

0004 - Identification of medication discrepancies and potentially inadequate prescriptions in elderly adults with polypharmacy

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Abstract: Medication reconciliation is the process of comparing the documented prescriptions in medical records with those actually consumed by the patients. Potentially inadequate prescriptions (PIP) are those significantly associated with adverse drug events.

Objectives

- 1) to describe the frequency and type of medication discrepancies through medication reconciliation
- 2) to describe the frequency of PIP

Method: In a cross-sectional study of randomly selected elderly people (>65 years old) with more than 10 medications recorded in their electronic medical record (EMR), structured telephone interviews were performed in order to identify medications discrepancies and PIP. STOPP criteria were used to identify the latter.

Results: Out of 214 randomly selected individuals 150 accepted to participate (70%). 85% were women (average age 78). The average number of medications referred to be consumed by patients was 9.1 (CI 95% 8.6-9.6), and the average number of prescribed medications in their EMR was 13.9 (CI 95% 13.3-14.5). 99% had at least one discrepancy; 46% consumed at least one prescription not documented in their EMR and 93% did not consume at least one of the prescriptions documented in their EMR. In 77% of the patients a PIP was detected, 87% were inadequate use of benzodiazepines, proton pump inhibitors or aspirin.

Conclusions: There is a high prevalence of medication discrepancies and PIP within the community of elderly adults affiliated to a Private University Hospital. Additional interventions need to be implemented in order to warrant a safer medication profile among elderly adults.

0006 - Methodological challenges in quantifying overdiagnosis in organized screening for abdominal aortic aneurysm using Swedish registry data

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Background: Screening for abdominal aortic aneurysms (AAA) has been implemented in Sweden, the UK and the US based on a relative reduction in disease-specific mortality of about 50% in randomised trials, which translates into a 0.5% absolute reduction. However, no effect on total mortality has been shown.¹ Additionally, there are important harms that has not been adequately quantified, such as overdiagnosis of harmless aneurysms, which may result in unnecessary surgery and even death, as well as psychosocial harm.^{2,3} Based on data from the trials leading to the introduction of AAA screening, we have previously estimated that for every 10,000 men invited, 176 will be overdiagnosed and 37 of them will unnecessarily undergo preventive surgery, two of whom will die from the operation.² However, these estimates are based on populations with a much higher disease prevalence than today; due to reduced smoking, the prevalence of AAA has dropped by over 70%,⁴ resulting in reduced absolute benefit and probably a worsened benefit/harm-ratio.²

Objectives: To estimate overdiagnosis in organised AAA screening in Sweden and compare our results to those seen in the randomised trials leading to the introduction of AAA screening.

Method: We are conducting a study based on Swedish registry data. The Swedish screening programme has been gradually implemented (2006-2015), which makes it possible to compare a screened versus a non-screened cohort using individual patient data.

Results: We will discuss the methodological challenges of our on-going register study and preliminary results will be presented.

Conclusions: The balance of benefits and harms of AAA screening today is unknown. The gradual implementation of AAA screening in Sweden presents a unique possibility for evaluation of the screening programme, but substantially declining disease incidence complicates analyses.

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0009 - "Informed choice" in a time of too much medicine - no panacea for ethical dilemmas

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Abstract: "Informed choice" is increasingly considered as a means to prevent overdiagnosis and resolve the ethical dilemmas arising from preventive medicine, medicalization and "too much medicine". However, providing information to enable informed choices does not address the many deeper drivers of excessive use of medical interventions and it creates new ethical dilemmas that are under-recognised. We welcome a respect for patient autonomy and are not opposed to involving patients in decisions, but we are concerned with potential downsides of this approach within the context of too much medicine.

Objectives: To analyse the limits and potential downsides of trusting "informed choice" and "shared decision making" to resolve the ethical dilemmas associated with "too much medicine".

Method: A narrative review of a topic that is difficult to formally analyse.

Results: In modern medicine, the health care system often place citizens in a situation with no possibility to avoid making a choice, this creates ethical dilemmas. Informed choice may transfer responsibility from the health professional to the patient. Additionally, a strong focus on individual autonomy and informed choice may divert attention from some of the underlying, unspoken premises and assumptions that are of fundamental importance to clinical decisions. When considering a patient's personal preferences we need to take into account that these are influenced by professional presumptions, advocacy groups, financial and political interests, pushing "preferences" in the direction of more medicine.

Conclusions: If we fail to analyse and critically reflect on the drivers leading to a new need for "informed choices", our good intentions may inadvertently enhance medicalization and "too much medicine".

0010 - Attitudes of Portuguese women concerning breast cancer screening exams - A Population-Based Nationwide Cross-Sectional Study

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Objectives: Although breast cancer screening may save some women from breast cancer death, it also has important harms like exposing women to false positive results, overdiagnosis and unnecessary treatment. This study aims to assess which breast cancer related medical tests are deemed necessary by adult Portuguese women.

Method: This is a cross sectional study. 520 Portuguese women were surveyed by computer-assisted telephone interviewing and randomly selected from national landline telephone lists and NUTS II regions. Proportions and prevalence estimates of the Portuguese population were determined for mammography and breast ultrasonography having women answered on whether they consider they should do, the periodicity they should do it and if they use to do it.

Results: 520 women were interviewed; 97.70% (95% CI 94.7 to 99.00) of women aged 50-69 considered they should undergo mammography; 58.4% (95% CI 51.00 to 65.50) of the non-target for screening age group of 18-39 years old having the same opinion. Breast ultrasonography, was referred an intervention they should do by 100.00% of women aged 50-59 years old (N=75), with 79.60% (95% CI 69.70 to 86.80) affirming they usually do it. Obese women were more likely to consider they should undergo mammography. Results were similar when excluding women with personal or familiar history of cancer.

Conclusions: A big proportion of Portuguese women consider they should undergo mammography, even younger women, who are not a target in the National Screening Program and most of them say they usually do it.

