual dysfunction." The industry funded a PR campaign called "Even the Score" complete with jazzy website, expert talking head video vignettes, public petition, congressional briefing, expensive recruiting lunches, FB, Twitter, and slick handout packets. Designed by "the world's largest public relations firm," this campaign uses factual misinformation and political tactics to influence the public's understanding of sexual problems and treatments and to recruit participants to pressure the FDA in the name of "gender equity."

Shortly before an October, 2014 FDA meeting, the International Society for the Study of Women's Sexual Health (ISSWSH), the primary professional organization promoting female sexual medicine, asked its members to recruit their patients to participate in the FDA meeting and offering to pay travel and expenses from a fund supported by "Even the Score." The ethics of this request are troubling.

In 2015, as the primary pharmaceutical backer of "Even the Score" (Sprout Pharmaceuticals) resubmitted the drug for the 3rd time to the FDA, the PR campaign ramped up its efforts using traditional methods as well as the expanding social media universe to involve additional congresswomen and feminist co-sponsors. This presentation will review this campaign and its public relations tactics as they affect the overdiagnosis and overtreatment associated with medicalization and disease-mongering.

0048 - Integrating decision aids in guidelines -an approach to reduce overtreatment?

Corinna Schaefer, Susanne Schorr, Ina Kopp, Norbert Donner-Banzhoff

Objectives/Background: Evidence based guidelines have the potential to improve patient care. However, research has shown that physicians tend to be reluctant to adopt recommendations *against* interventions as they fear a) litigation and b) impairment of patient-doctor-relationship. Decision aids (DA) have been proven to reduce decisional conflicts and unnecessary or potentially harmful interventions. In the recent update of the German National Disease Management Guideline on coronary heart disease (CHD), DAs have been developed as an integral part of the guideline.

Methods: A multidisciplinary panel identified relevant decisions in the CHD guideline chapter on revascularization. Informed by a systematic search and critical appraisal of the evidence, the panel decided not to provide recommendations guiding decisions in a specific direction but strongly recommended the use of DAs in 3 decision-making situations:

- before opting for invasive diagnostic measures
- acute versus delayed PCI
- stent implantation versus bypass surgery.

DAs were developed by a team of patient information specialists and authors of the guideline chapter, adhering to international standards (IPDASi). All DAs were conceived for use within consultation in the individual encounter to support patient-doctor relationship. DAs were discussed and adopted in a formal consensus process with the guideline panel.

Results: Strong consensus was reached on all DAs (agreement of all panelists). DAs communicate risks and benefits of all treatment options and describe the indication for catheterization. DAs were integrated into the diagnosis and treatment algorithm and published as integral part of the updated CHD guideline. A generic guideline chapter describes background and methodology.

Conclusions: To our knowledge, The German CHD guideline is the first to recommend and provide specific DAs. This may encourage physicians to share decisions and support opting for defensive strategies. Consenting DAs in a formal process and providing them as integral part of the guideline may foster acceptance and implementation.

0049 - **Why is it so hard to estimate how many people are overdiagnosed?**

Ruth Etzioni, Roman Gulati

Objective: Overdiagnosis is not observable and can be challenging to estimate. There are two major approaches in the literature, one based on the excess incidence in a screened group and one based on modeling disease natural history or lead time. The two approaches are rarely applied together and their comparative properties are not well understood. In this presentation I will clarify the challenges to determining the frequency of overdiagnosis and develop conditions under which reliable estimates can be derived from screening trials and population studies.

Methods: Simulation study of a hypothetical population in which the true frequency of overdiagnosis is known. I consider stop-screen trials, continuous-screen trials and a population setting, and examine the accuracy of overdiagnosis estimates based on the excess incidence approach applied within a given year and also cumulatively from the start of screening. For the lead time approach I simulate a screening study assuming that a specified fraction of disease cases are non-progressive and examine the accuracy of modeling estimates derived under different assumptions about disease natural history.

Results: In a continous-screen trial, if there is no control group contamination, excess annual incidence is unbiased for overdiagnosis after screening stabilizes plus the maximum preclinical period. In a stop-screen trial, excess cumulative incidence is unbiased under the same conditions. Excess cumulative incidence is persistently biased in a continuous-screen trial and in population settings. Modeling estimates that do not acknowledge non-progressive disease may underestimate the frequency of overdiagnosis if a significant fraction of cases do not progress. However, identifying this fraction may not be possible in practice.

Conclusions: Randomized trials do not automatically permit unbiased estimation of overdiagnosis. Sufficient follow-up and appropriate analysis given the design of the trial remain crucial. Many published estimates of overdiagnosis do not satisfy the requirements for unbiased estimation.

0050 - **Evaluating the Evidence for Choosing Wisely in Primary Care Using the Strength of Recommendation Taxonomy (SORT)**

Kenneth Lin, Joseph Yancey

Objectives: To systematically rate the quality of evidence supporting primary care-relevant recommendations from the American Board of Internal Medicine Foundation's "Choosing Wisely" campaign using a strength of recommendation taxonomy developed specifically for family medicine.
Methods: One investigator reviewed all Choosing Wisely recommendations released by June 2014 and excluded recommendations not relevant to primary care. General criteria for study relevance included services that are likely to be provided by family physicians or referred by family physicians; services that are exclusively ordered and performed by subspecialists were excluded. Both investigators then independently applied the SORT taxonomy to the remaining recommendations, using the citations provided by the nominating organization, and graded each recommendation A (consistent, good quality, patient-oriented evidence), B (inconsistent or limited-quality patient-oriented evidence), or C (consensus, disease-oriented evidence, usual practice, expert opinion, or case series). Differences in assigned letter grades were resolved by consensus. Recommendations were categorized by relevant body system and proportions of evidence ratings analyzed overall and within categories.
Results: Out of 224 Choosing Wisely recommendations, we rated 43 (19%) SORT A, 57 (25%) SORT B, and 124 (55%) SORT C. We further determined that 11 of the SORT C recommendations were unlikely to be upgraded by further studies due to their being self-evident or so vague or broad that they could not be proven. Across body systems, only the Orthopedic category had a predominance of SORT A recommendations (6/11, or 55%), while several body system categories (Cardiovascuar, Gastrointestinal, Psychiatric, Pulmonologic, Rheumatologic, Urologic) had no SORT A recommendations.
Conclusions: A majority of primary care-relevant Choosing Wisely recommendations are based on expert consensus or disease-oriented evidence. Many of these recommendations are intended to reduce overdiagnosis and overtreatment. Further research is warranted to strengthen the evidence base supporting these recommendations and improve their acceptance and implementation into primary care practices.

0051 - **Too much Routine Follow-Up.**

Stephen Hall, Kelly Brennan, John Yoo, Patti Groome

Objectives: The purposes of routine follow-up for patients with cancer or those with chronic disease include disease surveillance, documentation and the management of the many aspects of survivorship. The practice of routine surveillance of asymptomatic patients is based on an assumption that the early identification of a recurrence, resurgence or deterioration will improve outcomes, but unfortunately for most cancer sites there is no evidence that this is true. Follow-up appointments are expensive for patients and the health care system and provide opportunities for over-testing. In the absence of evidence, routine follow-up could be re-designed around concepts of personalized medicine to reflect disease risk and patient needs.
Methods: The Patient Needs and Preferences Questionnaire was created to assess the needs, attitudes, fears and preferences of head and neck cancer patients (HNCa) at the time of routine appointments. The 78 question survey was based on validated scales and has been completed by 126 consecutive patients at the regional cancer centers in Kingston and London Ontario Canada. Patients who had been treated for cure were surveyed at the time of their 1st anniversary of treatment completion when the acute effects of treatments are resolved and the majority of recurrences would have occurred.
Results: The age, gender, site, stage and treatment distributions were typical of the HNCa population in 2013/14. 60% of patients did not lose sleep over their looming appointments, 20% dreaded appointments, 25% felt they were cured and all patients felt reassured after appointments. Only 60% felt blood or imaging tests might be useful and 40% felt they could wait be seen in 6 months rather than the 2-3 month regimen they were on.
Conclusion: The one-size-fits-all protocols could be replaced with a more efficient tailored program matched to risk and patient need that avoids the problems created by too much medicine

0053 - **Using a Novel Graphing Approach to Better Understand the Relationship between Cancer Statistics and Changes in Diagnosis Patterns**

Kathleen Cronin, Jessica Boten, Quyen Tran, Pamela Marcus, Barnett Kramer

Objective: Incidence of new cases, mortality, and survival are the main statistics that describe the cancer burden in the population. A seminal paper by Welch et al. (JAMA, 2000) showed that increases in survival were more highly correlated with changes in incidence than mortality, suggesting that increased survival may reflect changes in patterns of diagnosis, including detection of cases that may never have become symptomatic (overdiagnosis). This study updates and expands this analysis using a graphical approach to examine patterns in incidence, mortality and survival that show the impact of changes in detection, treatment, and risk factors prevalence.
Method: Data from the US SEER program of cancer registries were used to calculate the percent change in cancer incidence and mortality and absolute change in 5-year survival from the baseline years of 1975-1979 for 19 cancer sites. Changes in incidence are plotted against changes in mortality, using animation to display changes over time. Color is used to represent magnitude of change in 5-year survival. The plot is divided into sectors typically associated with increased detection (increased incidence and survival with stable mortality), improved treatment (increased survival, decreased mortality and stable incidence), and change in prevalence of risk factors (similar changes in incidence and mortality with stable survival).
Results & Conclusions: The data confirms that improved survival often coincides with increased detection and not necessarily a decrease in mortality. Although many cancer sites are influenced by multiple factors, several fell clearly into one particular category. The area of the plot associated with increased detection identified cancers that have organized screening programs and sites where diagnostic procedures for other conditions, such as CT scans, led to

serendipitous findings. Analyzing trends simultaneously can identify potential areas of research to understand the characteristics of disease that may not progress and would require less aggressive treatment.

0054 - **Trends in Prostate-specific Antigen Testing Following 2012 USPSTF Recommendation: Retrospective Longitudinal Study**

Mei-Sing Ong, Kenneth Mandl

Objectives: In 2012, the U.S. Preventive Services Task Force advised against prostate specific antigen (PSA) screening in men of all ages. The effect of the recommendation on clinical practice is unknown. We evaluate the utility of routine PSA screening among men aged 40 to 74, after the publication of the Task Force recommendation.
Methods: We conducted a population-based study of men aged 40 to 74, who were enrolled in a national commercial health insurance plan, and had at least one outpatient visit between July 2010 and June 2013 (n=1,680,626). We assessed the PSA screening rate two years before (July 2010 to June 2012), and a year after the Task Force recommendation (July 2012 to June 2013) was published, stratified by two age groups: 40 to 54, 55 to 74.
Results: Two years prior to the Task Force recommendation, PSA screening rates averaged at 28.9% and 43.2% among men aged 40 to 54 and 55 to 74 respectively. Elevated screening rates persisted in both age groups a year after the publication of the recommendation, with 27.4% of men aged 40 to 54, and 44.1% of men aged 55 to 74 receiving PSA screening. Men who underwent routine PSA screening prior to the recommendation were more likely to be screened for prostate cancer after the recommendation (OR 3.57; 95% CI 3.54-3.60; p<0.0001).
Conclusions: Notwithstanding the Task Force recommendation against PSA screening in asymptomatic men, routine PSA screening continues to be widespread. Informed or shared decision-making needs to be practiced, so that patients are fully aware of the benefit-harm tradeoff associated with PSA screening.

0056 - Addressing overtreatment of ductal carcinoma in situ (DCIS): a qualitative study of how terminology affects women's concern and treatment preferences

Brooke Nickel, Alex Barratt, Jolyn Hersch, Ray Moynihan, Les Irwig, Kirsten McCaffery

Objectives: There are increasing rates of mastectomy and bi-lateral mastectomy in women diagnosed with ductal carcinoma in situ (DCIS). To help women avoid decisions that lead to unnecessary aggressive treatments, there have been recent calls to remove the cancer terminology from descriptions of DCIS. We investigated how different proposed terminologies for DCIS affect women's perceived level of concern and treatment preferences.
Methods: Qualitative study using semi-structured interviews conducted between June and August 2014 with a community sample of 26 Australian women varying by education and cancer screening experience. Women responded to a hypothetical scenario using terminology with and without the cancer term to describe DCIS.
Results: Among a sample of women with no experience of a DCIS diagnosis, a hypothetical scenario involving a diagnosis of DCIS elicited high levels of concern regardless of the terminology used to describe it. Women exhibited stronger negative reactions when a cancer term was used to describe DCIS compared to that of a non-cancer term, and preferred the diagnosis be given as a description of abnormal cells. Overall women expressed interest in watchful waiting for DCIS but displayed preferences for very frequent monitoring with this management approach.
Conclusions: Communicating a diagnosis of DCIS using terminology that does not include the cancer term may help to decrease patients' high levels of concern, which in turn may enable discussions about more conservative treatment options. However, preferences for a higher frequency of monitoring during watchful waiting of DCIS may have implications for providing confidence to women when making decisions about treatment.

0057 - **Race/ethnicity, and Americans' perceptions and experiences of over- and under-use of care**

Nancy Kressin, Mengyun Lin

Objective. Despite widespread documentation of racial/ethnic disparities in care (predominantly under-use, generally among specific clinical populations), differences in population-wide attitudes or experiences about under- or overuse of care are not well understood. We examined whether race/ethnicity is associated with perceptions or experiences of overuse or underuse.
Methods: Secondary analysis of cross-sectional data from national telephone survey of nationally representative sample of 1,238 American adults; 57.9% female, 75.4% Non-Hispanic White, 11.8% Non-Hispanic Black, 10.1% Hispanic. Main outcome measures were general perceptions and personal experiences of overuse and underuse, including cost-related dimensions of each.
Results. Bivariate results indicated that respondents of minority race/ethnicity generally viewed both overuse and underuse as bigger problems than did Whites, and reported more personal experiences of each. After adjustment, Hispanics were less likely than Whites to report personal experiences of overuse (odds ratio [OR] [95% CI], 0.44[0.23 to 0.86]), while Blacks and Others were more likely to report cost-related overuse (ORs [95% CIs], 4.16 [2.30 to 7.51]; 3.55 [1.52 to 8.28], respectively). Non-Hispanic Others more often reported doctors' protection from overuse (OR [95% CI], 3.69 [1.75 to 7.78]). General concerns with underuse were more frequent among Blacks and Hispanics (ORs [95% CIs], 3.07[1.72 to 5.54]; 2.12[1.24 to 3.61] respectively), while Others reported significantly fewer concerns (OR [95% CI], 0.43[0.23 to 0.80]).
Discussion. Over- and underuse of medical care are important problems for many Americans, and experiences vary by race/ethnicity. Clinician communication and educational campaigns about appropriateness of care may need tailoring for varying population groups.

0059 - Can a single question be used to facilitate shared decision making for lung cancer screening?