Ultrasonography, which is not recommended for breast cancer screening is pointed as an intervention they should undergo by an unexpected high number of women. Pondered information of real benefits and harms may help reduce false positives, overdiagnosis and unnecessary therapies.

0011 - Addressing 'waste' in health systems through disinvestment: A critical interpretive synthesis

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Objectives: Countries are continually pressured to 'do more with less'. Increasingly, health systems and organizations are exploring how to address the overuse, waste and unnecessary use of health services. Our objective was to conduct a critical interpretive synthesis to understand: 1) whether, how and under what conditions health systems address 'waste' (i.e., agenda setting and prioritization); 2) how health systems have chosen to address the issue (i.e., policy development); and 3) how health systems have implemented approaches.

Method: A critical interpretive synthesis approach was utilized for this work. We searched 15 databases to identify all empirical and non-empirical articles focused on overuse, disinvestment, waste, and value at a system level. Two reviewers independently screened records, assessed for inclusion and conceptually mapped included articles. Using the conceptual mapping findings, we selected a purposive sample of articles, and created structured summaries of key findings from each using frameworks related to government agendas, policy development and implementation,

and health system arrangements. We used the structured summaries to thematically synthesize the results across the domains: agenda setting/prioritization, policy development and implementation.

Results: Our search strategy identified 3537 references, from which we included 254 papers that were classified as relevant to agenda setting/prioritization (n=65), policy development (n=46) and implementation (n=60). The focus on addressing 'waste' emerges from the need to ensure value for money and to prevent patient harm. Approaches for addressing 'waste' include: 1) processes to identify and diagnose the types of overused or misused health services; 2) stakeholder- or patient-led approaches; and 3) government-led initiatives. Key implementation considerations include the need to develop 'buy in' from key stakeholders, including citizens.

Conclusions: Ensuring the use of high-value health services to keep citizens healthy and avoid harm is a priority across health systems. Our synthesis can be used by policymakers, stakeholders and researchers to understand how the issue has been prioritized, approaches that have been used to address it and implementation considerations.

0013 - Appropriateness of bone density measurements in Switzerland: a cross-sectional study.

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Abstract: Current guidelines recommend bone density measurement with Dual X-ray Absorptiometry (DXA) screening for women >65year and men >70year as well as for younger patients with equivalent fracture risk based on individual risk factors. Former studies raised concerns about appropriateness of current DXA screening practice.

Objectives: On the basis of insurance claims data, we aimed to evaluate the appropriateness of DXA taking into account age and individual risk.

Method: We used a cross-sectional analysis of insurance claims data from 2013 including all patients ≥40y insured by the Helsana Group. Based on patient's age we classified all DXA used in women ≥65y and men ≥70y as appropriate. Among younger patients all DXA in patients who had at least one FRAX risk factor or a known osteoporosis were classified as appropriate, while the remaining were classified as inappropriate (Glucocorticoid use, rheumatoid arthritis, insulin-dependent diabetes mellitus, osteogenesis imperfecta, hyperthyroidism, hypogonadism, chronic malnutrition, underweight or malabsorption). Finally we computed the yearly rate of DXA screening by age categories.

Results: In our sample of 573'392 patients 12'373 DXA were performed in 2013. Of those, 3'539 DXA were made in women <65y and 734 in men <70y. After subtracting 1'573 women and 437 men with identifiable risk factors, 1'966 women <65y and 297 men <70y had an inappropriate DXA, making out 40.5% of the DXA used in men <70y and 55.6% in women <65y. Overall 18.3% of all DXA used in our sample were classified as inappropriate (2'263/12'373). The yearly rate of DXA in men 40-70y and ≥70y were 0.38% and 0.93% respectively, and in women 40-65y and ≥65y 2.09% and 5.31% respectively.

Conclusions: These preliminary data show that approximately half of DXA used in patients <65/70y can be identified as inappropriate, making out a modest part of all DXA.

In a second step we will investigate the association of patient's characteristics, presence of risk factors for osteoporosis and type of patient's insurance on DXA use. Admitting the limitation of unassessed risk-factors (family history, tobacco and alcohol abuse), this data will allow identifying trends for over- and underuse of DXA among subgroups of patients and will help to raise clinicians awareness about adequate use of DXA.

0018 - Consumer information about knee arthroscopy: A review of written patient information provided by clinicians or easily accessible via the internet in Australia

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Objectives: To determine the content and quality of consumer information about knee arthroscopy for osteoarthritis and/or degenerative meniscal tears in Australia.

Method: Materials were included provided it related to knee arthroscopy for diagnosis and/or management of knee osteoarthritis. Materials were identified from Australian Commission on Quality and Safety in Health Care sources and Internet searches conducted 20-28 May 2015. Search terms were 'knee arthroscopy', 'knee pain', 'osteoarthritis knee' and 'meniscal tear', and 'orthopaedic surgeon' linked to each capital city. Two independent reviewers selected documents for inclusion and extracted data. The Evaluative Linguistic Framework (ELF) was used to guide analysis. Main outcomes were frequency of inclusion of the evidence base to support use/non-use of knee arthroscopy and how likelihood of benefits/risks were communicated.

Results: Of 92 documents included, none included an explicit statement attributed to a guideline or recommendation and only 7 (7.6%) made a clear recommendation against use of arthroscopy for all/most people with knee osteoarthritis. While 11 (22.4%) specified an information source, none gave a sense of the quality and/or strength of the evidence. Only 5 (10.4%) provided likelihood of benefit or harms in absolute or relative terms. Wikipedia provided the most valid information but it may be incomprehensible to the average reader. Lexical density (average number of content words/clause) was higher than advocated for a lay audience in all documents reviewed.

Conclusions: Consumer information about knee arthroscopy in Australia is suboptimal and may be contributing to its continued overuse. There is an urgent need to develop and disseminate easily understandable evidence-based written consumer information on the benefits and harms of knee arthroscopy for people with knee pain attributable to osteoarthritis who are contemplating arthroscopy.

0022 - Economic consequences of threatened preterm labor overdiagnosis

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Abstract: The treatment of threatened preterm labor is the last step in the prevention of prematurity. Medical care costs associated with preterm birth reached more than eighteen million euros and premature babies accounted for 10476 hospital admissions in Spain in 2013. Premature birth rate is 9.6% at our institution. The diagnosis of threatened preterm labor is currently based on the presence of uterine contractions and shortening of the cervix. Transvaginal ultrasound allows measurement of cervical length and is the gold standard test as it is cost-effective and clearly associated with preterm birth. Patients with a long cervix (more than 25mm) are still being admitted and treated for preterm labor and this contributes to avoidable health care costs. Previously published studies calculate those costs based on average hospital stay. A new protocol for the management of threatened preterm labor was started in 2008 in our Institution.

Objectives: To evaluate the adherence to protocol in the admission of patients with threatened preterm labor. To calculate the costs of unnecessary admissions for threatened preterm labor by DRG. To analyse the social costs of unnecessary admissions for threatened preterm labor.

Method: Six-year hospitalization for threatened preterm labor before 34 weeks gestation at our institution were reviewed. Charts were reviewed for cervical length measurements at admission and related to gestational age at delivery, days of tocolytic treatment and length of hospital stay. We identified patients with a cervical length of 25 mm or greater as "inappropriate admissions" and calculated length of stay, gestational age at delivery, costs by DRG, and total medical and approximated social care costs for this group of patients (sick leave).

Results: In a 6-year period 430 patients were admitted for threatened preterm labor. 31% of these patients had a cervical length greater than 25mm. The rate of inappropriate admissions was reduced by 50% throughout 6 years following the establishment of a protocol. Annual medical charges cost saving reached 30000 euros. Patients with a long cervix had an average interval of 50 days until delivery vs 36 for those with a short cervix. Based on DRG, inappropriate admissions costs accounted for 500000 euros in 6 years. Sick leave accounted for at least 300000 euros in this group of patients.

Conclusions: The economic burden of unnecessary admissions for threatened preterm labor reached half a million euros in 6 years. Adherence to protocol helps reduce these costs by 50% without increasing the rate of premature births. Costs should be calculated based on DRG.

0028 - Involving the Public in Preventing Overdiagnosis – community juries reason about the potential benefits and risks of PSA screening for prostate cancer

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Abstract: Involving the Public in Preventing Overdiagnosis – community juries reason about the potential benefits and risks of PSA screening for prostate cancer

Objectives: Overdiagnosis continues to cause controversy amongst experts. At times of expert uncertainty, values in addition to facts become central to debates about knowledge and practice. Therefore strategies to address overdiagnosis should consider public values and concerns. We convened three community juries to discover how well-informed members of the public understood the aims of prostate cancer screening and ascribed importance to the potential for overdiagnosis from PSA testing.

Method: Forty participants of diverse background with no experience of prostate cancer were recruited via advertising: two juries with mixed genders/ages; one all-male jury of screening age. Each jury was presented with balanced factual evidence supporting different expert perspectives on the harms and benefits of PSA screening, and given the opportunity to ask experts questions. A detailed qualitative analysis of transcripts of question and answer sessions and jurors' deliberations followed, focusing on how jurors understood and gave importance to the technical content of the expert witness testimony, and how they construed expert and patient roles in resolving the controversy.

Results: We found patterned similarities and differences in how jurors reasoned about key issues surrounding overdiagnosis. Population-based data were given lesser weight by jurors of lower SES. They put greater importance on saving individual lives than the values underpinning harm prevention. Many jurors had difficulty understanding differences between screening and diagnostic testing. Most expected that medical practices should be based on accurate information. Jurors saw the controversy as the product of conflict between different professional communities. Many participants thought they should not have to take responsibility for the problem, and that they had little choice but to trust their doctors.

Conclusions: Our results show an informed public may resist or embrace attempts to involve them in decision-making processes at times of expert uncertainty. They are strongly invested the logic of early intervention, and tend to construe overdiagnosis as a matter that requires them to place their trust in the values and knowledge that underpin medical expertise.

0029 - Shared decision making and PSA screening for prostate cancer: All care, but whose responsibility?

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Abstract: Shared decision making and PSA screening for prostate cancer: All care, but whose responsibility?

Objectives: PSA testing for prostate cancer in asymptomatic men may save lives but also results in significant overdiagnosis. General Practitioners (GPs) often have responsibility for guiding men's decisions about PSA-based screening, but patients' expectations of this responsibility remain unclear. Expectations of responsibility in the

informed- and shared decision making literature are also under-conceptualised. Our study examined how well informed members of the public allocate responsibilities in PSA screening decision-making.

Method: Three Community juries were convened in Sydney (2014), Australia to address questions on PSA testing in asymptomatic men. Juries 2 and 3 focused on the content and timing of information provision, and respective roles of patients and GPs in screening decisions. Participants in jury 2 were mixed gender / all ages; jury 3 were all male / screening age. Both juries were presented with balanced factual evidence on the harms and benefits of PSA screening and expert perspectives on consent in medical practice. Qualitative analysis jurors' deliberations was conducted to understand how jurors assign responsibility in PSA screening decisions.

Results: Jurors recognized the risks associated with PSA screening and agreed that GPs should take responsibility for informing men of the options, risks and benefits. However jurors arrived at three different positions on whether or not GPs should also guide screening decisions: GPs should support SDM; GPs should act as trustworthy paternalists; and GPs should first try and protect, but then divest decision-making to their patients. Jurors also disagreed on how much and when GPs should provide detailed information about biopsies and treatments.

Conclusions: Our findings highlight that even when well informed potential PSA screening service users may hold rationally defensible yet diverse and even opposing positions on the role of doctors in supporting their screening decisions. These responses suggest that there is a public expectation that both the allocation of responsibility between GPs and their male patients, and the level of information provided will need to be tailored to individuals. Preferences on the allocation of responsibility in decision-making is strongly affected both by the capacities of patients and what they value most in their relationships with primary health care providers.