Tanner J Caverly, Laura D Scherer, Brian J Zikmund-Fisher, L. Knoll Larkin, Angela Fagerlin

Objectives: Recent research found that the Medical Maximizer Scale – measuring whether people self-identify as *minimalists* who prefer to do as little as possible when it comes to medicine or as *maximalists* who prefer to aggressively pursue medical tests and treatments – predicts healthcare utilization. This study tested whether minimalist-maximalist preferences predict lung cancer screening preferences.
Methods: We conducted a randomized survey experiment with 1,612 adults aged 18 years or older who reported smoking daily or almost daily. Participants imagined they were 60 years old and eligible for lung cancer screening, then viewed the likelihood of benefit and harm with lung cancer screening. We measured minimalist-maximalist preferences using a single screening question found to be strongly predictive of the 10-item Medical Maximizer Scale. We also measured participants' risk perceptions and whether they would choose to get screened. We tested associations between the outcome variables (risk perceptions and screening decision) and the predictor (minimalist-maximalist preferences) using logistic regression, adjusting for age, race, gender, personal/family history of cancer, numeracy, and comprehension of screening benefits and harms (assessed with 11 knowledge items).
Results: Compared with strong maximalists in the final adjusted regression model, strong minimalists were significantly less likely to rate lung cancer screening as a good choice (50% vs. 79%; $P<0.001$), were less likely to rate screening as effective in reducing lung cancer mortality (42% vs. 75%; $P<0.001$), would worry less about dying from lung cancer if not screened (35% vs. 69%; $P<0.001$), and were less likely to report they would get screened if it were free (63% vs. 92%; $P<0.001$).
Conclusions: In this Internet sample, a single screening item assessing minimalist-maximalist preferences was a reliable predictor of risk perception and self-reported decision-making about lung cancer screening. Assessing a person's minimalist-maximalist preferences could help facilitate the shared decision making required by Medicare.

0060 - **An alternative to diagnosis based practice in pediatric mental health**

Kristopher Kaliebe

Objectives:Review a "common factors" approach to pediatric mental health centered on matching evidence based treatments and broad lifestyle interventions with presenting problems and symptom clusters.
Methods: This presentation questions the pre-eminence of definitive psychiatric diagnosis within pediatric primary care. It highlights a common factors model of assessment and treatment less reliant on diagnosis.
Results: More and more, patient expectations, physician training, practice guidelines, medical records, approval for visits and reimbursement for treatments hinge on diagnosis. . In aspects of medical care this push for an immediate precise diagnosis has advantages, but at times, leads to overdiagnosis. Moreover, basing care on a single definitive diagnosis is at odds with the epidemiology of children's mental and behavioral health. Children's mental health typically displays drifting symptoms clusters, mediated by family functioning, peer interactions, environmental and developmental stressors.
An alternative assessment and treatment model, the "common factors" approach, matches the problem or symptom cluster to evidence based treatment elements. Literature reviews have paired childhood particular emotional and behavioral problems with effective interventions such as parent management training with disruptive and defiant behavior; cognitive restructuring with anxiety; and behavioral activation with depressed mood. Families simultaneously can be educated about the negative impacts of common childhood stressors including the effects of trauma, excessive screen time, sleep deprivation, toxic diets, and lack of exercise. This does not label the child, can be immediately initiated, does not turn away children who do not meet diagnostic threshold and can reduce overdiagnosis.
Conclusions:Administrative demands for diagnosis, practice guidelines, family expectations and economic considerations push primary care physicians to prematurely diagnose pediatric mental health problems, thus contributing to overdiagnosis and over treatment. A common factors model would reduce overdiagnosis and provide sensible evidence-based treatment.

0062 - A Professional Society's Response to Medical Resource Overuse

Cynthia Smith, Patrick Alguire, Steven Weinberger

In response to the unsustainable rise in health care costs, the American College of Physicians (ACP) launched its High Value Care (HVC) initiative in 2011. HVC is defined as the process of balancing clinical benefit with harms and costs. The initiative is guided by a cross-divisional Steering Committee with representatives from Medical Education, Communications, Marketing, Clinical Policy, Research, the Center for Quality, and the Center for Patient Partnership in Healthcare. The initiative has been supported by the ACP's operational budget and government and non-profit foundation grants. The goal of the initiative is to support delivery of HVC at all levels of professional training and practice. Strategies include: defining HVC competencies and skills; publishing clinical guidelines, guidance statements, and policy papers (18 papers published in peer reviewed journals); developing curricula and teaching materials for students, residents (32,000 downloads), and practicing physicians (8,493 registered users); surveying residents (n = 21,000/year for 3 years), program directors (n = 247/year for 3 years), and practicing physicians (n = 198) to better understand attitudes and barriers to practicing HVC; incorporating of HVC principles into ACP's existing educational products (e.g., 62,000 Medical Knowledge Self-Assessment Programs); providing a HVC sub-score on the Internal Medicine In-Training Examination to program directors and residents (21,000 residents/year for 3 years); developing HVC maintenance of certification medical knowledge and practice assessment programs; forming alliances and developing collaborative programs across professional societies and the health care disciplines; and creating patient education resources. Instructional barriers include inadequate curricular time, lack of financial transparency, and faculty development. Misaligned financial incentives and fear of malpractice impair physicians' ability to practice high value care. Potential future directions include faculty development programs and incorporation of HVC principles into ACP's

graduate medical education policy recommendations and sponsoring a HVC symposium for health care systems featuring best practices.

0064 - A Diagnostic Discovery: Transforming Low Back and Neck Pain Care

Ronald Donelson

Objectives: Both mis- and over-diagnoses for the non-specific symptoms of low back (LBP) and neck pain (NP) are rampant resulting in highly variable, frequent over-treatment by many healthcare professions and medical specialties. Commonplace are unproven, unnecessary, ineffective, risky, expensive treatments. It is said that 50% of this care is unnecessary,.....but which 50%?

Methods: This overview will present: 1-the existing chaos within LBP and NP care, 2-the issues and mind-sets that underlie the widespread mis-diagnoses and over-diagnoses responsible for highly variable over-treatment, and 3-extensive data validating an innovative diagnostic process that solves most of these disorders. The "Triple Aim Outcomes" provide ideal metrics for this review.

Results: A sixty-year-old clinical discovery gave birth to a highly informative, standardized diagnostic process that is redefining and clarifying the causes of most LBP and NP, not unlike the impact of discovering a bacterial cause for peptic ulcers. Published evidence includes numerous reliability, prospective cohorts, randomized trials, and systematic reviews that collectively report that most LBP and NP can recover rapidly and non-invasively using patient self-care methods*, if first evaluated and characterized "mechanically".* These recoveries occur without need of imaging, medications, prolonged physical therapy, chiropractic care, injections, or surgery. Patient satisfaction is extremely high and claims data across multiple large payers document a 50% cost-savings in the face of current sky-rocketing costs of spine care. Not surprising is that most spine specialists view this paradigm of care as a major disruption to their understanding of LBP and NP and their own treatment preferences that generate their income. Some clinical guideline panels are beginning to acknowledge these mechanical methods of evaluation and treatment of LBP and NP based on their review of the evidence.

Conclusions: Patients, payers, policyholders need exposure to this diagnostic innovation, self-care paradigm, and its strongly positive Triple Aim evidence.

0066 - Preoperative Laboratory Testing Prior to Low-risk Surgical Procedures

Ciara Pendrith, Kyle Kirkham, Michael Schull, Wendy Levinson, Andreas Laupacis, Jack Tu, Duminda Wijeysundera, R. Sacha Bhatia

Objectives: To assess the use of preoperative laboratory tests prior to low-risk surgical procedures in Ontario, Canada, and to identify predictors of preoperative testing.

Methods: Patients who underwent endoscopies, ophthalmologic surgeries, or pre-defined low-risk surgeries in Ontario between April 1, 2008 and March 31, 2013 were identified from population-based administrative databases. Preoperative blood work was captured from claims data and defined as at least one of the following tests within 60 days prior: complete blood count, prothrombin time (PT), partial thromboplastin time (PTT) and basic metabolic panel. Adjusted associations between patient and institutional factors and preoperative testing were assessed with hierarchical multivariable logistic regression and institutional variation was assessed with the median odds ratio (MOR).

Results: There were 1,546,223 patients who underwent 2,224,070 procedures (40.1% endoscopy; 34.2% ophthalmologic; 25.7% low-risk surgery) at 137 institutions. Preoperative blood work was completed before 29.8% of procedures. Complete blood count and basic metabolic panel were performed before 24.1% and 24.4% of procedures, respectively, while PT and PTT were less common. The unadjusted institutional rate of preoperative blood work varied from 0.3% to 98.1%. Regression results showed significant associations between preoperative testing with endoscopic procedures (adjusted odds ratio [AOR] vs. low-risk surgery: 1.2; 95% confidence interval [CI]: 1.2-1.2), preoperative medical consultation (AOR: 1.7; 95% CI: 1.7-1.8), atrial fibrillation (AOR: 2.3; 95% CI: 1.8-2.0), mitral valve replacement (AOR: 2.4; 95% CI: 2.2-2.6), and liver disease (AOR: 1.8; 95% CI: 1.7-1.9). The MOR was 2.4, suggesting an adjusted higher odds of preoperative testing if a patient had surgery at one institution compared to another.

Conclusions: Nearly a third of patients received preoperative laboratory testing before low-risk surgical procedures. Our results suggest that testing is associated with the type of procedure, preoperative medical consultation and clinical covariates, and adjusted institutional variability contributes significantly.

0072 - Balancing Glycemic Overtreatment and Undertreatment for Seniors: An Out of Range (OOR) Population Health Safety Measure

Leonard Pogach, Miriam Maney, Orysya Soroka, Chin-Lin Tseng, David Aron

Objective: Endorsed National Quality Forum (NQF) measures that apply to individuals 65-74 years are <8% (good) and >9% (poor) A1c; 75 years and older are not assessed. The Health and Human Services National Action Plan for Adverse Drug Event Prevention recommended that the <8% measure be revisited, and that an overtreatment measure be added. The Centers for Medicare and Medicaid Services entered a public comment to NQF recommending that the <8% measure be retired. We assessed combined OOR (overtreatment (A1c <7%) and undertreatment (A1c>9%), and in-range control (A1c 7.5%-8.5%), consistent with major guidelines recommendations to individualize targets depending upon co-morbid conditions, life expectancy and preferences.

Methods: Cross-sectional study of Veterans Health Administration patients in 2013 receiving insulin (I) or sulfonylurea (SU) who were considered high risk for hypoglycemia (75 years or older, or serum creatinine >2.0 mg/dL, or having a diagnosis of cognitive impairment or dementia). The national average and facility specific performance for combined and individual over and undertreatment were determined using the last A1c in 2013.

Results: We identified 435,078 patients on I/SU; 133,302 (30.6%) met the inclusion criteria at 130 facilities (average number of patients: 1,017; range 126 - 3,587). The mean age was 75.5 years. OOR A1c 45.2% (37.6% in the best performing facility decile to 53.5% in the worst performing decile. Overtreatment was over twice as common (31%, facility range 23%-41%

in best and worse deciles) as undertreatment (14.2%, 9.7%-20.4%, in best and worst deciles). Facility rankings for over or undertreatment were poorly correlated (Spearman's rho = -0.44). Only 27.6% were in-range.
Conclusions: About half of elderly or ill patients are at risk for short term harms, primarily overtreatment. We recommend replacing current glycemic measures with a single accountability OOR measure that separately reports overtreatment and undertreatment, with an in-range quality improvement component.

0074 - Competing priorities: a national survey of individuals with depression and clinicians who treat depression

Paul Barr, Rachel Forcino, Rachel Blitzer, Manish Mishra, Glyn Elwyn

Objectives: Given varying levels of efficacy and risk among treatment options for depression, clear and relevant information is needed to inform treatment decisions. We aimed to identify consumer and clinician information priorities in selecting treatment for depression, estimate the frequency of treatments received and assess the consumer reported experience of shared decision making (SDM).
Methods: We administered online cross-sectional surveys to convenience samples of US-based adults with depression and clinicians who treat individuals with depression. Quotas were implemented in the consumer survey based on epidemiological data on prevalence of depression in the US. Participants were shown a list of 20 frequently asked questions about depression treatments and asked to rank the top five most important. Clinicians were asked to provide rankings from both consumer and clinician perspectives. Demographics, health status and treatment experience were assessed. Consumers also completed CollaboRATE, a patient-reported measure of SDM.
Results: 244 clinicians and 972 consumers completed surveys. 78% of consumers visited a clinician in the last 6 months to discuss depression. Consumers and clinicians converged on three of their top five ranked questions, both ranking 'Will the treatment work?' highest. Consumers included the importance of insurance coverage and cost of treatment in their top five, while clinicians did not. Yet, when considering the questions from a consumer's perspective, clinicians included the same top five questions as consumers. Medication (93%) and talk therapy (72%) were the most commonly used treatments. Only 18 percent of consumers reported experiencing gold standard SDM.
Conclusions: While clinicians recognize what information is most important to consumers making depression treatment decisions, competing priorities in the clinical encounter can preclude focus on this information. Medication was the most common treatment among consumers experiencing low levels of SDM. Improving SDM could align consumers' and clinicians' priorities, leading to more informed treatment decisions.

0076 - A Model for Delivering High Value Care to Improve Patient Outcomes

Amir Qaseem, Russell Harris, Timothy Wilt

Objective: Clinicians, patients, payors, and policy makers need to work together to minimize the use of resources that do not improve health care outcomes and may actually harm patients. The goal of this presentation is to describe the American College of Physicians High Value Care (ACP-HVC) initiative and highlight how end-user products are developed and implemented.
Methods: The ACP-HVC initiative is a comprehensive program that connects two important priorities - helping our physicians provide the best possible care to their patients and reducing unnecessary costs to the healthcare system. The three components of this program include: 1) Physician Education; 2) Patient Education; and 3) System Redesign. Programs under these components include clinical guidelines, point of care tools, resident education curriculum and training examination, and physician performance measures and pay for performance programs. To change the practice of medicine, it is critical to start with changing physicians' attitudes, beliefs, and behaviors regarding the quality of care provided to their patients. Rather than using passive methods, the ACP-HVC initiative believes that active and individualized methods will be more effective in changing clinician behavior. An essential step in this process is for clinicians to understand their patients' values and concerns around health care decisions and to commit to customizing their recommendations based on this knowledge.
Conclusion: First step to provide high value care is to decrease or eliminate care that provides no benefit and may even be harmful. Second step is to provide medical interventions that provide good value where medical benefits outweigh the harms and costs. The goal of high value care should not be limited to "don't provide unnecessary services" but should also focus on "do provide necessary services." The ACP-HVC initiative is a leader in helping to define and deliver high value care including reducing overdiagnosis.

0081 - Can Interval cancer rates be used to monitor overdiagnosis from new technologies in breast cancer screening?

Alexandra Alexandra, Nehmat Houssami, Kirsten Howard, Gemma Jacklyn, Les Irwig

Objectives: Introduction of new breast screening technology should result in fewer interval cancers (clinically presenting cancers 0-24 months later), if the new technology is detecting more clinically important cancers. However in the few studies to date comparing film versus digital mammography (DM), detection rates at screening have increased significantly, without proportionate reductions in interval cancer rates, suggesting overdiagnosis rather than incremental health gain. To explore the use of this approach to monitor overdiagnosis, we examined trends in cancer detection and interval cancer rates among women 50-69 years in the Australian breast screening program during implementation of DM (2005-2015).
Methods: Age-standardized detection rates (invasive cancer and DCIS) per 10,000 women screened in initial and subsequent screening rounds were obtained for the years 2002-2012 from BreastScreen Australia reports. Interval cancer rates were obtained for as many years as possible within the same period.
Results: Invasive cancer detection increased from 76.0/ 10,000 women screened in 2002 to 103.6 in 2012 in initial screening rounds, and was unchanged in subsequent rounds (44.2 in 2002 and 43.9 in 2012). DCIS detection rates were 21.4/10,000 (initial round) and 9.3 (subsequent rounds) in 2002, and 22.8/10,000 (initial) and 11.0 (subsequent) in 2012. Interval cancer rates fell slightly from 9.6 (index screen in years 2003-2005) to 9.1/10,000 (index screen in years 2007-2009). Data for later years are not yet available. Cancer detection rates appear to have increased with the

implementation of DM in Australia. It is probably too early for a significant reduction in interval rates to be seen, given the phased implementation of DM. These data will be discussed in the context of published studies to explore the strengths and limitations of this approach.
Conclusion: Detection rates and interval cancer rates may be useful for monitoring overdiagnosis in established screening programs when new technology is introduced.