0030 - 12-month Follow-up Effects of Overdetection Information in a Breast Screening Decision Aid Trial

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Objectives: Supporting informed decision making about breast screening requires effective communication about overdetection (the diagnosis and treatment of breast cancers that would never become clinically relevant). We investigated the effects of including information about overdetection in a decision aid for women considering breast screening. As previously reported (at the Preventing Overdiagnosis Conferences in 2014 and 2015), findings at 3-week follow-up showed that the intervention increased knowledge and informed choice, made screening attitudes and intentions less positive, and reduced breast cancer worry. We now present outcomes collected at 6- and 12-month follow-up.

Method: A random cohort of women aged 48-50 was recruited by telephone in 2014 for a community-based randomised controlled trial in Australia. Eligible women had not undergone mammography in the past 2 years and had no personal or strong family history of breast cancer. 879 women were randomised to receive either the intervention decision aid (evidence-based information on overdetection, breast cancer mortality reduction, and false positives) or a control decision aid (identical but without overdetection information). We assessed follow-up outcomes by telephone after 6 and 12 months, including knowledge, attitudes, mammography uptake, breast cancer worry, perceived breast cancer risk, and anxiety.

Results: 790 and 746 women completed 6- and 12-month follow-up, respectively. Compared with controls (12-month follow-up), more women in the intervention group demonstrated adequate conceptual knowledge (40% vs. 20%, $p < 0.01$) and fewer expressed positive attitudes towards screening (77% vs. 85%, $p < 0.01$). A slightly lower proportion of women underwent mammography within 6 months in the intervention group compared with controls (15% vs. 20%, $p = 0.06$); by 12 months the groups equalised (both 29%). There was weak evidence of lower breast cancer worry in the intervention group than controls at 6 ($p = 0.05$) and 12 months ($p = 0.08$) but no differences in anxiety or perceived risk.

Conclusions: Communicating information about overdetection in a breast cancer screening decision aid improved women's conceptual knowledge and shifted their screening attitudes, with these effects persisting at 12 months. Women who received information about overdetection were no more anxious or worried about breast cancer than those who did not. Although intentions to undergo breast screening differed between groups when measured immediately post-intervention, we have not observed an impact on self-reported screening uptake at 12 months. A final, 2-year follow-up round commenced in March 2016, including both self-reported and objectively recorded screening participation.

0032 - Training physicians to provide high-value, cost-conscious care.

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Objectives: High-value, cost-conscious care refers to care that aims to assess the benefits, harms and costs of interventions and consequently to provide care that adds value. Besides the increasing health care costs and its associated complications like the accessibility and sustainability of health care, quality cannot always be established. Interventions targeting physicians and their medical expertise are proposed as a means to reduce health care waste (care that is not beneficial to patients) while maintaining quality of care. This review was conducted to gain understanding of how and under what circumstances interventions may help physicians (in training) deliver high-value, cost-conscious care.

Method: PubMed, EMBASE, Education Resources Information Center (ERIC), and Cochrane databases were searched to identify educational interventions that aim to train physicians, resident physicians and medical students to provide high-value, cost-conscious care. Studies were included on the basis of topic relevance, implementation of intervention, evaluation of intervention, educational components in intervention, and appropriate target group. Articles were analyzed using the realist review method, a narrative review technique that focuses on understanding the underlying mechanisms in interventions. Recurrent patterns were identified in the data through thematic analyses. Resulting themes were discussed within the research team until consensus was reached.

Results: 79 articles met the inclusion criteria. Data-analysis suggested that 3 factors aid successful learning: (1) transmission of knowledge, related to general health economics and prices of health services, to scientific evidence and the benefits and harms of health care, and to patient preferences and personal values; (2) facilitation of reflective practice, such as providing feedback or asking reflective questions to give trainees insight into their past behavior; and (3) creation of a supportive environment in which the organization of the health care system, the presence of role models, and a culture of high-value, cost-conscious care reinforce the desired training goals.

Conclusions: Research on educating physicians to deliver high-value, cost-conscious care suggests that learning by practicing physicians, resident physicians, and medical students is promoted by combining specific knowledge transmission, reflective practice, and a supportive environment. These factors should be considered when educational interventions are being developed.

0033 - The benefit-harm balance of prostate cancer screening - A decision-analytic view on screening with and without active surveillance considering overdiagnosis and overtreatment

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Objectives: The benefit of prostate cancer (PCa) screening is still controversial due to potential harms from overdiagnosis and overtreatment. Active surveillance has been proposed as a measure to reduce unnecessary treatment and adverse events by breaking the link between overdiagnosis and overtreatment. We applied the ONCOTYROL Prostate Cancer Outcome and Policy (PCOP) model to evaluate the benefit-harm balance of PCa screening, depending on familial risk, age, individual disutility weighting, and active surveillance.

Method: The PCOP state-transition micro-simulation model simulates the onset and progression of PCa and the consequences of screening and treatment on duration and quality of life. Benefit-harm analyses were performed separately for men with average and elevated familial risk. Evaluated screening strategies included one-time screening at different ages, and interval screening at different intervals and age ranges followed by immediate treatment. Strategies maximizing quality-adjusted life expectancy (QALE) were assessed depending on age and individual disutility weighting. Additionally, screening was evaluated in combination with biennial active surveillance biopsies delaying treatment of localized cancer until progression to Gleason score ≥ 7 .

Results: Screening followed by immediate treatment reduced QALE in men with average PCa risk, whereas men with elevated familial risk gained QALE depending on age and disutility. Active surveillance reduced overtreatment by 54-64% and 46-56% in men with average and familial PCa risk, respectively. However, gains by averted overtreatment were opposed by losses due to delayed treatment, especially in the high-risk population with assumingly faster disease progression. Compared to screening with immediate treatment, screening with active surveillance resulted in reduced QALE losses in men with average PCa risk, and predominantly reduced QALE gains in men with elevated familial PCa risk.

Conclusions: Assumptions about PCa risk, prevalence and speed of progression strongly affect the benefit-harm balance of screening. Based on our assumptions, PCa screening in men with average PCa risk yields no net QALE benefit. In contrast, men with familial predisposition may benefit from screening depending on their age and disutilities. Active surveillance may worsen the benefit-harm balance of screening, if QALE gains by averted overtreatment are outweighed by QALE losses due to delayed treatment. Criteria other than Gleason score progression to 7 should be considered for treatment initiation and evaluated in future modeling studies.

0034 - Overdiagnosis and Big Data: An Ethical Perspective

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Background: Big data in healthcare refers to the fast processing of voluminous and various data coming from biomedical research, clinical settings, public health and crowdsourcing. Experts in algorithm design generate information patterns aiming at better care with more targeted, personalized treatments. This high-precision medicine is reclassifying diseases and reduces misdiagnosis or overtreatment. Yet, big data's pressing offer tends to pre-empt the clinical demands and disrupts the traditional empirical model of evidence-based medicine. The redefined diseases concern a higher number of patients, but their true impact on patients' lives is not always known, with the risk of overdiagnosis and consequent inappropriate treatment despite a targeted approach. As over-diagnosis would mitigate

the benefits of big data, it is important to assess it. The measurement of overdiagnosis is nevertheless difficult because it relies on a range of observations including physical, psychological, social or economical harms. These risks of harm, already identified in clinical research ethics, reveal the moral nature of overdiagnosis, and the limit of a solely technological approach to medical judgment. This presentation argues that a broadened narrative ethics perspective would identify overdiagnosis resulting from big data, and contribute to prevent it.

Methods: Based on Ricœur's work on narrative identity, we consider a narrative approach to big data, which produces a mattering map of the health information context, identifying patients and other stakeholders as story characters. The plot describes the succession of events including unexpected information patterns in the narrative time i.e. lead-time and long-term evolution of the pathology. Interpretation identifies the authors/sponsors of the information, the value of the information per se, and the patients and physicians receiving it. Medical judgment could thus focus on what matters and recognise overdiagnosis as narrative dissonance due to lack of decision-making accountability for the delivered big data information, lack of medical evidence or lack of patients' and physicians' digital literacy.

Resulting ethical recommendations: A fair use of big data should avoid overdiagnosis narrative dissonance and that big data sponsors and providers appropriate all the benefits. The following ethical recommendations are proposed: Clarifying accountability for medical judgment based on big data information; Developing digital literacy in citizens, patients and care providers; Performing long-term research for evidence of big data and over-diagnosis; Sharing governance between experts, policy-makers, clinicians and patients, including access to algorithms, deliberation on common good and compensation for harm due to overdiagnosis.

0035 - Objective criteria for ordering cardiac stress tests to reduce overdiagnosis of ischaemic heart disease

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Abstract: Cardiac stress tests are very useful for the diagnosis of ischaemic heart disease. There are different types. Cardiac stress computed tomography (MIBI-Spect) can improve diagnostic accuracy, but a cumulative irradiation risk exists, and it is more expensive than conventional ECG stress tests. Although the risk of severe complications is very low, there is an increased probability of overdiagnosis in people with low cardiac risk, and its use can trigger unnecessary follow-up and treatment. Primary care in our institution has at its disposal an ECG stress test (carried out in our hospital). In addition the MIBI-Spect is available, but is carried out in another hospital and considered an external intermediate service that costs about 200€/p. In 2012, 1123 cardiac stress tests were done: 351 conventional and 772 MIBI-Spect: 27% came from Cardiology, 38% from Primary Care and 30% from Internal Medicine with an annual cost of 161,921.50 €. The waiting time was much lower for the external MIBI-spect than for the internal ECG stress test (as such, the service we provided in our hospital was not optimal).

Objectives: To adapt the criteria for ordering cardiac stress tests to conform to existing scientific evidence. To decrease the number of inappropriate examinations. To improve waiting time. To improve the prioritization of demand. To create a computerized document for requesting these tests included within the computerized patient records, based on clinical practice guidelines and agreed to between healthcare levels, allowing for analysis of results.

Method: Review the scientific evidence and define the criteria for ordering different tests. Development of electronic request form. Coordination with Primary Care and Cardiology. Training of Primary Care. Launch of the new request form for stress tests. Adjust activity levels for stress tests in Cardiology Department. The new model was started in January 2014.

Results: For each type of test an analysis was done.

ECG-test: year 2012 N= 351 (waiting time 9 months). Year 2013 N= 461. Year 2014 N= 554. Year 2015 N=526 (waiting time 2 months). MIBI-spect: year 2012 N= 772. Year 2013 N= 690. Year 2014 N= 532. Year 2015 N= 369. The decline in MIBI-spect requests occurred in all departments, and was most evident in Primary Care. We have not detected an increase in the number of referrals for first-time visits to cardiology, and we have reduced spending on MIBI-spect, which was 34,807.40 € in 2014 and 26,876.60€ in 2015.

Conclusions: We believe that this experience is a "Triple aim" initiative because it improves patient care: it provides the best diagnostic test based on clinical needs; minimizes the risk of overdiagnosis; and it allows doctors to provide a diagnostic process based on clinical practice guidelines. The level of diagnostic capacity of Primary Care was maintained. This experience has optimized the resources at our institution and helped to reduce the cost of external referrals. Electronic medical records have facilitated this innovative process by creating a new model for ordering tests based on scientific evidence.

0038 - Antibiotics for acute cough in general practice. Description of differences between high and low prescribers using claims data.