0082 - **The overuse and misuse of musculoskeletal imaging: The initiating step to overdiagnosis, overtreatment and unnecessary management.**

Paul Levin, James Rickert

Advanced musculoskeletal imaging has become an integral component in the evaluation and management of musculoskeletal pain. Utilized appropriately, it can lead to successful treatment. Unfortunately, musculoskeletal imaging is often ordered inappropriately. Images are obtained because the patient requests the study to identify what is causing their problem. Health providers, inexperienced in the evaluation and examination of patients with musculoskeletal complaints, obtain studies to insure that they are not missing an important finding. Musculoskeletal providers utilize the images to explain the "problem" to the patient and recommend interventions that they believe will treat the condition, often despite evidence that the treatment is not indicated. Radiologists interpret the studies without the necessary clinical information compromising their ability to adequately interpret the study.
Published studies in imaging of the spine, knee and shoulder report a variety of incidental and asymptomatic "abnormal findings". For the uninformed, patients and providers alike, it is much easier to extrapolate the meaning and importance of the picture. Something hurts, the picture shows why and now it must be "fixed". A willing provider, believing in their treatment, agrees and institutes treatment.
Resolving the abuse and misuse of musculoskeletal imaging will remain a major challenge in a system that rewards quantity and not quality. It will also be a challenge in a system that rewards patient satisfaction. Utilizing readily available practice guidelines, the following basic requirements should be met prior to ordering musculoskeletal imaging:

1. A real concern exists for life or limb threatening pathology.
2. The individual ordering the study is able to explain the findings to the patient.
3. Evidence based treatment has failed.
4. The decision to obtain the study is "shared", and the patient understands what the information is being used for (i.e recommend surgery).
5. Treating the imaging finding is appropriate for the individual patient.

0087 - Potential overtreatment of chronic diseases and associations with polypharmacy in nursing home patients: a cross-sectional survey

Rita McCracken, Charmaine Lam, Jonathan Berkowitz, Scott Garrison

Objective**:** Polypharmacy is a recognized source of harm for frail elders. Some studies suggest that a focus on aggressive chronic disease management, rather than more frailty-appropriate treatments may be contributing to polypharmacy. This study describes prevalence of polypharmacy for a representative group of frail elders in nursing homes in British Columbia and their associated patient characteristics. It identifies potential associations between hypertension and diabetes surrogate markers and numbers of medications prescribed.
Methods: Cross sectional survey of 213 randomly selected nursing home patients from 6 nursing homes in British Columbia's lower mainland (total population of 950 patients) using a highly regarded physician and pharmacist care model.
Main Outcome Measures: Mean# medications prescribed, systolic blood pressure (SBP), HgbA1c, hospital visits for each patient and demographic characteristics.
Results: The mean number of medications prescribed was 7.5 ±3.4. 70.4% of patients had a diagnosis of hypertension, mean SBP 128 ±18 mmHg. Only 27% had a diagnosis of diabetes, mean HgbA1c 6.5 ±1.19. The average number of hospital visits in the preceding year for all patients was 0.7±1.5. A diagnosis of hypertension was associated with more medications, p=0.04 and increasing age associated with fewer p=0.002. No association with number of medications was found for a diagnosis of diabetes or dementia, nor length of stay, prescribing MD or number of hospital visits.
Conclusions**:** The number of medications prescribed to frail elders remains high. Chronic disease diagnosis and treatment may be contributing to this large number. In the case of hypertension, the mean systolic blood pressure was surprisingly low and relaxation of surrogate targets may result in fewer medications. Future efforts to address polypharmacy may have more success if they directly address less aggressive drug therapy for frail elders with chronic diseases.

0088 - **Benefits and Harms of Routine Preoperative Testing: Comparative Effectiveness Review**

Ethan Balk, Amy Earley, Nira Hadar

Objectives. Preoperative testing is used to guide perioperative management. There is uncertainty whether routine or per-protocol testing prevent complications, improve outcomes, or cause unnecessary delays, costs, and harms due to false-positive results.
Methods. We conducted a systematic review, searching MEDLINE and Cochrane databases through July 22, 2013. We included comparative and cohort studies of patients undergoing procedures requiring either anesthesia or sedation. We included all preoperative tests that were likely to be conducted routinely or on a per-protocol basis (i.e., in selected patients). Outcomes included mortality, perioperative events, complications, patient satisfaction, resource utilization, and harms.
Results. 57 studies (14 comparative and 43 cohort) met criteria. Well-conducted randomized controlled trials (RCTs) of cataract surgery suggested that routine testing with electrocardiography, complete blood count, and/or a basic metabolic panel did not affect procedure cancellations (2 RCTs, relative risks [RRs] of 1.00 or 0.97) with no clinically

important difference for total complications (3 RCTs, RR = 0.99). Two RCTs and six nonrandomized comparative studies of general elective surgeries in adults varied greatly in the surgeries, patients included, and tests used. They mostly had high risk of bias and yielded insufficient evidence regarding the effect of routine or per-protocol testing on outcomes. There was insufficient evidence for other procedures and populations. No studies reported on quality of life, patient satisfaction, or harms related to testing.
Conclusions. There is high strength of evidence that, for patients undergoing cataract surgery, routine preoperative testing has no effect on complications or procedure cancellation. However, the cataract studies are not generalizable to higher risk procedures. There is insufficient evidence for all other procedures and populations and insufficient evidence comparing routine and per-protocol testing. Studies do not evaluate several outcomes of interest or mediators of effect. Numerous future adequately powered comparative studies are needed in specific patients undergoing specific procedures.

0090 - External Validity of placebo-controlled Trials of Thromboprophylaxis for Medical Patients cited in Clinical Practice Guidelines.

Sami Morin-Ben Abdallah, Aurore Dutilleul, Xavier Marchand-Senecal, Valerie Nadon, Ji Wei Yang, Paul Van Nguyen, Robert Wistaff, Christophe Kolan, Maxime Lamarre-Cliche, Mikhael Laskine, Madeleine Durand

Objectives: Based on placebo-controlled randomized clinical trials (RCT) the American College of Chest Physician (ACCP) guidelines recommend thromboprophylaxis for hospitalized medical patients at high risk for venous thromboembolism (Padua prediction score≥4). However, due to stringent exclusion criteria, the population included in these RCTs may not be representative of our inpatient population.
Methods: We identified RCTs cited in support of the guidelines, and extracted the exclusion criteria from each trial. We selected a random sample of all patients admitted on the general internal medicine ward of a large Canadian teaching hospital over one year. Individual hospital charts were reviewed to collect data on the presence/absence of exclusion criteria for each of the selected RCT. Descriptive statistics were used to present the data.
Results: 9 RCTs were identified, totalling 28,793 randomized patients. 451 hospital charts were reviewed, of which 429 hospitalization episodes were studied. Median stay was 7 days (IQR 3-13). Median age was 65(IQR 51-77) and 236(55%) of patients were male. 78(18%) were already anticoagulated on admission and were excluded from the analysis. From 26% to 67%(weighted average 51%) of our patients had exclusion criteria for individual RCTs. When restricting to patients with a Padua score≥4 (n=118), exclusions rose from 21% to 76%(weighted average 55%). Overall 75 patients (21%) were excluded from 100% of trial population and 198(56%) from 50% or more of the trial population. In patients with a Padua score≥4, 20(17%) were excluded from all RCTs, and 73(62%) were excluded from at least 50% of total RCT population.
Conclusions: The external validity of RCTs cited in support of ACCP guidelines on thromboprophylaxis was low. Roughly half of inpatients would not have been eligible to enroll into the studies supporting the current guidelines. Therefore for these patients, the balance of benefits and harms for thrombophylaxis is still not well defined.

0091 - PREVALENCE OF INCIDENTAL PROSTATE CANCER: A SYSTEMATIC REVIEW OF AUTOPSY STUDIES

James Dickinson

Background and Objectives: Prostate cancer screening may detect non-progressive cancers, leading to over-diagnosis and over-treatment. The potential for over-diagnosis can be assessed from the reservoir of prostate cancer in autopsy studies that report incidental prostate cancer rates in men who died of other causes. We aimed to estimate the age-specific incidental cancer prevalence from all published autopsy studies.
Methods: We identified eligible studies by: searches of Medline and Embase, forward and backward citation searches, and contacting authors. We screened the titles and abstracts of all articles; checked the full text articles for eligibility; and extracted clinical and pathology data using standardized forms. We extracted: mean cancer prevalence, age-specific cancer prevalence, and validity measures, then pooled data from all studies using logistic regression models with random effects.
Results: The 29 studies included in the review dated from 1948 to 2013. Incidental cancer was detected in all populations, with no obvious time trends in prevalence. Prostate cancer prevalence increased with each decade of age, OR =1.7 (1.6 – 1.8) and was higher in studies that used the Gleason score, OR=2.0 (1.1 – 3.7). No other factors were significantly predictive. The estimated mean cancer prevalence increased in a non-linear fashion from 5% (95% CI 3 – 8%) at age <30 years to 59% (95% CI 48 – 71%) by age >79 years. There was substantial variation between populations in estimated cancer prevalence.
Conclusions: There is a substantial reservoir of incidental prostate cancer which increases with age. The high risk of over-diagnosis limits the usefulness of prostate cancer screening.

0095 - Intensive monitoring after resection of primary colorectal cancer advances diagnosis of liver and lung metastases but does not improve survival.

Tom Treasure, Fergus Macbeth, Christopher Russell, Francesca Fiorentino

Objectives: Colorectal metastases in the liver and/or lung are resected with 'curative intent' without evidence from randomised controlled trials (RCTs). Intensive monitoring after primary resection, is widely recommended to detect asymptomatic metastases and to increase opportunities for their resection. These policies have been the subject of RCTs which we have reviewed.
Methods: Systematic review and meta-analysis
Results: Seven RCTs of intensive monitoring versus less intensive follow-up were found, reporting 2,653 randomised patients from 1994 to 2014. Latest overall reported survival rates were 17%, 56%, 65%, 69%, 66%, 70% and 82% in successive trials from 1994 to 2015. Data amalgamation was therefore undertaken with caution because of this

apparent time related upward trend in survival of patients in RCTs over the passage of twenty years. Follow-up interval varied. There may have been earlier diagnosis of the primary cancer, variability in inclusion criteria in the RCTs and/or improving results of treatment. Monitoring methods also changed over time. In 1994 CEA was regarded as intensive but later became standard as colonoscopy, CT and liver ultrasound were used with greater frequency in the intensive arms. Monitoring detected progressive disease 5, 9, 10 and 13 months sooner than control in four studies reporting the difference. In six of seven RCTs there was no significant difference in survival. One study in 1998 reported greater survival in the intensively monitored arm (73% vs 58%, N=207) associated with re-resection at the primary site but not related to metastasectomy. The FACS trial in which increasing metastasectomy was the explicit intent of monitoring reported more deaths (non-significant) in the intensively monitored arms.
Conclusions: Earlier detection leads to more diagnosed metastases and an increase in metastasectomy. Neither individually nor in meta-analysis does this result in increased survival. We conclude that these policies lead to overtreatment with unavailing major surgery without benefit

0096 - **What gain is worth a daily pill? A systematic review**

Loai Albargouni, Jenny Doust, Paul Glasziou

Objective: Current cardiovascular disease(CVD) prevention guidelines focus primarily on the medication effectiveness; and disregard peoples' preferences. The main purpose was to summarize current evidence regarding the minimum acceptable risk reduction of a cardiovascular event which patients feel would justify daily intake of a preventive medication.
Methods: We searched 4 databases (MEDLINE, CINHAL, EMBASE, PsycINFO) with no restriction on study design or language. We searched for published and unpublished studies, and conducted forward and backward citation search. Studies were eligible if they assessed the minimum acceptable benefit in terms of CVD-risk-reduction of a preventive medication among a sample of potential population, and required participants to choose if they would be willing to take a medication to prevent CVD for a hypothetical reduction in risk. Screening of search results, risk of bias assessment, and data extraction of eligible articles were conducted by two independent assessors, with disagreements resolved by discussion with a third assessor as needed.
Results: Of 240 studies screened, we included 21 records, involving a total of 19497 participants: 14 studied Number Needed to Treat, 11 Absolute Risk Reduction and 6 studied Life years lost as measures of risk reduction communicated to the patients. On average, 52.5%, 58.4% and 61.6% of participants of included studies accepted a preventive medication with a 5-year ARR of <1%,1-4% and>4% respectively; 64.9%,59.8% and61.1% of them would accept it based on NNT of >100,25-100 and<25 respectively; and 59.1%,47.6% and61.3% accepted to commence a cardio-preventive medication that could prolong their lives ≤ 2,3-12 and≥ 12months.
Conclusions: Even for a side-effect free, costless medication, many patients require a substantial risk-reduction to be seen as worthwhile. However, the range of answers was very wide with some accepting no risk, and other any risk. Guidelines need to account for both these average and individual values in setting risk thresholds.

0098 - Influence of information about risks, lack of benefits, and expert recommendations on uptake of cancer screening tests

Laura D. Scherer, James Burke, Tanner J. Caverly, Jeffrey T. Kullgren, Brian J. Zikmund-Fisher, Meghan Roney, Angela Fagerlin

Purpose: Overdiagnosis is common in cancer screening. To reduce overdiagnosis it is important to understand what kinds of information reduces patients' interest in low yield tests. The purpose of the present research was to examine the influence of three types of information on test uptake: 1) test risks (e.g. being harmed by overtreatment), 2) lack of test benefits, and 3) expert recommendations.
Methods: Adult men (N=715) at a hospital in Ann Arbor, Michigan were asked to make two hypothetical decisions: 1) whether to have PSA screening for prostate cancer, and 2) whether to get an MRI in response to migraine headaches (to test for brain cancer). Both of these tests have recently been counter-recommended by the USPSTF and Choosing Wisely®, respectively. All participants received standard information about the tests but were also randomly assigned to receive additional information related to overdiagnosis in a 2 (Risk information: present vs. absent) X 2 (Information about uncertain benefit: present vs. absent) X 2 (Recommendation: present vs. absent) experimental design. Participants then made a decision about whether to get the test.
Results: Overall, most participants wanted testing (74.8% for MRI and 64.2% for PSA). For MRI, the Choosing Wisely recommendation had no impact on test uptake, p=0.91. Information about test risks and uncertain benefit both significantly reduced test uptake (p's<0.05) but only by 9 and 7 percentage points, respectively. For PSA, USPSTF recommendation reduced uptake by 9%, uncertain benefit reduced uptake by 10%, and risk information reduced uptake by 23% (all p's<0.05). There were no interactions between information types.
Conclusions: The present data examined how information about overdiagnosis influences patient uptake of MRIs and PSA tests. Expert recommendations had the least effect on test uptake, information about lack of benefits had consistent but small effects, and risk information had inconsistent but potentially influential effects.