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Objectives: Antibiotics are being overprescribed for respiratory tract infections (RTI). Clinical signs are unspecific leading to diagnostic uncertainty. GPs orientate to some seemingly "cardinal symptoms" as discoloured sputum. In most cases, a bacterial diagnosis may serve as a false justification for a prescription. Antibiotic high prescribers seem to diagnose more bacterial infections. However, also the role of further medical and non-medical factors is discussed. Research questions: How much do high prescribers and low prescribers differ in their antibiotic prescription rate? Do

high prescribers use more broad-spectrum antibiotics and diagnose more bacterial infections? Are there differences in doctors' and patients' characteristics?

Method: Claims data were provided by the Bavarian Association of Statutory Health Insurance Physicians (KVB). Data captured between January 2011 and December 2012 were analysed. Patients older than 18 years with RTIs consulting a GP were selected. Data from 6.650 GP surgeries were analysed (N = 4.155.262 doctor-patient-contacts).

Results: Averaged over all GP surgeries, mean prescription rate was 27%, showing that more than one quarter of patients with a single RTI diagnosis received at least one antibiotic prescription. Mean prescription rate within the high prescriber group was 57% as compared to 12% within the low prescriber group. High prescribers relatively used more macrolides and quinolones than low prescribers, but these differences were rather small. Low prescribers diagnosed more often acute upper respiratory tract infections whereas high prescribers diagnosed more often acute bronchitis. High prescribers have a higher proportion of patients older than 65 years and with comorbidities.

Conclusions: Prescribing decisions are complex and associated with diagnostic uncertainty, for both: patient and GP. To gain knowledge about differences between antibiotic high- and low-prescriber and also a deeper understanding of individual determinants in prescribing antibiotics might help to develop new interventions to reduce overtreatment with antibiotics in primary care.

0040 - An Innovative Patient-Centered Precertification and Data Collection Process for Total Joint Replacements

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Abstract: In 2016, Blue Shield of California (USA), the Society for Patient Centered Orthopedics, and the California Orthopedic Association put in place a patient centered preoperative and postoperative data collection process as part of routine preauthorization and evaluation of total joint replacement surgery. Blue Shield of California is a large American commercial medical insurer covering well over 4,000,000 lives. In 2015, patient insured through BS of CA underwent over 12,000 joint replacements, and the demand for such services is expected to grow. In order to reduce inappropriate surgery and to help ensure that patients are engaged and actively involved in surgical decision making, documentation of shared surgical decision making using the CollaboRATE tool will be required from surgeons as a component of the preauthorization process. BS of CA will also obtain SDM-Q-9 scores directly from patients to assess the accuracy of the CollaboRATE scores obtained by the surgical offices. This program, thus, requires patients and providers to engage in shared decision making in order for joint replacement surgery to be authorized for insurance coverage. Standard decision aids to help patients in their joint replacement decision are provided by Blue Shield of California. In order to help ensure that patient centered data is part of the surgical decision process, HOOS Jr. scores for potential total hip replacement patients and KOOS Jr. scores for potential knee replacements patients are also required as part of the preauthorization process. This requirement helps ensure that patient symptomatology is the main driver of total joint replacement decisions. PROMIS scores are obtained both pre-operatively and at 1 year post-op directly from patients in order to assess the patient centered effectiveness of individual surgeries and individual surgeons. All data will be shared back with participating surgeons, including aggregate data so that participating surgeons can review their results compared to their surgical peers. The program therefore functions as both a joint replacement registry to assess outcomes of participating surgeons while at the same time requiring surgeons to evaluate patients preoperatively using patient centered tools as well as requiring documentation of shared decision making. Among the goals of this program is a reduction in the use of inappropriate joint replacement surgery. A more thorough description of the program and preliminary results will be shared along with the response of participating surgeons to this program.

Objectives: Describe an innovative patient centered total joint preauthorization process undertaken by Blue Shield of California. Describe the insurer/physician collaborative process that made the program possible as well as the reaction of participating surgeons to the mandatory preauthorization process. Describe the pre-operative and post-operative patient centered data collected, including PROMIS scores, CollaboRATE scores, KOOS, Jr. scores, HOOS Jr. scores, and SDM-Q-9 scores. Discuss early results of the program. Discuss the potential for the program to reduce inappropriate joint replacement surgery.

Method: SDM-Q-9 scores are obtained directly from preoperative patients. In addition, providers must supply a CollaboRATE Shared Decision Making score obtained from each patient for whom providers are requesting preauthorization of total joint replacement. KOOS, Jr. scores for total knee replacement or HOOS Jr. scores for total hip replacement are required preoperatively from providers as well. PROMIS scores are obtained directly from patients both preoperatively and at 1 year follow-up.

Results: Preliminary preoperative results will be available for a few hundred patients by the time of the conference. Limited postoperative results will be available.

Conclusions: A collaborative effort by surgeons and a large commercial insurer, Blue Shield of California has led to an innovative patient centered preauthorization program for elective total joint replacement surgery. This program helps reduce the potential overuse of total joint replacement surgery for patients complaining of hip and knee pain. Both patient centered outcomes data and patient centered preoperative data on patient symptomatology are acquired through the preauthorization and case management processes. The use of preoperative shared decision making tools is also required, and this data is collected. This presentation will describe the program more fully and discuss early results.

0041 - Costs of the Danish national colorectal cancer screening programme

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Abstract: Meta-analyses of four randomised controlled screening trials have shown a relative mortality risk reduction of 14-16% on colorectal cancer (CRC) using faecal occult blood test (FOBT). Therefore, a Danish national CRC screening programme, using iFOBT as the screening test, was implemented in March 2014. All citizens, aged 50-74, are invited to participate in the first round of the screening programme. The first round will last four years and every year a birth cohort of three months will be invited in a randomised design. In 2018 the programme will be fully implemented and subsequently, the target population will be invited biennially. Medical screening may not only lead to intended benefits, but also unintended harms. One of the harms is false-positive findings another is overdiagnosis of colon polyps. According to WHO, iFOBT has a relatively low specificity, resulting in many false-positives and overdiagnosed with polyps that will never disseminate to CRC. A consequence of the high positive rate is that many healthy citizens will unnecessarily have a colonoscopy to confirm that they do not have CRC. Numerous studies have revealed that false-positive screening results cause psychological harms, such as anxiety, sleeplessness and condition-specific distress. In fact, the harms may not only be of psychological nature, but may also have a financial influence. If the false-positives and polyps cause further follow-ups and investigations, it could cause unexpected derived public healthcare costs of the CRC screening programme, if governmentally provided.