0099 - **Going Beyond Limited Evidence: An Approach for Guideline Panels to Help Reduce Overdiagnosis by Providing Additional Guidance**

William Garneau, Brittany Hipkins, Colleen Barclay, Russell Harris

Objectives: A situation that contributes to overdiagnosis occurs when guideline panels find that deficiencies in existing evidence prevent a clear assessment of a service's benefits, harms, or both. Panels may handle this by making an "insufficient evidence" statement without a recommendation, making a "weak recommendation with low quality

evidence", or making a recommendation based on expert opinion. Confused by these approaches, clinicians may implement the service in question rather than await further evidence, increasing the probability of overdiagnosis. Guideline panels need an approach to give clinicians further guidance.
Methods: We selected 9 recent guidelines from the American College of Physicians (ACP) and the US Preventive Services Task Force (USPSTF) that included marked deficiencies in the evidence. Using evidence considered by the guideline panels, we assessed reasons for the guideline panel's rating plus 3 further domains (potential benefits, harms, and costs). We then applied a simple decision rule of implementation only in situations where the probability of benefit is clearly greater than the probability of harm and cost.
Results: Guideline panels found deficient evidence for all 9 recommendations (5 minimal evidence; 4 poor quality evidence). After assessing the probability of at least moderate benefits, harms, and costs, and applying the decision rule, we found that a reasonable case could be made for limited implementation of 3 of the guidelines, but not for the other 6.
Conclusions: Using a simple analytic method plus decision rule, we found that a clear statement could be made not to immediately implement 2/3 of a small sample of guidelines with marked deficiencies in the evidence. For 1/3 of the guidelines, reasonable guidance could be given to implement only under limited circumstances. This is a process that guideline panels could employ to provide guidance beyond formal recommendations, thus potentially reducing overdiagnosis.

0102 - Meta-analysis of overdetection in trials of mammography screening: an example of adjusting for unplanned cross-over in cancer screening trials

Gemma Jacklyn, Paul Glasziou, Petra Macaskill, Alexandra Barratt

Objectives: Women require information about the benefits and harms of breast cancer screening to help them make informed, individualized decision. Thus quantitative estimates of the mortality benefit and risk of overdiagnosis with regular, ongoing participation in mammography screening (compared to non-participation) are needed. We aimed to produce relevant estimates by pooling results of breast cancer mortality reduction and overdiagnosis from randomized controlled trials of mammography screening with adjustment for less than 100% adherence to the trial protocol.
Methods: 10 mammography screening trials used in the UK Independent Breast Screening Report were selected. Data on breast cancer mortality and incidence were extracted. Extending the approach previously described by Glasziou to adjust intention-to-treat estimates for participation, we conducted a random-effects meta-analysis. This produced a deattenuated prevented fraction, which is the proportion of deaths attributable to breast cancer prevented by mammography screening (using data in all 10 trials), and a deattenuated percentage risk of overdiagnosis (suitable data available in 3 trials).
Results: Non-compliance in the mammography trials ranged from 0% to 35%; contamination ranged from 0% to 26%. The prevented fraction of breast cancer mortality for women aged 39-75 at 13-years follow-up is 0.21 (95% CI 0.12 to 0.30), which deattenuation increased to 0.30 (95% CI 0.07 to 0.52). The percentage risk increase in overdiagnosis during the screening period in women invited to screen is 19.0% (95% CI 15.2% to 22.7%), which deattenuation increased to 29.7% (95% CI 17.8% to 47.5%).
Conclusions:This novel approach to deattenuate pooled estimates of overdiagnosis respects the randomization and is applicable to other cancer screening trials. Adjustment for unplanned cross-over increased the size of both the mortality benefit and risk of overdiagnosis by up to 50%. Providing such deattenuated estimates are more appropriate when presenting quantitative information to support individual decisions about cancer screening.

0103 - **Is there over screening for Cancer in patients with limited estimated life expectancy - a Cross Sectional Study in Israel**

Ronen Bareket, Shlomo Vinker, Doron Comaneshter

The benefit of screening for colorectal cancer and breast cancer becomes significant only after 10 years of screening. Still, only few Screening Guidelines include limited estimated life expectancy as screening cessation criteria (American College of Physicians - 10y for CRC; Society of Breast Imaging, American College of Radiology - 5-7y for Breast). It is not known to what extent patients with reduced life expectancy, who are still young enough to be included in the common screening programs, are being screened. Data from the population-based National Health Survey implies that a substantial proportion of the US population with limited life expectancy received cancer screening that is unlikely to provide net benefit. Clalit Health Services is the largest HMO in Israel with 4.2 million patients (54% of the population) and EHR since 1998. It uses a quality indicators program to make sure eligible patients are being screened. The system is based on the Israeli screening guidelines, that limit screening to age 74, but does not include limited estimated life expectancy as screening cessation criteria.
We would like to examine to what extent patients with low estimated life expectancy aged 65 to 74 are being screened, and whether there are patterns implying that the quality indicators system is associated with screening being done for patients that will probably will not benefit. The life expectancy estimation will be based on Schonberg Index for Community dwelling adults aged 50 and older, that includes age, gender, BMI, History of Lung Disease, Cancer, and Diabetes, ADL status, Smoking status, and Hospitalizations. Personal perception of own health and difficulty walking 3 blockes - will be excluded from the index due to inability to attain these data from EHR. This will be the first estimation of this sort, that will be based on EHR information and not questionnaire based.

0104 - **Overdiagnosis of Chronic Obstructive Pulmonary Disease in the UK**

Halima Buni, Rachel Jordan, Peymane Adab, Alexandra Enocson, Kar Keung Cheng

Objectives: Over diagnosis is a growing concern for a wide range of diseases. We aimed to assess the magnitude of COPD over-diagnosis in the UK primary care settings and examine the characteristics of patients potentially over-diagnosed with COPD.

Methods: We analysed data on 1,473 GP diagnosed COPD patients aged 40 years and over who participated in the Birmingham COPD cohort study-UK. Patients were classified as non-COPD or confirmed-COPD based on post-bronchodilator spirometry results. Characteristics were compared using logistic regression adjusted for age, sex and smoking status.
Results: Based on Global Initiative of Obstructive Lung Disease, Lower Limit of Normal and NICE 2004 definitions, 13.7%, 28.1% and 32.3% of participants were potentially over-diagnosed with COPD respectively. Restrictive pattern of lung disease was observed in 18.9% of non-COPD. Compared to confirmed-COPD, non-COPD were younger (mean age 67.2 versus 69.5 years, OR 0.98; 95% CI 0.96 - 0.99), more likely to be females (52.2% versus 35.4%, OR 0.5; CI 0.4 - 0.7), never smokers (22.9% versus 13.8%, OR 0.5; CI 0.4 - 0.7), obese (39.3% versus 31%, OR 1.7; CI 1.1 - 2.6) and with multiple co-morbidities (23.9% versus 16.4%, OR 1.7; CI 1.1 - 2.6). Non-COPD participants were more likely to report previous asthma (47.3% versus 38.7%), coronary heart diseases (18.4% versus 14.2%), diabetes (18.9% versus 14.2%) and depression (21.4% versus 16.8%). But the difference between groups was not statistically significant.
Conclusion: Over diagnosis was common. We identified female sex, obesity, restrictive lung pattern and multiple comorbidities as potential predictors for COPD over-diagnosis but recommend a follow-up assessment for spirometry variability.

0106 - Practices to question in 2014

Sanket Dhruva, Scott Wright, Deborah Korenstein, Daniel Morgan

Objective: To identify and highlight the most significant clinical articles published in 2014 relating to practices to 'deimplement.' We identified the ten most important studies describing practices shown to be ineffective. Specifically, we focused on new evidence demonstrating common practices that result in no more benefit than harm.
Methods: We performed a systematic review of English-language articles published in 2014 and reviewed tables of contents of relevant journals to identify studies reporting original data on deimplementation in adults. We ranked articles based on quality of methodology, strength of results, potential effects on patient care, and the number of patients potentially affected to select the most relevant articles to feature and describe.
Results: We reviewed 911 published potentially relevant articles that met our inclusion criteria. Of these, 103 were ranked most relevant and were reviewed in detail and the 10 most relevant were selected. Manuscripts were organized into screening, diagnostic testing (covering overdiagnosis), and treatment (covering overdiagnosis and overtreatment). For the top 10 papers, the background for the study, its main results, and the implications for clinical care will be reviewed and described.
Conclusions: Our review provides clinicians with summaries of the most important clinical services to question given that their benefits are likely outweighed by risks based on new data.

0107 - **Advancing overuse research: what did we learn in 2014?**

Deborah Korenstein, Daniel J Morgan, Sanket Dhruva, Scott Wright

Objective: Overuse of medical services is a common yet understudied problem. We reviewed the 2014 published literature to identify important papers contributing to knowledge of overuse, facilitating overuse research, or informing efforts to reduce overuse.
Methods: We performed a structured PubMed search and reviewed tables of contents of relevant journals to identify English-language articles published in 2014 relating to overuse. We reviewed 909 papers and identified the 100 most relevant studies in terms of methodology and potential impact on patient care or overuse research. Among these, we included papers in this review if they related to 1) the incidence of overuse of a particular service, 2) trends in overuse over time, 3) drivers of overuse, or 4) assessments of interventions to reduce overuse.
Results: We identified 31 relevant papers: 16 described the incidence of overuse, 3 described time trends, 3 described drivers, and 9 described interventions to reduce overuse. Studied conditions included upper endoscopy, cancer screening tests, cardiac testing, knee arthroscopy, antibiotics, and white cell growth factors. Intervention types included audit and feedback, decision support, and patient and provider education. Included papers are noted with detailed descriptions of featured high-impact articles and their contribution to advancing overuse research.
Conclusions: The literature enhancing our understanding of overuse, overused services, and interventions to reduce overuse is rapidly expanding and may be difficult to follow. We provide a useful summary of important additions to the field from 2014.

0111 - **Long term SSRI antidepressant use: effective care or overtreatment? RCT of maintenance SSRI treatment versus discontinuation.**

Dee Mangin, Claire Dowson, Roger Mulder, J. Elisabeth Wells, Les Toop, Tony Dowell, Bruce Arroll, Evan Begg

The increasing SSRI prescription numbers in the population are being driven in part by continuation of medication after acute treatment as maintenance therapy to prevent recurrence. Primary care guidelines recommend maintenance treatment for some patients, however there is no evidence from RCTS of the effectiveness of this in primary care patients. It is possible this represents substantial overtreatment.
Objectives
- Assess the effectiveness in primary care patients of maintenance treatment with fluoxetine versus discontinuation in prevention of depression recurrence.
- Compare outcomes at 18 months for those who trialled discontinuation versus those who didn't.Design: Multicentre double blinded RCT
Intervention: Placebo masked maintenance fluoxetine compared with tapered withdrawal.
Participants: aged 18-75, treated in primary care, historical diagnosis of depression, taking fluoxetine as maintenance treatment to prevent recurrence for >15 months.
Followup:18 months for recurrence, side effects, and general functioning.

Primary outcome: depression recurrence over 18 months.
Secondary: All outcomes at 18 months for those who trialled withdrawal versus those who didn't.
Results: 33% (419/1273) responded to the invitation. 156 were ineligible. 263 were randomised. There were 30 (23.3%) depression recurrences in the taper arm and 14 (10.5%) in the continuation arm (Absolute difference 12.8% 96% CI 3.4%-22.3% p=0.005). For every 16 patients trialling discontinuation could not discontinue because of the severity of withdrawal symptoms. There was no difference in other outcomes at 18 months for those who trialled discontinuation.
Conclusions: The benefit is substantially smaller than previously thought. Most patients taking long term SRIS experience no benefit over 18 months. The NNTrial for one patient to successfully discontinue medication at 18 months is 2. It seems reasonable to present these data to patients and offer a trial of discontinuation. The difficulties some patients had discontinuing (NNH=16) is an important piece of data for shared decision making when starting SSRIs.

0112 - **Reducing overdiagnosis by obtaining second opinions: The potential population impact of alternative breast pathology reading strategies**

Anna Tosteson, Heidi Nelson, Qian Yang, Gary Longton, Samir Soneji, Margaret Pepe, Tracy Onega, Donald Weaver, Joann Elmore

Objectives: We assessed the population impact of alternative breast pathology reading strategies involving a second opinion, with a focus on over- and under-treatment and care costs in the year following biopsy.
Methods: Diagnoses of 115 practicing pathologists in the Breast Pathology Study (B-Path) were compared relative to reference-standard-consensus diagnoses, with resulting data on rates of diagnoses that are over-called (FP) or under-called (FN): benign without atypia (FP:5.8%), atypia (FN:34.7%, FP:17.4%), DCIS (FN:13.3%, FP:2.6%), invasive cancer (FN:3.9%). Strategies were defined based on whether a second (2nd) opinion was sought universally, based on the initial diagnosis (e.g., 2nd if atypia, DCIS or invasive), or if desired by the pathologist. Discordant 1st and 2nd opinion diagnoses were resolved by a 3rd pathologist. Decision analysis was used to estimate the expected percent of biopsies with reference-standard-concordant diagnoses and percent involving under- or over-treatment. Standardized care pathways were used to ascertain care costs in 2014 U.S. dollars in the year following biopsy. To address population impact, results were applied to the estimated 1.6 million breast biopsies done each year in the U.S.
Results: Without a 2nd opinion, 92.2% of biopsies received a reference-standard-concordant diagnosis. Concordance rates increased under all 2nd opinion strategies, and the rate was highest (95.1%) and under-treatment lowest (2.6%) when all biopsies had 2nd opinions. However, over-treatment was lowest when 2nd opinions were sought selectively for cases with initial diagnoses of atypia, DCIS or invasive cancer (1.8% vs. 4.7% with no 2nd opinion). This strategy also had the lowest total care costs in the year following biopsy ($8.54 billion vs. $8.76 billion with no 2nd opinions); and savings from a reduction in mis-diagnosis costs ($330 million) more than offset 2nd opinion costs ($116 million).
Conclusions: Second opinion strategies have the potential to reduce over- and under-treatment and lower costs of care.

0113 - **The role of guided referrals on reducing inappropriate diagnosis and treatment: a policy makers guide to profiling providers based on quality & cost**

Ayodele Kazeem, Epaminondas Sourlas

Introduction:Bupa is the largest health insurer in the UK and is committed to making high-quality healthcare affordable. Analytics on claims and hospital episode data identified significant variations in the approach of care to insured patients compared with the publicly funded National Health Service (NHS) - In 2011 Bupa patients over 45years old were over four times more likely to have radiology procedures and the potential for an MRI ten-fold more likely in over 16's. Procedures such as extensive open repair of rotator cuff muscles occurred over 5-fold more frequently in members over 65, a significant proportion (58%) of hysterectomies were abdominal as opposed to vaginal or laparoscopic and Spinal surgery (vertebroplasty and kyphoplasty) was not in line with evidence-based guidelines.
In response, Bupa undertakes medical reviews and created predictive models which identify unexplained variations in the charging and treatment behaviour in the private sector. This enables appropriate guidance to specialists as a value-based strategy to reduce cost without compromising clinical quality.
Aims: To conduct analysis which identifies unexplained variations in cost and treatment against published evidence. Funding policies should support value-based outcomes through the guidance of patients.
Methods: The cost and clinical quality model analyses claims and published outcomes data derived from the National Health Service. This risk-adjusts for patient specific factors and case-mix at sub-specialty level to enable peer-to-peer comparisons.
Results: Patients guided to appropriate specialists are 10% more likely to refer Bupa to friends and family. We have seen a 33% reduction in requests to fund spinal procedures, 6% reduction in claims associated with unnecessary knee arthroscopies and 15% reduction in abdominal hysterectomies amongst other findings.
Conclusions: Analytics ensures that policy makers implement value-based approaches to funding treatment in a private healthcare setting. Communication, engagement and reference to evidence-based medicine are simple strategies to maintain patient outcomes.