Objectives: Therefore, the objective of this study was to analyse all healthcare costs in the Danish population aged 50-74, in both the primary and the secondary healthcare sector, during the CRC screening period.

Method: The trial is a register study and the primary outcome was total costs of the CRC screening programme. From the first of March 2014 and a year ahead, all citizens, invited to attend the CRC screening programme, were included in the study. The study cohort was compared with a matched control cohort, randomised to invitation to CRC screening in the subsequent years. The healthcare costs were analysed from the date of invitation to screening, until the 29th of February 2016. To adjust for differences in observation time, outcomes were annualised. A two-step statistical approach was used to analyse the costs.

Results: The preliminary results and conclusions will be presented at the conference.

0042 - Reducing Overtreatment associated with Overdiagnosis in Cervical Cancer Screening in Austria - A Decision-Analytic Benefit-Harm Analysis.

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Abstract: In Austria, opportunistic cervical cancer screening with annual Pap cytology for women 18 years and older is current standard. However, new primary screening tests with increased test-sensitivity in combination with risk-based follow-up algorithms may improve the trade-off between benefits and overtreatment. This oral presentation presents results from our decision-analysis used to determine cervical cancer screening strategies with an acceptable benefit-harm trade-off in the Austrian context.

Objectives: In Austria, opportunistic cervical cancer screening with annual Pap cytology for women 18 years and older is current standard. However, new primary screening tests with increased test-sensitivity in combination with risk-based follow-up algorithms may improve the trade-off between benefits and overtreatment. Our aim was to systematically evaluate the benefit-harm balance of different cervical cancer primary screening strategies for the Austrian context.

Method: A Markov-state-transition model calibrated to the Austrian epidemiological and clinical context of the disease was used to evaluate different screening strategies that differ by primary screening test (cytology, p16/Ki-67-testing, and HPV-testing alone or in combinations), screening interval, age, and specific follow-up algorithms. Austrian clinical and epidemiological data, as well as test accuracy data from international meta-analyses and trials were incorporated. Predicted outcomes were reduction in cervical cancer incidence, -mortality, overtreatment (defined as conization with histological diagnosis < CIN2), and the incremental harm-benefit ratios (IHBR) measured in numbers of overtreatment per additional prevented cervical cancer death. Comprehensive sensitivity analyses were performed.

Results: Within the same screening interval, HPV-based strategies compared with cytology or p16/Ki-67 are more effective, but associated with increased overdiagnosis. Adopting risk-based follow-up including p16/Ki-67-triage for ASCUS/LSIL and colposcopy referral for HSIL or p16/Ki-67-positivity can reduce overtreatment. In the base-case analysis (31-43% screening-adherence <60yrs), biennial HPV+cytology achieved an acceptable benefit-harm relation (IHBR: 45 unnecessary conizations per additional prevented cancer death). Annual screening strategies result in much higher IHBRs of 131-355. The screening interval can be extended to 3-5yrs with increased screening-

adherence. The age for screening initiation can be increased to 24yrs without significant loss in effectiveness, but with reduced overtreatment.

Conclusions: Based on our benefit-harm analysis, HPV-based screening in women of the age 30 years or older and cytology-based screening in younger women at screening intervals of at least 2 years incorporating a risk-based follow-up algorithm can be recommended for the Austrian screening setting. Screening should be initiated in the age range of 20-24 years. The screening interval may be increased to 3-5 years in women regularly participating in screening.

0043 - Reconsideration on General Health Checks in China: a Community-based Study from Beijing City on People's Understanding and Utilisation

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Abstract: Routine health checks for asymptomatic adults used to be popular in developed countries. In recent years, an increasing number of studies on the effectiveness of health checks revealed that general health checks may not be clinically and economically necessary due to no effective in reducing morbidity or mortality. Countries like the US have begun to re-evaluate and optimize their health check systems. The same industry in China, however, continues to boom. Thousands of health checks centers have been set up over the past decade, and the government regards health checks as one of their promising industries. Nevertheless, there has been increasing critical voice from health professionals about China's health check industry, such as inappropriate use of medical equipment, false results due to poor service quality and negligence on over-diagnosis and over-treatment.

Methods: This study aimed at investigating the awareness and utilization of health checks among the general public in Beijing City. A household questionnaire survey of 800 residents from eight communities across Beijing was conducted.

Results: It was found 79.6% of the respondents took general health checks over the last year, either at one's own cost (29%) or through employee benefits (71%). Most of the health checks were conducted at public hospitals' health check departments or private health check centers, both only offer health check service as fixed set-menus based on ability to pay, rather than personalized service based on health risk evaluations. Only 46% of respondents reported that, after taking physical examinations they received subsequent health education or management service. In terms of people's understanding, over 90% of respondents felt taking routine health checks are necessary for all asymptomatic adults and 55% of them believed the more health check items the better. Only 27% of respondents considered general health checks might lead to over-diagnosis or over-treatment.

Discussion/Conclusion: Routine health checks has been a common health care activity in China, making the industry over-commercialized and profit-driven rather than focusing on the role of preventive care and health management. The general public lacks of a comprehensive understanding of the purpose, meaning and possible side-effect of general health checks. It is suggested that the government needs to better regulate and standardize the health check industry in China. Health professionals and experts need to carry out more evidence-based studies on the cost-effectiveness of health checks as well as exploring how health checks can be integrated into China's primary care system.