0114 - **Using Deliberative Methods to Guide Implementation of Lung Cancer Screening: Exploring Perceptions and Understanding of Overdiagnosis**

Daniel Reuland, Alison Brenner, Russel Harris, Laura Cubillos, Maihan Vu, Michael Pignone

Objectives: Implementing lung cancer screening (LCS) guidelines is complex and involves making value judgments about tradeoffs between benefits and harms in screened populations. Obtaining perspectives of citizens who are informed about potential harms of LCS, including overdiagnosis, is important for patient-centered implementation. As part of a larger project involving the use of deliberative methods to guide LCS implementation, we explored the issue of overdiagnosis with a "citizens' panel" of individuals eligible for screening by USPSTF guidelines.

Methods: The panel met for one full day, completing a didactic session, a question and answer session with an expert panel, and a facilitated deliberation session regarding LCS implementation. Evaluation included qualitative elicitation of participants' perceptions regarding benefits and harms of screening, including the issue of overdiagnosis, as well as quantitative, pre-post assessments of knowledge (including 3 questions specifically related to overdiagnosis) and the Screening Attitudes Scale-Benefits scale (SAS-B), a measure of general enthusiasm for screening.
Results: Panel composition (n=11): 5 women, 6 college graduates, 5 current smokers, 6 former smokers, mean age was 61 years (56-72), mean pack-years smoked 49. Five scored 3/3 on a standard numeracy scale. Qualitatively, participants reported surprise at the notion of harmless (indolent) lung cancers and the inability of physicians to predict with certainty which cancers would cause harm. At the end of the session, participants answered an average of 2.5 of 3 overdiagnosis knowledge questions correctly, compared to only 1.0 correct at baseline (difference 1.5, 95% CI 0.8, 2.1). Mean SAS-B scores decreased by 4.2 (95%-CI 1.7, 6.6) on 30-point scale.
Conclusion: People eligible for LCS may be unaware of the potential for overdiagnosis. In a small sample, citizen participation in a deliberative process led to improved understanding of overdiagnosis as a potential harm of LCS as well as tempered enthusiasm for screening in general.

0115 - **Acute rheumatic fever and other post-streptococcal pharyngitis complications in North America in the 21st Century - do current guidelines lead to overdiagnosis and overtreatment?**

James Dickinson, Ian Johnston, Carmen Gittens

Objectives: Acute rheumatic fever (ARF) and other complications of group A streptococcal pharyngitis are now rare in the developed world, yet concerns over these complications dominate guidelines in North America that recommend antibiotic prescriptions. The US-CDC stopped collecting data on ARF as a notifiable condition in 1995 due to low rates, and only isolated reports of disease activity have been published since. In other parts of the developed world, indigenous communities have much higher rates than those living in better social conditions.
This study reports on the recent incidence of these conditions in North America and their relative importance in indigenous communities.
Methods: Canada wide admission data from the Canadian Institute for Health Information (CIHI) for recorded diagnoses of Acute Rheumatic Fever (ARF), Sydenham's chorea, peri-tonsillar abscess and retropharyngeal abscess were obtained for all patients up to and including age 30 based on ICD-10-CA code for years 2004 - 2014. Population data from the Statistics Canada 2011 census, including aboriginal populations and residential crowding for each health region, were used to relate these factors to incidence.
Results: Initial analyses of ARF data shows a rate of 6 admissions per million population under 18 years or 1 per million for the total population with greater incidence in areas having predominant aboriginal populations and poorer social circumstances.
Conclusions: Initial results support the hypothesis that in the general population in North America, acute rheumatic fever is exceedingly rare. It appears likely that continued focus on antibiotic prescribing may cause more harm than it has potential to prevent. Continued prescription of antibiotics in areas with high aboriginal populations may be warranted. Completed analyses of all diagnoses and implications for antibiotic prescribing guidelines will be further discussed.

0116 - **Assessment of benefit of ultrasound monitoring of adnexal masses <10 cm for ovarian cancer early detection.**

Elizabeth Suh-Burgmann

Objective: To assess the impact of ultrasound monitoring of adnexal masses <10 cm on ovarian cancer survival.
Methods: We identified women who had a new diagnosis of primary ovarian/fallopian tube cancer in 2011 from the Tumor Registry. Chart review was performed to identify women whose cancer diagnosis was preceded by an ultrasound demonstrating an adnexal mass <10 cm that was not associated with an elevated ca125 or other signs of metastatic disease (ascites, peritoneal implants). The number of non-obstetric pelvic ultrasounds that were performed in 2011 for this population, for the indication of adnexal mass, was estimated from electronic databases.
Results: In 2011, 233 women were diagnosed with primary ovarian/fallopian tube cancer. Of these, 114 women (49%) did not have any pelvic ultrasound imaging prior to diagnosis. For 106 women (45%), their cancer presented with either an initial pelvic ultrasound demonstrating a mass > 10 cm, elevated ca125 (>35), ascites, or evidence of metastatic disease on imaging. There were 13 women (6%) who had an ultrasound demonstrating a mass < 10cm without other signs of malignancy. Of these 13, 7 underwent immediate surgical removal based on ultrasound features and other clinical factors (physical exam, symptoms). Six women were followed with repeat imaging prior to eventual removal, with 1/6 having stage I disease, 3/6 having stage II disease, and 2/6 having stage III disease at surgery. Approximately 21, 240 non-obstetric pelvic ultrasounds were perfomed in 2011 for known or suspected adnexal mass.
Conclusions: Among 233 women diangosed with ovarian/fallopian tube cancer in this closed population, 6/233 (3%) had their diagnosis preceded by ultrasound monitoring of a mass <10 cm that was not removed immediately based on other clinical factors. Monitoring led to benefit for 4 women (2%) in the form of early stage at diagnosis. Approximately 5310 ultrasounds were performed for each woman who benefitted.

0117 - **Reducing unnecessary prostate cancer screening in older men**

violeta violeta, Ronald Loo

Kaiser Permanente (KP) is an integrated care delivery system that provides clinical services to 10 million members in nine US states and the District of Columbia. Our mission is to provide high-quality and affordable health care. KP's **aim** is to ensure appropriate, evidence-based, reliable screening, treatment and follow-up of prostate cancer (Pca) patients; and to eliminate potential harm associated with over screening and over-diagnosis of Pca.
Methods: Transforming the care provided to Pca patients evolved into the first population - based cancer program that manages the entire continuum of care by leveraging our integrated health delivery system. Rapid adoption of an evidence-based screening guideline was supported by multiple interventions:1) Implementation of electronic medical

records and decision support best practice alerts; 2) Skilfully developed physician education and physician-patient shared decision making tools; 3) Analytics and transparency of performance within and across KP regions. KP's analytics provided multiple analyses that were leveraged in care delivery and quality improvement work (e.g., the percentage of men age 70 and older who were screened unnecessarily for Pca using the prostate-specific antigen (PSA), the rate of prostate biopsies and diagnostic workups in case of abnormal findings, and resulting treatment stratified by intervention). These data and qualitative analyses were used to educate physicians in meetings and educational sessions about appropriate Pca screening. Each successful process was spread throughout KP regions through collaboration with KP's Interregional Chiefs of Urology. As part of a learning organization, variations in practice and outcome are researched, evidence is updated, and processes continually updated.
Results: A trend analysis showed unnecessary PSA screening for older men (> age 75 for 2010 – 2012, > age 70 for 2012-2014) trending down in all regions. At the regional level the rate declined between 3% to 13%.

0123 - Comparison of the 2009 and 2013 Appropriate Use Criteria for Single Photon Emission Computed Tomography (SPECT) at a Canadian Academic Hospital

Kareem Morant, Kevin Levitt, Robert Iwanochko, Eric Yu, Mansoor Husain, Doug Lee, Ravi Mohan, Sacha Bhatia

Objective**:** The 2009 appropriate use criteria (AUC) for Single Photon Emission Computed Tomography (SPECT) were revised in 2013 to cover a wider range of scenarios. Data comparing the 2009 and 2013 AUC for SPECT, as well as rates of appropriate and inappropriate ordering of tests at a Canadian institution are limited.
Methods**:** A retrospective chart review of SPECT studies was performed at an academic medical center. Ordering of SPECT studies were assessed using both the 2009 and 2013 AUC to classify them as Appropriate (AP), Inappropriate (IP), or Uncertain (U) (for 2009 criteria) and Appropriate (AP), Maybe Appropriate (MA), and Rarely Appropriate (RA) (by 2013 criteria).
Results: A total of 149 consecutive SPECT studies performed in March of 2015 were reviewed. The 2009 and 2013 AUC classified 123 (83%) and 134 studies (90%) (p = 0.05), respectively. The most common indication for testing was for intermediate to high risk symptoms (46%). Of the studies that were classifiable, there were 112 (78%) and 114 (80%) studies that were AP, according the 2009 and 2013 AUC, respectively (p =NS). There were 9 (6%) studies that were classified as IA and RA according to 2009 and 2014 criteria. Twenty studies (14%) by 2009 and 10 (7%) studies by 2014 criteria, were unclassifiable (p=0.05). Of the unclassifiable studies by 2009 criteria, 50% became classifiable using the 2013 AUC. Of the IA/RA tests ordered 6 (67%) and 4 (44%) were for pre-operative risk assessments. The most common indication for unclassified studies were related to pre- transplant or post transplant assessments.
Conclusions**:** The 2013 AUC classified a greater proportion of SPECT studies compared with 2009 AUC. This difference was non-significant. Most reclassified studies were related to pre-transplant assessment. Most common IA tests by both criteria were related to pre-operative assessments.

0124 - **Overdiagnosis, overtreatment and quaternary prevention in primary care -A qualitative study with general practitioners**

Thomas Kuehlein, Kathrin Alber, Susann Schaffer

Objectives: There is increasing interest in the identification of unnecessary medicine worldwide. Its prevention has been described as "quaternary prevention". The German ambulatory Health Care System with numerous specialists running their own office based surgeries bears a risk of unnecessary medicine. Being at the starting point of avoidable cascades, general practitioners can play a vital role in protecting patients from unnecessary medical interventions. As a first approach, this study aimed to explore the topic from a general practitioner's perspective. We wanted to learn about common areas and medical conditions, as well as possible causes and consequences of overdiagnosis and overtreatment as perceived by German general practitioners.
Methods: Applying the method of an iterative an iterative process of grounded theory, twelve qualitative, in-depth expert interviews with general practitioners were conducted. All interviews were transcribed and anonymized. Two independent researchers coded the transcripts using open and axial coding in a continuous and comparative process until saturation of information was reached. Data analysis was supported by the computer software RQDA.
Results: The general practitioners identified certain factors to be determinants of unnecessary medicine, the most important being progress in medical technology, patients' high levels of expectation, economic aspects, increasing specialization in medicine and deficits in continuing medical education. Essential aspects to reinforce quaternary prevention were thought to be the general practitioner's gatekeeper role, the application of evidence-based medicine principles, a trustful doctor-patient-relationship and the consideration of underlying psychosomatic causes for illness and disease. Poor patient benefit and a considerable potential for harm were considered main consequences of overdiagnosis and overtreatment.
Conclusions: General practitioners see a wide range of unnecessary medicine taking place. They identified these processes as relevant sources of patient harm and distorted allocation resources in Health Care. Their role is already to prevent some of it.

0125 - **Consequences of overdiagnosis**

Lars Kristian Hebsgaard Jessen, Russell P. Harris, John Brodersen

OBJECTIVE: Overdiagnosis is gaining increasing attention within health scientific contexts and accordingly has become a topic in medical literature. However, there is still little consensus about the extent and consequences of overdiagnosis even though several studies have tried eliciting these aspects.
To assess the evidence existing on consequences of overdiagnosis based on Harris and colleagues' taxonomy(1) and subsequent endorsements that summarize the harms of overdiagnosis into 7 aspects: 1) financial strain; 2) hassles/inconvenience; 3) medical costs; 4) opportunity costs; 5) physical harms; 6) psychological harms; and 7) societal costs. In addition to these, we have defined an eighth aspect: 8) work-related costs.

METHODS: Eight different literature searches were conducted in PubMed. Moreover, relevant papers were also identified via MedLine, Web of Science, Google Scholar, reference lists and expert suggestions.
RESULTS: According to the eight search profiles, following pools were retrieved: (1) 599; (2) 139; (3) 1679; (4) 1525; (5) 4357; (6) 2044; (7) 2877; and (8) 87 articles, respectively. After excluding articles through title and abstract reading, a pool of (1) 17; (2) 3; (3) 36; (4) 31; (5) 24; (6) 45; (7) 48; and (8) 12 articles were included for thorough reading. In these articles empirical evidence confirmed that consequences of overdiagnosis exists in at least six of seven aspects of Harris and colleagues' taxonomy plus in work-related costs.
CONCLUSION: We found empirical evidence that consequences of overdiagnosis can be described as belonging to seven different aspects: financial strain; hassles/inconvenience; medical costs; opportunity costs; physical harms; psychological harms; and work-related costs. We did not identify empirical evidence about societal costs. Examples of which specific consequences overdiagnosis leads to will be presented at the conference.

0126 - **Quantification of overdiagnosis in randomized trials of cancer screening: an overview of systematic reviews**

Mikela Ambæk Krag, Bruno Heleno, Karsten Juhl Jørgensen, John Brodersen

Objectives**:** The purpose of this literature review was to quantify overdiagnosis in cancer screening. **Methods**: We identified randomized trials from reference lists of Cochrane Systematic Reviews of cancer screening and updated the search in Ovid Medline. Randomized trials were eligible if they compared cancer screening with either no screening or an alternative screening intervention. We did not include trials of screening targeting cancer precursors. Two authors independently assessed eligibility, extracted data, and assessed the risk of bias from contamination in the control group and inadequate consideration of lead-time. For other domains, we extracted the risk of bias assessments from the respective Cochrane Systematic Reviews. We estimated overdiagnosis, defined as the probability that a screen-detected cancer was overdiagnosed. Results were summarized through a random-effects meta-analysis using an inverse variance method. We planned a main meta-analysis restricted to trials at low risk of bias and a subsidiary meta-analysis including all trials, regardless of risk of bias.
Results**:** We identified 27 trials (four types of cancer, six screening technologies), 19 of which provided data on cumulative cancer incidence and number of screen-detected cancers (1,123,325 participants, four types of cancer, five screening technologies). We did not perform our main meta-analysis, because we only found two trials at overall low risk of bias. The subsidiary meta-analysis showed that 19% (95% confidence interval 7% to 31%) of the screen-detected cancers are overdiagnosed (I^2 89%).
Conclusions**:** Although randomized trials are theoretically the best design to assess overdiagnosis, only two out of 19 trials had low risk of bias. Our meta-analysis showed that on average 19% of screen-detected cancers are overdiagnosed, but the quality of the evidence is poor due to inconsistency and high risk of bias in the primary studies.

0128 - Obtaining Informed Consent by Invitations to Cervical Screening

Sie Karen Kolthoff, Mie Sara Hestbech, Karsten Juhl Jørgensen, John Brodersen

Objective: It is globally agreed upon that participating in cancer screening should be based on an informed consent. Invitations to cervical screening is the only source of information distributed to all potential participants and play a central part in the process of obtaining informed consent. An informed consent requires balanced information of possible benefits and harms from participating in cervical screening. Those responsible for the screening programme are also responsible for the invitations. Herein lies a conflict of interest since high participation rates are pivotal to any screening programme, but information about potential harms may discourage women from participation.
Our primary objective is to investigate whether invitations to cervical screening provide sufficient information to enable women to make an informed consent.
Methods: We collected invitations to cervical screening from Scandinavian and English speaking countries, which all have publicly funded screening programmes that are nationally or regionally coordinated. We requested invitation letters including any enclosed pamphlets sent to women inviting them to their first cervical smear.
Two authors evaluated all information material independently. We used a checklist containing 23 information items on benefits and harms, most of which have been used in other studies of information material. We recorded whether the material was written in a neutral tone and whether the invitation letter contained a pre-assigned date for appointment.
Results and conclusion: Twelve screening units representing 10 countries were included in this study. The invitations included a median of four of the possible 23 information items, ranging from 0 to 10. Our preliminary results suggest that the information was biased: strongly emphasising the benefits and downplaying the harms of cervical cancer screening. Moreover, the information was insufficient and thereby do not allow fully informed consent. The final results will be presented at the conference.

0130 - Avoiding low-value practices: Implementation of ESSENCIAL Project in Catalonia

Cari Almazan, Anna Kotzeva, Johanna Caro, Cristina Adroher, Cristina Colls, Josep Maria Argimon

Background: Improving healthcare quality through discontinuation of low-value practices requires a change in clinical practice led by healthcare professionals. Essencial Project in Catalonia is aligned with international initiatives to reduce unnecessary care through recommendations and is currently in the implementation phase in primary care.
Objectives
1) To implement clinical recommendations of Essencial project in primary care.
2) To evaluate the impact of recommendations on general practitioners' (GPs) practice.
Methods: The intervention consists in:
1) Nomination of clinical leaders to promote the project among their primary care teams (PCT) and to lead the implementation activities by identification of barriers and enablers for change in clinical practice towards avoiding low-value practices.
2) Selection of recommendations to be implemented and definition of corresponding activities to be carried out by

each PCT according to the specific characteristics of their organizations.
3) Development of related indicators and comparison between baseline status and change at 6, 12 and 18 month.
Results; 75 PCT (covering 28,4% of the Catalan population) participate in the pilot project. 12 recommendations were selected for implementation, including: bisphosphonates in post-menopausal women with low risk of fracture, antibiotics in pediatric otitis, PSA screening and statins for primary prevention of cardiovascular disease. Needs expressed by GPs include training in evidence based medicine for low-value practices and patient information tools as supporting material during visits.
Conclusions: This is the first experience in Catalonia and Spain of implementation of recommendation to avoid low-value practices with early involvement of target professionals. Real change in clinical practice should be promoted and led by health professionals as it has been planed in the pilot. Monitoring by indicators and feedback to GPs will be able to show if the project's objectives are reached.

0131 - **Overuse of PET, CT and radionuclide bone scans in the staging of early prostate and breast cancer patients - measurement of ASCO's Choosing Wisely recommendations**

Momoko Iwamoto, Izumi Inoue, Takahiro Higashi

INTRODUCTION: The use of PET, CT, and radionuclide bone scans has been listed by the American Society of Clinical Oncologists as unnecessary tests for the staging of early prostate and breast cancer patients as they show no benefit on metastatic detection or survival.
OBJECTIVE: To measure the prevalence and cost of overuse of advanced imaging tests among early prostate and breast cancer patients.
METHODS: We used cancer registry-linked administrative claims database of patients diagnosed in 2012 from 232 cancer treatment hospitals in Japan. We analyzed the frequency of using advanced imaging (FDG-PET, PET-CT, CT, or radionuclide bone scans) at the time of diagnosis for 23,924 early breast (clinical stage I/II) and 11,264 prostate cancer patients (T1c/T2a). We counted all tests conducted within 30 days of cancer diagnosis as tests conducted for the purpose of diagnosis. We calculated the direct medical cost of overuse by projecting the estimate obtained from our cohort to the total number of patients with the same cancer type and stage in the entire registry.
RESULTS: We found that the majority of early breast and prostate cancer patients received at least one advanced imaging at the time of diagnosis (68.7% and 65.7%, respectively), while 38.6% and 51.5% of the patients received both CT and nuclear imaging. Advanced imaging was routinely provided as standard tests for diagnosing breast and prostate cancer patients in 25% of hospitals where more than 90% of patients had received advanced imaging tests. The total cost of overuse was estimated to be $17 million in 2012.
CONCLUSION: Advanced imaging in early breast and prostate cancer patients was commonly practiced in Japan. Although the potential cost saving is substantial, its lack of survival benefit must be demonstrated prospectively to convince clinicians to change their practice patterns in the future.

0133 - **Should We Require Informed Consent Forms for Risk Factor Treatment?**

John Yudkin

Medical interventions are diverse, ranging from surgery to prescribing. The decision-making process requires the patient's assessing the balance of benefit and 'disutility,' comprising risks of the procedure, false-positive screening tests, or side effects of drugs and treatment inconvenience. For each, the physician needs the patient's consent. This could be the signed consent form preceding surgery, or verbal consent, usually assumed, for prescribing for symptomatic acute illness.
People are increasingly being prescribed drugs for preventing complications of non-communicable disease. The person may be asymptomatic, although at increased future risk, but is initiated on a drug, maybe for life. Similarly, asymptomatic people with type 2 diabetes may be started on insulin because glycaemic control is poorer than recommended in guidelines. Studies suggest that physicians, as well as patients, may have grossly exaggerated perceptions of benefits, with information often presented solely as relative risk reduction ("25% fewer heart attacks").
A recent landmark case in the UK Supreme Court has considered the information provided by an obstetrician to a pregnant woman with diabetes about possible risks of a vaginal delivery. The Court overturned the principle of the doctor deciding the optimal course, saying that the woman should have been provided with all the information necessary for her to make a choice, with the process carefully documented.
Similar considerations are likely to apply to benefits and risks of screening, investigations and prescribing – particularly when considering interventions intended for both individual and public health benefit - as well as to surgical interventions. Providing precise estimates for these will require improvements in knowledge, communication skills, and shared decision-making tools, and careful documentation of the consultation content. For initiating long-term drug treatment, introduction of a signed informed consent form might be considered. This will undoubtedly demand major changes in medical education, information tools and health service provision.

0134 - **Active surveillance as a possible management strategy for ductal carcinoma in situ: a computational risk analysis**

Marc D. Ryser, Mathias Worni, Elizabeth L. Turner, Jeffrey Marks, Rick Durrett, Shelley Hwang

Objectives: Ductal carcinoma in situ (DCIS) is a noninvasive breast lesion with uncertain risk for invasive progression. Usual care (UC) for DCIS consists of treatment upon diagnosis, thus potentially overtreating patients with low propensity for progression. One strategy to reduce overtreatment is active surveillance (AS), whereby DCIS is treated only upon detection of invasive disease. Our goal was to perform a quantitative evaluation of outcomes following an AS strategy for DCIS.
Methods: Age-stratified 10-year disease-specific cumulative mortality (DSCM) for AS was calculated using a computational risk projection model based upon published estimates for natural history parameters, and SEER data for outcomes. AS projections were compared to the DSCM for patients who received UC. To quantify the propagation of

parameter uncertainty, a 95%-projection range (PR) was computed, and sensitivity analyses were performed.
Results: Projected median differences in 10-year DSCM between AS and UC were 2.6% (PR: 1.4-5.1%), 1.5% (PR: 0.5-3.5%), and 0.6% (PR: 0.0-2.5%) when diagnosed at ages 40, 55 and 70, respectively. Corresponding median numbers of patients needed to treat to save one life were 38.4 (PR: 19.6-70.1), 67.4 (PR: 28.2-205.7), and 155.3 (PR: 40.4-3509.7), respectively. Sensitivity analyses showed that the parameter with greatest impact on DSCM was the probability of understaging invasive cancer at diagnosis.
Conclusions: AS could be a viable management strategy for select DCIS patients, particularly among older age groups and those with significant competing mortality risks. The effectiveness of AS could be markedly improved by reducing the rate of understaging.

0136 - Perceptions and attitudes of primary care physicians toward overdiagnosis and unnecessary care.

Anna Kotzeva, Johanna Caro, Nuria Prat, Cristina Adroher, Cari Almazan

Background and Objectives: ESSENCIAL is a healthcare project launched in Catalonia (March 2013) which promotes and develops actions towards avoiding overdiagnosis and overtreatment in the clinical practice. Physicians play key role in these processes and their views provide valuable information for better targeted policy interventions to reduce unnecessary care. Our objective is to explore and describe physicians' knowledge, attitudes and perceptions towards overdiagnosis and overtreatment in primary care.
Methods: Anonymous online survey targeting general practitioners (GPs). Issues covered include: general awareness and understanding of concepts, perceived role, views on driving forces and need for interventions to support change in diagnostic and prescription routines. Survey was piloted before its launch and specific strategies to maximize the response rate - user-friendly format, pre-notification and reminders - were applied. Response frequencies are calculated and correlation analyses run for pre-selected variables.
Results: The validation of the questionnaire led to improvements and resulted in 25 questions. The preliminary analyses of the initial responses suggest that the GPs are aware of existing practices of overidiagnosis and overtreatment (67,5% consider them frequent and 54,0% identify them in their daily practice). Reported as driving forces: clinical uncertainty (75,6%), lack of time for meaningful conversation with the patient (62,1%), insufficient evidence knowledge (43,2%) and patient demand (43,2%). The majority report speaking with their patients about the potential harms and side effects (56,7%), but less frequently about the care cost (41,0%). Interventions to support doctor-patient shared decisions are identified among the enablers to lower unnecessary care.
Conclusions: Overdiagnosis and overtreatment practices are frequent in primary care and GPs are aware of that and of existing driving forces behind these phenomena. Training and evidence-based updates, as well as tools to support doctor-patient shared decisions have important potential to lower unnecessary care.

0140 - Veterans' Identification of Important Factors in Lung Cancer Screening Decision Making

Sarah Lillie, Steven Fu, Angela Fabbrini, Kathryn Rice, Ann Bangerter, Barbara Clothier, Tam Do, Elizabeth Doro, Anas Moughrabieh, David Nelson, Melissa Partin

Objectives. We identified factors Veterans at the Minneapolis VA considered most important in lung cancer screening (LCS) decision making, and examined variation by LCS participation and Veteran characteristics.
Methods. In 2014 the Veterans Health Administration initiated a LCS Clinical Demonstration Project, offering LCS CT to eligible Veterans. We surveyed Veterans 3 months after LCS invitation to assess their perceptions about the importance (1='not at all important' to 5='extremely important') of 8 factors: lung cancer risk, fear of getting lung cancer, chance of incidental findings, LCS convenience, chance of false positive result, anxiety waiting for LCS results, knowledge about LCS, and CT scan health risks. We compared mean ratings across various subgroups.
Results. Of 877 Veterans invited to LCS, 43.8% completed the survey (N=384). Overall, the factor rated most important to LCS decision making was lung cancer risk (mean 3.26) and least important was CT scan health risks (2.35). Compared to the 70% of survey responders who did not schedule a LCS CT (N=269), the 30% who did (N=115) rated the following as more important: lung cancer risk (3.48vs3.16,$p<0.01$), fear of getting lung cancer (3.42vs3.05,$p<0.01$), chance of incidental findings (3.22vs2.99,$p<0.05$); they rated CT scan health risks as less important (2.10vs2.46,$p<0.01$). Current smokers rated the fear of getting lung cancer as more important than ex-smokers (3.31vs3.05,$p<0.05$), participants with more than a high school education rated LCS knowledge as more important than those less educated (2.87vs2.58,$p<0.05$), and participants with an income <=$40,000 rated the convenience of LCS as more important than those with an income >$40,000 (3.21vs2.91,$p<0.05$).
Conclusions. Factors identified as important in LCS decision making varied with Veteran characteristics, but mainly focused on the benefits of LCS. As LCS is implemented widely, these findings suggest a need to inform patients of potential screening harms and support the development of targeted decision tools.

0141 - Establishment of the Israeli Society for the Reduction of Overdiagnosis

Anat Gaver, Ronen Bareket, Rita Rahmani, Andre Matalon

The Preventing Overdiagnosis movement is spreading worldwide. Now Israel is joining in, and is in the process of setting up of the Israeli Society for the Reduction of Overdiagnosis (ISROD).
The new society's agenda is to raise awareness to the phenomenon of overdiagnosis in its widest definition, to promote action in the field of professional education at all levels, find ways to communicate with patients, the media and policy makers about overdiagnosis, draw up guidelines and encourage research.
ISROD is purposely being established under the auspices of the Israeli Medical Association which engages members of all medical specialties. Hence, its declared objectives are to come up, through dialogue and partnerships, with recommendations that will be relevant to a wide range of medical subjects.
At the conference, we'll briefly discuss the accumulating experience of founding "preventing overdiagnosis" organizations elsewhere in the world, and conduct an open discussion in order to learn more from international guests in

the audience.
Then we'll describe the current status of awareness to overdiagnosis in Israel and some of the dilemmas we face:
Naming the society: Using the familiar term "overdiagnosis" or the thought- provoking slogan "too much medicine"?
Global vs. local: Fully adopting the "top 5" lists of the choosing wisely initiative? Adopting and then adapting? Creating new, local lists? The burnout that might arise from too many "top 5" lists is to be taken into consideration.
Mapping the land: What are the main contributors to overdiagnosis in this country? Considering private and public medicine interaction, guideline publishing policy, healthcare regulation, distinctive conflicts of interests such as HMO-affiliated institutes who promote screening for profit, annual screening offered by employers and perceived as a benefit and status symbol etc.
Identifying partners: Patients' organizations, other health care practitioners, etc. Where does the local equivalent of "Consumers Report" hide?

0143 - Understanding the Nature of PSA (Prostate Specific Antigen) Prevents Overdiagnosis

Juuêrg Kuoni

Background: Two errors drive overdiagnosis of prostate cancer:
1.PSA is generally the result of contributions by hyperplastic prostate (BPH) and prostate cancer (PCa). The measured value PSA_{total} is the sum of PSA_{BPH} and, in the presence of cancer, PSA_{PCa}. They are physically and chemically identical. Applying thresholds to PSA_{total} will inevitably produce false-positive diagnoses of prostate cancer because PSA_{BPH} and PSA_{PCa} connote different biological phenomena.
2.Positive biopsies may prove histopathologic characteristics of cancer. They do not provide information about the progression of the disease.
Approach: Cancer cells divide at a faster pace than cells of BPH, kinetics of PSA_{BPH} and PSA_{Pca} therefore differ substantially. Both increase exponentially with time however according to different ranges of doubling times. Mathematical analysis recognizes whether one or two components are present and calculates the respective doubling times.
Semi-logarithmic graphs offer visual information of this analysis : exponential growth according to a constant exponent is represented by a straight line. Sums of two exponential functions follow simple rules: the shorter doubling time becomes dominant and unmistakably steeper. Such a curve points to accelerated growth or PCa. The shorter doubling time can again be calculated.
A minimal detectable tumor volume of one milliliter with a doubling time of two years will evolve to a tumor of 1024 ml after 10 additional doubling times. Based on patient age and clinical status doubling times of the cancer provide accurate information for treatment decisions.
Conclusions: PSA_{total} is a mixture of chemically and physically identical PSA_{BPH} and PSA_{PCa}. Based on the different kinetics of PSA_{BPH} and PSA_{PCa} a mathematical analysis is a prerequisite to reliably diagnose the underlying disease. Patient age and prognosis and the calculated progression of the disease provide the necessary information for treatment decisions. Several cases of BPH and PCa are demonstrated.

0145 - Race/Ethnicity and Overuse of Care: Result from a Systematic Review of the Literature

Nancy Kressin, Peter Groeneveld

Objectives: Literature on disparities in health care examines the contrast between white patients receiving needed care, compared to racial/ethnic minority patients not obtaining the care that they need; less attention has focused on racial/ethnic differences in overuse of care -unneeded care that does not improve patients' outcomes. We systematically reviewed the literature regarding race/ethnicity and overuse of care.
Methods: We searched the Medline database for US studies that included at least two racial/ethnic groups and that examined the association between race/ethnicity and the overuse of procedures, diagnostic or therapeutic care. We identified studies examining overuse by race/ethnicity in a recent review, and examined reference lists of retrieved articles. Study information was abstracted and evaluated, including the population studied, data source, sample size and assembly, type of care, guideline or appropriateness standard, controls for clinical confounding and financing of care, and findings.
Results: We identified 59 unique studies, of which 11 had low risk of methodological bias. Studies with multiple outcomes were counted more than once. Thirty three studies, six with low risks of bias (LRoB) provided evidence of whites receiving more inappropriate/unrecommended care than racial/ethnic minorities. Eight studies (two LRoB), found evidence of more overuse of care among minorities compared to whites. Thirty three studies (six LRoB) found no relationship between race/ethnicity and overuse.
Conclusions: While overuse of care is not invariably associated with race/ethnicity, when such associations have been found, a substantial proportion found greater overuse of care among white patients. Clinicians and researchers should seek to understand how and why race/ethnicity might be associated with overuse, and intervene to reduce such variations.

0146 - **Political Foundations of Overdiagnosis: Transformations in Modeling and Measuring Illness at the National Institute of Mental Health**

Herschel Nachlis

This paper examines the transformation of federal mental health policy since the founding of the National Institute of Mental Health (NIMH) in 1946. It demonstrates how and why the federal government played a central role in two developments with significant implications for the overdiagnosis of mental illness and Americans' health practices: the shift from modeling mental illness as a disease with social and environmental causes into an illness borne of brain chemistry and genetics, and the expansion of the concept of mental illness and attendant growth in epidemiological estimates of disease prevalence. Contrary to historical accounts of the growth of mental health treatment emphasizing

the primacy of the psychiatric profession and pharmaceutical corporations, and unlike some political science and public policy scholars who emphasize the sudden appearance of large-scale disease epidemics like obesity, I argue that political institutions and incentives played a primary role in the development of mental illness as a disease in America, and that this political development of mental illness was slow-moving and gradual, and its form largely unintended. These political developments, I argue, produced in a set of conditions necessary for the significant expansion of mental health diagnosis, which some scholars have deemed overdiagnosis and misdiagnosis. This account, drawn from the archival records of agencies and advocacy groups, firsthand accounts of agency leaders and scientists, and Executive branch and Congressional reports, also has important implications for scholars of policy feedback: while the NIMH's embrace of different broad disease models had short-term positive feedback effects, doing so caused longer-term political and scientific difficulties and negative feedback effects for the agency.

0147 - **The direct and derived costs of lung cancer CT screening in a Danish setting**

Manja Dahl Jensen, Jakob Fraes Rasmussen, Volkert Dirk Siersma, John Brodersen

Objective: To make a detailed analysis of the healthcare costs and utilization in relation to lung cancer CT screening using the "Healthcare costs in the Danish randomized controlled lung cancer CT-screening trial (DLCST): A registry study" as basis.
This prior study calculated the direct and derived healthcare costs of lung cancer screening by comparing costs in the CT group and the control group in the DLCST. After the publication of this study, the authors demonstrated that the participants in both groups experienced significantly increased concern after randomization compared with baseline. Moreover, participation bias has been documented. This bias plus the psychosocial impact on the control group could have resulted in over- or underestimation of healthcare costs.
Method: This analysis compared the healthcare costs and utilization of participants in the DLCST to a new reference group: a comparable random sample of the general population that was never invited to screening. The random sample, the CT group and the control group was compared respectively in a time period from randomization (2004-2006) until 2014.
Preliminary results: Compared with the new reference group, the participants in both the control group and the CT group had significantly increased healthcare use in five out of ten outcomes.
Conclusion: Our preliminary results underline that CT screening leads to derived healthcare costs, not directly related to the CT screening. They also indicate that the previous estimates of costs of lung cancer screening were underestimated. The final results will be presented in details at the conference.

0148 - **Wikipedia in medical school classrooms - crowdsourcing public health communication through medical education**

Lane Rasberry, Amin Azzam, David Bresler, Armando Leon, Jake Orlowitz, Fred Trotter, James Heilman, Lauren Maggio, Evans Whitaker, Kingsley Otoide, Jack McCue, Will Ross, Val Swisher, Mihir Shirish Joshi

Objectives: The information era continues reshaping the ways "digital consumers" access, retrieve and digest medically-related content. Wikipedia consistently ranks as the planet's 5th - 7th most heavily trafficked website, and more individuals look there for medical information than all other sources (e.g. NIH, CDC, etc.). While physicians and physicians-in-training are comfortable as digital contributors in traditional sources of medical content (e.g. textbooks, journals, Up-to-Date, etc.), active contributions to open or crowdsourced repositories (e.g. blogs, Wikipedia, etc.) has not yet been widely adopted as a practice norm or professional expectation.
This session will present a case study in which a medical school professor incorporated a Wikipedia editing assignment into a class for fourth-year medical students. Examples of information relating to overuse of treatment will be featured.
Methods: For a cohort of classes, students and instructors completed a tutorial to learn to edit Wikipedia. The students then edited Wikipedia articles on health topics under the direction of their instructors. Reviewers evaluated this content for quality and impact.
Results: The quality measurements done by reviewers indicated that student contributions usually increased the quality of health information presented by Wikipedia.
In the cohort examined, students published information which was widely read and had a positive learning experience in their field of health study and in the field of health communication.
Conclusion: To the extent that these outcomes are replicable, an instructor who understands Wikipedia guidelines can incorporate a Wikipedia assignment into typical classroom activities. This intervention is an exercise for students in meeting health learning goals and a practical health communication experience. It has the side effect of achieving health information distribution to the public through students.

0149 - **Guidelines, Benefit Design, and Cancer Screening: Combining Levers for Reducing Overuse?**

John Hsu, Maggie Price

Background: With growing appreciation of the clinical harms associated with inappropriate cancer screening, effective methods to reduce overuse are needed. We examined screening patterns during the period before and after release of the 2009 US Preventive Service Task Force (USPSTF) guideline revisions recommending against routine screening among women aged 75+ years (and before the elimination of cost-sharing in the Medicare program). We further focused on lower-income beneficiaries who did or did not have to pay for their mammograms because of income-based federal subsidies.
Methods: Using linked SEER-Medicare data, we examined 2007-10 biennial screening rates among fee-for-service Medicare female beneficiaries aged 75+ years, compared with those aged 65-74 years. We focused on beneficiaries having annual household incomes just above vs. below subsidy qualification threshold: lower-income beneficiaries faced no cost-sharing (free mammograms) throughout the study, whereas others had 20% cost-sharing. We used a difference-in-difference design and linear random-effects models adjusting for race/ethnicity, risk scores, disability and

state.
Results: Prior to the USPSTF guideline revision, 40% of beneficiaries aged 65-74 and 18% aged 75+ years had a screening mammogram within the past two years. After adjustment, we found that relative biennial screening rates dropped by 3.2% (95%CI: 2.94-3.40%) with the guideline revision, among beneficiaries aged 75+ years compared to those aged 65-74.Within the subgroup of beneficiaries who consistently had free mammograms, screening rates dropped by 3.1% (95%CI: 2.85-3.34%); within those who faced the 20% cost-sharing, rates dropped by 4.2% (95%CI: 3.51-4.84%).
Conclusions: The guideline revisions were associated with reductions in screening rates among affected women, and the reductions were 35% larger when the women had to pay for the tests. Policies that eliminated cost-sharing for all beneficiaries (as opposed to anchoring the changes on the USPSTF guidelines) may be premature. Thoughtful efforts are needed to align better benefit design with clinical goals.

0152 - **Treatment Preferences for Active Surveillance vs. Active Treatment Among Men with Low Risk Prostate Cancer**

Kathryn Taylor, Richard Hoffman, Kimberly Davis, Amethyst Leimpeter, Tania Lobo, David Aaronson, Stephen Van Den Eeden

Objectives: In light of the evidence indicating overdiagnosis and overtreatment of PCa, there has been increasing interest in active surveillance (AS) as an alternative to the active treatments (AT) of surgery and radiotherapy. The rationale for AS versus AT is that men with low-risk cancers are more likely to suffer treatment harms than benefits. However, AS is not widely utilized, partially due to psychological and decision-making factors associated with treatment preferences.
Methods: In a longitudinal cohort study, we conducted a pre-treatment baseline telephone interview (N=1,145, 69% participation rate) with newly-diagnosed, low-risk PCa patients (PSA<10, Gleason<6) from Kaiser Permanente Northern California. We assessed sociodemographics, tumor characteristics, decision-making processes, and treatment preference [AS, AT, or No Decision (ND)].
Results: Men were 61.5 years old, 24 days post-diagnosis, 49% college-educated, and 81.5% white. Treatment preference was: 39% AS, 31% AT, and 30% were ND. Multinomial logistic regression revealed that greater preference for AS vs. AT was associated with increased PCa knowledge (OR=1.45, CI 1.23-1.72), having anxiety about PCa (OR=1.08, CI 1.01-1.16), and wanting to engage in shared decision-making (vs. deciding independently; OR=2.97, CI 1.9-4.63). However, AS preference was inversely associated with certainty about the treatment decision (OR=0.62, CI 0.48-0.80). The odds of preferring ND vs. AT also increased with greater PCa knowledge (OR=1.49, CI 1.21-1.85) and preference for shared decision-making (OR=2.86, CI 1.68-4.88), but was inversely associated with decision certainty (OR=0.18, CI 0.14-0.24).
Conclusions: Compared to men who preferred AT, men preferring AS were more likely to want to make a shared decision, were more knowledgeable about PCa, but were also less certain about their decision. The treatment decision for low risk PCa can be difficult and may require providing balanced decision-support information shortly after diagnosis. Determining methods for delivering timely and appropriate information during the decision-making process is needed.

0156 - Is there an App for that? Assessing a web-based tool (MedStopper) as a decision-aid in "deprescribing"

Alan Cassels, Barbara Farrell, Dee Mangin, James McCormack, Johanna Trimble, Malcolm Maclure

Objectives: A wise clinician once observed: "starting a new medication is like the bliss of marriage and stopping it is like the agony of divorce." Despite the many and diverse encouragements to elicit new prescriptions, there are few resources to help clinicians stop medications, even in cases where the likelihood of polypharmacy-induced harm is high. For some practitioners and patients deprescribing is fraught with considerable emotional and psychological stress. Practitioners say they often don't know why certain drugs were prescribed in the first place, fear an increased/ unmanageable workload, fear contradicting the order of a specialist, and find engaging elderly patients in discussing quality of life/ life expectancy difficult. Despite these barriers there is a growing desire from health care providers, aware of overdiagnosis and overtreatment, to seek tools to reduce polypharmacy risk and carry out 'deprescribing' activities.
Methods: Our expert team developed a tool (medstopper.com) to help sequence deprescribing decisions and provide desprescribing guidance. The tool ranks a patients' medications, from "more likely to stop" to "less likely to stop," based on the drug's ability to improve symptoms, reduce future illness and avoid harm. We evaluated this tool in in-depth interviews with physicians (n=25).
Results: When deprescribing, clinicians rely on intuition, knowledge of the unique circumstances of the patient, and common sense and found MedStopper useful and easy to use. Additional information such as NNT/NNH numbers, drug costs and serious adverse effects were recommended.
Conclusion: We plan a randomized trial of Medstopper in physician groups to measure its impact on ease of deprescribing, medication reductions, and impacts on health related factors (falls, cognition, and hospitalizations due to adverse events).

0158 - Do Low Grade Prostate Tumors Have the Potential for Growth? Evidence from Serial Imaging During Active Surveillance

Mohamed Eltemamy, Michael Leapman, Janet Cowan, Hao Nguyen, Katsuto Shinohara, Peter Carroll

Objectives: An improved understanding of the growth potential of low-grade prostate cancers (PCa) has a major impact on management of incidentally detected, low risk tumors. We aimed to evaluate changes in anatomic transrectal ultrasound (TRUS) in a large cohort of men followed with active surveillance (AS).
Methods: We retrospectively reviewed patients at the University of California San Francisco (UCSF) enrolled in AS. Patients received quarterly PSA testing, prostate biopsy, and high resolution anatomic TRUS at initial staging and at 6-12 month intervals to assess for disease progression. Low and intermediate risk men were included with PSA ≤20, clinical

stage T1 or T2, biopsy Gleason score ≤3+4, who received initial staging TRUS within six months of diagnosis. We assessed progression on imaging, defined as volumetric increases in ultrasound-evident lesions (≥ 50% in volume), change in number of lesions, or clinical stage and associated rates of biopsy upgrade or high-grade or non-organ confined disease at surgery (adverse pathology).
Results: We identified 713 men with low and intermediate risk PCa receiving serial TRUS imaging. The median number of ultrasound studies was 5 (IQR 3-8). Patients were followed for a median of 54 months (IQR 30-87), and received a median of 2 biopsies (IQR 2-4). 167 men (23%) experienced progression by any definition at a median time of 12 months (IQR 6-28). Among 160 patients with a TRUS-apparent lesion at diagnosis, 55 experienced a ≥50% change in tumor volume and 39 patients had an increase in the number of lesions from baseline. Progression on TRUS was associated with biopsy upgrade, but not adverse surgical pathology among 157 men treated with prostatectomy.
Conclusions: Among men diagnosed with low and intermediate risk PCa in the PSA-screening era, a proportion of tumors displayed non-static growth within the prostate. When detected, such a change allows for timely intervention

0159 - **Over-prescribed: An Analysis of Pre-participation Sport Physical Exams**

Gene Harkless

Objective: For 30 years, there has been a debate about value of the pre-participation sport history and physical exam (PPE) in the U.S. What is the evidence for the PPE? What should be the screening interval? Should ECG be standard? What level of high school athlete benefits from these efforts? This analysis aims to address these questions and provide a critical appraisal of the PPE policies of ten states whose combined numbers of student athletes totaled over 4 million in 2013-14.
Method: A systematic review, examining the process, content, and measurable outcomes of the PPE for student athletes, provided the context for the critical appraisal the PPE policies of ten states.
Results: For the process and content of the PPE, including the frequency of the evaluation, there are no outcomes based studies that provide support for any particular approach. Nor is there clear evidence that the PPE decreases injury or death. The issue most discussed over the past decade is the evidence regarding ECG screening to lessen the event rate of sudden cardiac death and this presentation will provide a summary of this debate. Of the ten states, eight require annual PPEs. This means about 3 million student athletes in those eight states are required to see a provider every year for a PPE. Notably, the 2010 national consensus recommendation is a PPE every 2-3 years.
Conclusions: Recommendations for PPE policy must consider the state of the science so as to understand what PPEs can actually deliver and be relied upon to do consistently. As there is little evidence as to the value the PPE for most student athletes, it would be prudent to allow families and providers to make these complex value judgments about specific preventive interventions. The least restrictive state policy affords students and families this opportunity.

0161 - Active Surveillance of Prostate Cancer Detected by Population Based Screening

Michael Leapman, Janet Cowan, Hao Nguyen, Katsuto Shinohara, Matthew Cooperberg, Peter Carroll

Objectives: Population-based prostate specific antigen (PSA) screening has resulted in the incidental detection of many prostate cancers (PCa) in many men that harbor low risk of metastatic progression and cancer-related mortality, and in whom treatment offers minimal benefit to longevity or quality of life. Active surveillance (AS) with close monitoring for disease progression provides an alternative to immediate treatment, yet globally remains an underutilized initial management strategy for such patients.
Methods: We reviewed the clinical and pathological data of men enrolled in AS at the University of California San Francisco (USCF) between 1990-2015 with a minimum follow of six months. Surveillance consisted of semi-annual PSA testing, transrectal ultrasound, and periodic prostate biopsy. We describe the rates of progression on follow-up biopsy, longitudinal changes in PSA, and rates of treatment in extended follow.
Results: We identified 1,200 men enrolled in AS at our institution. The median follow up period was 53 months (range 6 months-20.4 years). The median PSA at diagnosis was 5.3 ng/mL. 65% of men met strict UCSF clinical criteria for surveillance at enrollment. 38% were reclassified to Gleason 3+4 or higher, 7% had a PSA doubling time within 36 months, and 36% were treated (prostatectomy, radiation, or androgen deprivation therapy). The five-year overall survival was 98% and no cancer-related deaths occured.
Conclusions: In an experience spanning one quarter-century, patients with incidentally detected, low risk tumors, initial management with AS yielded favorable treatment-free rates and rare disease-related morbidity.

0163 - When Do Changes in Cancer Survival Mean Progress?

Hyunsoon Cho, Angela Mariotto, Lisa Schwartz, Steven Woloshin

Background: It is often assumed that increases in cancer survival reflect true progress against cancer. This is true when these increases are accompanied by decreased burden of disease. But increased survival can also occur even when disease burden is increasing - biases in survival can be introduced by early detection and overdiagnosis.
Objective: To illustrate when changes in cancer survival reflect true progress
Methods: We analyzed US trends in five-year relative survival, age-adjusted incidence, and mortality for selected cancers to identify patterns that do and do not reflect progress. Data from 1975 to 2010 collected by the Surveillance, Epidemiology, and End Results Program and the National Center for Health Statistics are used. Interpretation of changes in survival time with and without early detection were explained.
Results: Among the nine common cancers examined, survival increased in seven, and changed little or not at all for two. In some cases, increased survival was accompanied by decreased burden of disease, reflecting true progress. For example, from 1975 to 2010, five-year survival for colon cancer patients improved (from 48% to 68%) while cancer burden fell: Fewer cases (incidence decreased from 60 to 41 per 100000) and fewer deaths (mortality decreased from 28 to 16 per 100000), a pattern explained by both increased early detection (with removal of cancer precursors) and more effective treatment. In other cases, however, increased survival did not reflect true progress. In melanoma, kidney,

and thyroid cancer, five-year survival increased but incidence increased with no change in mortality. This pattern suggests overdiagnosis from increased early detection, an increase in cancer burden.
Conclusions: Changes in survival must be interpreted in the context of incidence and mortality. Increased survival only represents progress when accompanied by a reduction in incidence, mortality, or ideally both.
Paper published at J Natl Cancer Inst Monogr 2014;49:187-197

0164 - **Overdiagnosis and the Obesity Epidemic: When Cultural Dogma Trumps Evidence-Based Medicine**

Robert A. Gelfand

According to current diagnostic criteria, healthy body weight (BMI<25) is a relatively uncommon condition in the US, enjoyed by only ~1 in 3 adults. These definitions, reflecting broad medical consensus, assign the great majority of Americans to an unhealthy weight category (overweight or obese). The term "obesity epidemic" describes the astonishingly large numbers of people whose health is presumably impaired by excess body weight.
Being very fat is unhealthy. Extreme obesity (BMI>40) is associated with reduced life expectancy and impaired quality of life. For this group, medical treatment (e.g., surgery) to promote weight loss has sound scientific rationale and is supported by clinical evidence of improved outcomes.
Though its prevalence has increased substantially in recent decades, extreme obesity still constitutes small fraction of the population (<10%) and of the total overweight-obese patient group.
The present report critically reviews the evidence base underlying the current medical consensus view of overweight and obesity, including the extent to which clinical practice recommendations conform to the principles and spirit of evidence-based medicine.
Results will be summarized to suggest that most patients now classified as overweight or obese – with BMI between 25 and <40 – may be victims of overdiagnosis.
Topics include:
CDC Hyperbole
Why obesity is absent from cardiac risk assessment tools (Framingham, etc.).
The "Obesity Paradox"
The LOOK AHEAD Trial

0165 - **Dynamics of Routine Health Screening: Why Is Screening So Common For Some Diseases When Evidence Is So Uncertain?**

Ozge Karanfil, John D. Sterman

Practice guidelines for routine screening such as mammography or PSA testing have changed significantly over time. Evidence-based guidelines are often not followed by clinicians and patients, with significant over- screening for some tests and under screening for some others. In this study we describe a dynamic simulation model to explain changes in action thresholds of practice guidelines for major guideline issuing organizations, and document major drivers of screening by using a dynamic feedback perspective.
In this study we describe a behaviorally realistic model to explain changes in policy recommendation thresholds of practice guidelines and screening is still so common for some diseases such as prostate cancer when the evidence is so uncertain. The dynamic theory we seek to develop includes a decision-theoretic core around costs and benefits; cognitive processes affecting the ways in which these are interpreted; and the socio- political feedbacks that condition formal guidelines and the actual practice. Together, these feedbacks inform public's perception of risk for common diseases such as breast and prostate cancer, where recent changes to screening guidelines have been particularly controversial.
We seek to explore these research objectives through collection of both qualitative and quantitative data, and document evidence of gaps between the evidence and practice. Qualitative data includes interviews with medical and health professionals, members of patient advocacy groups and others, aimed at understanding how guidelines are formed, how they are communicated and implemented, and how the entire process is overseen. Quantitative data includes longitudinal data for screening in the US. Our goal is to build a picture of how screening decision are currently made at policy and individual levels, and how they have evolved.

0166 - **Quantifying the Contribution of Overdiagnosis on Gains in Life Expectancy for US Breast Cancer Patients, 1975-2002**

Samir Soneji

Objectives. Overdiagnosis chiefly occurs among women diagnosed with the smallest breast cancers (<1cm) and artificially inflates the share of these smallest tumors among all incident cancers. We quantified the maximum contribution of overdiagnosis to gains in life expectancy among US breast cancer patients between 1975 and 2002.
Methods. We calculate incidence-based mortality rates by age and year at diagnosis and tumor size (<1cm, 1-2cm, 2-5cm, ≥5cm). Using demographic decomposition, we quantify how much of the overall gain in life expectancy resulted from [1] changes in the annual share of cancers by tumor size, [2] improvements in mortality from breast cancer, and [3] improvements in mortality from competing causes. We also calculate the annual proportion of cancers by tumor size that resulted in death from breast cancer within 10 years of diagnosis. The maximum contribution of overdiagnosis equals the product of [1] the proportion of <1cm cancers that did not die of breast cancer within 10 years and [2] the contribution of the annual share of <1cm cancers on the gain in life expectancy.
Results. Life expectancy increased by 10.8 years (1975 to 2002). The increase in the annual share of <1cm cancers among all incident cancers (5% in 1975, 20% in 2002) contributed 4.8 years to the gain in life expectancy. The proportion of <1cm cancers that resulted in death from breast cancer within 10 years of diagnosis equaled 4% in 2002 (lowest level in study period). Under the conservative assumption that the remaining 96% of <1cm cancers were overdiagnosed, the maximum contribution of overdiagnosis for <1cm cancers equals 4.6 years (96% of 4.8 years). Thus,

overdiagnosis contributed, at most, 4.6 of the 10.8-year gain in life expectancy (39%).
Conclusion. Most of the observed gain in life expectancy resulted from improvements in breast cancer treatment rather than artificially from overdiagnosis.

0167 - Risk Perception, Preferences and Behaviors in Prostate Cancer Screening: A System without Negative Feedback

Ozge Karanfil, John D. Sterman

The introduction of Prostate specific antigen (PSA) testing for prostate cancer has nearly doubled the lifetime risk of receiving a diagnosis of prostate cancer in the US. A substantial proportion of these PSA-detected cancers are considered to be over diagnosed cases because they would not cause clinical problems during a man's lifetime. The degree of enthusiasm for PSA screening stays high despite limited evidence of benefits and documented harms of likely treatment, while the U.S. Preventive Services Task Force (USPSTF) recently issued a draft recommendation against PSA screening for asymptomatic men, regardless of their age, racial or ethnic group (USPSTF, 2012).
Our purpose is to document the forces of reinforcement that have occurred for screening and treatment decisions in prostate cancer, to illustrate the consequences of enthusiasm in clinical decisions for screening and treatment of prostate cancer in the US context, and to suggest potential ways to alleviate the future harms of over diagnosis and overtreatment of prostate cancer in US men.
We will document the results of an extensive semi-structured expert opinion interview study, conducted with medical and health professionals, clinicians, advocacy group members, media and science writers, and patients, between February-May 2015. Interviews shed light on why there is so much resistance for the recent changes in evidence based guidelines from some clinician groups and patients, and what are the real determinants of screening.
We provide multiple contributions that speak to the literatures of prostate cancer screening, medical decision making in the context of screening decisions, changing policy thresholds and empirical data collection for PSA practice guidelines. We provide the first theory building piece for PSA screening dynamics in the US that takes into account the bigger socio-political environment in which the screening decision is embedded, by documenting the most important features of a system lacking negative feedback.

0168 - Challenging the Selling of Sickness: A Partnership Model of Professionals and Advocates for a New Social Health Movement

Kim Witczak, Leonore Tiefer

There's a shift in society's collective belief and experience about our healthcare. The public is starting to wake up. Traditionally, patient stories/experiences are dismissed as "anecdotal". Everyone says they care about "patients" from the FDA to insurance companies to the drug/device companies. It's part of the healthcare narrative. But in reality, patients are the target for healthcare services/products.
Assumption: The public wants to be part of the conversation/process to create change. But its going to take creating a partnership between professional and citizen activists to help build a stronger and more effective health reform movement. A partnership model approach can create opportunity to think outside the box and apply the philosophy of building together (vs. just including or "talking" to..) through mutual respect of diverse sources of knowledge. Patients (consumers/citizens) come with own background, experience, and knowledge. We need doctors/researchers/citizens/media/lawyers to get involved in activism to change the system vs. accepting/playing within current paradigm/status quo. It's changing to the "experts are IN the room as well as IN FRONT of the room (aka those in white coat).
Background: Bridging traditional boundaries, Minneapolis consumer activist Kim Witczak (woodymatters.com) and Manhattan scholar activist Leonore Tiefer (newviewcampaign.org) produced a successful 2013 international conference, **"SELLING SICKNESS: PEOPLE BEFORE PROFITS."** It celebrated and blended the voices and contributions of both citizen and professional healthcare reformers.
Presentation: Using this experience, we will describe the roots and rationale for this innovation, and offer examples of how-to and why-to that will illustrate what partnership is all about. We will discuss what partnership model means; what are the strengths; what are the problems; what are the barriers to making it happen; what are the processes to making it happen.
Partnership in collaboration. Partnership in activism. Partnership in change.

0169 - Predictors of Men with Low Risk Prostate Cancer Choosing Active Therapy vs. Active Surveillance: 2004-2010 at Kaiser Permanente Northern California

Stephen Van Den Eeden, Scott Kelly, Richard Hoffman, Jun Shan, Arnold Potosky, Joseph Presti, David Aaronson, Kathryn Taylor

Objectives: Treatment choice among men with low-risk prostate cancer (PCa) is often a difficult decision. We characterized the treatment choices of men diagnosed with low-risk PCa within Kaiser Permanente Northern California (KPNC).
Methods: We identified KPNC members newly diagnosed from 2004-2010 with low-risk PCa (n=4,861; defined as Gleason≤6, PSA≤10 and stage≤T2a. Active surveillance was defined as having no active treatment within 12 months post-diagnosis unless clinically indicated (rising PSA or repeat biopsy with higher Gleason score).
Results: The proportion of men with low-risk PCa on AS increased from 18.2% in 2004 to 52.3% in 2010 ($p<0.05$). In multivariate models (Table), significant predictors of AS vs. AT included older age, more recent year of diagnosis, lower PSA/stage at diagnosis, and higher educational attainment. Hispanic men were less likely than non-Hispanic white (NHW) men to go on AS, while there were no differences for Black or Asian men. Comorbidity was not significantly associated with treatment choice. Of 1692 men selecting AS, 28% subsequently underwent AT between 1 and 12 years following diagnosis. The greatest proportion of switches to AT (33%) occurred between 12 and 18 months following

diagnosis. Hispanic and Black men were more likely to switch than NHW men; men with higher baseline or follow-up PSA levels were more likely to switch than those with lower levels.
Conclusions: In a community integrated health care delivery system setting with prepaid group practice, the use of AS for low-risk PCa has dramatically increased in recent years. Age, education, and clinical factors were most predictive of choosing AS. Only a minority of men switched from AS to AT; the change was generally clinically driven.

0170 - **On Successfully Implementing Medical Guidelines Under Uncertainty for Breast Cancer Screening Overdiagnosis: A Role for Agent-Based Simulation Analysis**

Author's preference: Either Poster or Oral

Luciana Garbayo, James Stahl

Objectives: This study aims at methodologically contributing to the development of successful medical guideline implementation strategies under uncertainty for patients in the case of breast cancer screening associated with overdiagnosis.
Method: Agent-based simulation is used under a modified D.E.E.P framework (Stahl, 2008) to predict uncertainty effects in patients' decision-making regarding breast cancer-screening overdiagnosis
Results: Preliminary results point to a learning-curve reduction of agent uncertainty regarding the implementation of medical guidelines for breast cancer screening overdiagnosis based on the projected simulation and revision of distributed results.
Conclusions: Agent-based simulation may play a relevant role for policy-makers and implementers in predicting and reducing confusion in the information flow for patients contemplating the decision of doing a breast cancer screening, while avoiding overdiagnosis, and thereby contribute to reduce harm and to strengthen patient autonomy and participation in the medical decision-making process.