0044 - Reasons doctors provide 'futile' treatment at the end of life: a qualitative study

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Abstract: Overdiagnosis results in treatment that is unnecessary and may be harmful. The "harms of too much medicine" are also contributed to by futile treatment at the end of life. While there is divergence about what the term "futility" means, there is general consensus that futile treatment (however it is defined) is sometimes provided in this setting. To date, there has been very little empirical research as to why doctors sometimes provide treatment knowing that treatment to be medically futile. This presentation reports on the results of 96 semi-structured interviews with doctors from a range of specialties in three Queensland public tertiary hospitals. It explores why doctors sometimes provide treatment they consider to be futile, strategies that they use to avoid providing it, as well as suggestions for systemic change that is needed to reduce the provision of futile treatment. Findings reveal that the drivers of futile treatment fall into one of three categories: doctor-related factors (including the fact that doctors are trained to treat, as well as their aversion to death); patient-related factors (including family or patient request for treatment, lack of information about patient wishes and prognostic uncertainty); and hospital-related factors (including increased specialisation, medical hierarchy and the difficulty at a tertiary hospital in stopping treatment once it has started). Good communication with the patient and family was the most common strategy nominated by doctors to prevent futile treatment being provided. Improved medical education and training, community education about the limitations of medicine and the need for discussion about death and dying, as well as structural reform in hospitals so that they can better meet the needs and expectations of the dying and their relatives may be needed. These findings have implications for how medical practice at the end of life can be improved.

Objectives: The objectives of this research were to investigate why doctors believe that treatment which they consider to be futile is sometimes provided at the end of a patient's life, what are some strategies used to minimise futile treatment, and systemic changes that may be required to reduce the provision of such treatment.

Method: Semi-structured in-depth interviews were undertaken of 96 doctors in three large tertiary public hospitals in Brisbane, Australia. These doctors were from emergency, intensive care, palliative care, oncology, renal medicine,

internal medicine, respiratory medicine, surgery, cardiology, geriatric medicine, and medical administration departments. Participants were recruited using purposive maximum variation sampling.

Results: Doctors attributed the provision of futile treatment to a wide range of inter-related factors: characteristics of treating doctors including their orientation towards curative treatment; the attributes of the patient and family including their requests or demands for further treatment; and hospital factors including a high degree of specialisation. A range of strategies are used by doctors to reduce futile treatment with particular focus on effective communication strategy. Systemic changes suggested include a greater emphasis on advance care planning, education of the public on the limits of modern medicine and further medical training to improve communication skills.

Conclusions: Doctors believe that a range of factors contribute to the provision of futile treatment. A combination of strategies is necessary to reduce futile treatment, including better training for doctors who treat patients at the end of life, educating the community about the limits of medicine and the need to plan for death and dying, and structural reform at the hospital level.

0046 - Are Racial/Ethnic Disparities in Youth Psychotropic Medication Due to Overuse by Whites?: The Relationship Between Psychological Impairment, Race/Ethnicity and Youth Psychotropic Medication

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Abstract: Despite evidence for the effectiveness of psychotropic medications, clinical practice guidelines underscore the need for careful evaluation of the benefit-risk ratio of their use in youth. This study examines racial/ethnic differences in the use of psychotropic medications in a U.S. youth sample ages 5-17. Using measures of psychological impairment, we decompose racial/ethnic disparities in psychotropic medication use into differences in overuse, underuse, and non-use.

Methods: Secondary data on psychotropic medication use were analyzed from 22,478 respondents age 5-17 from Panels 9-15 (corresponding to 2004-2011) of the Medical Expenditure Panel Surveys (MEPS). The MEPS is a U.S. nationally representative survey that tracks health care utilization and medication fills across two year longitudinal panels. Psychotropic medications were identified using the Multum classification system.

Measures were generated of "non-indicated use" (no illness in years 1 or 2, use in year 2), "indicated use" (illness in years 1 or 2, use in year 2), and non-use (illness in year 2, no use in year 2) for any psychotropic medication use based on a cut off of 16 or greater on the Columbia Impairment Scale (CIS). Logistic regression models and unadjusted rate comparisons were used to compare racial/ethnic groups on indicated and non-indicated use among individuals with medication use, and non-use among those with need.

Results: Compared to White youth, Blacks and Latinos were significantly less likely to fill prescriptions for any psychotropic medication. This disparity was due to the fact that Black and Latino youth were less likely to have both non-indicated use and less likely to have indicated use of psychotropic medication.

Rates of psychotropic medication use for those with impairment were low across all racial/ethnic groups. In terms of percentage points, 9.8% of the 13.7% of White youth with impairment did not fill a psychotropic medication (said in relative terms, 72% of Whites with impairment used no psychotropic medications). Among Black youth, 10.9% of the 12.9% with impairment did not fill a psychotropic medication. For Latino youth, 7.4% of the 9.0% of individuals with impairment did not fill a psychotropic medication.

Conclusions: Differences in rates of both non-indicated and indicated medication use suggest poor medication targeting across racial/ethnic minority youth and probable over-use among their non-Latino whites counterparts. Studies examining racial/ethnic differences in psychotropic medication use should be interpreted in light of widely publicized psychotropic medication risk warnings and concerns over increases in psychotropic medication use among youth.

0047 - A German Decision Aid to use within pre-screening discussions-A mixed methods study on patient and physician perspectives

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Objectives: Screening for prostate cancer with the PSA- test is vivid discussed against the background of possible benefits and harms. Therefore most societies recommend shared decision making (SDM) in pre-screening discussions. One possibility to improve decision-process and -quality in situations with an unclear benefit-harm-ratio is the use of patient Decision Aids (DA). Especially transactional DAs used within a consultation have the potential to improve SDM by structuring counseling. Therefore we systematically developed and evaluated a PC-based DA to use in pre-screening discussions with men suitable for PSA-screening. Our aim is to improve the understanding of screening benefits and harms e.g. overdiagnosis.

Method: We developed the DA in a stepwise approach using a mixed-methods design. The first draft was based on relevant literature according to content-recommendation of the IPDAS. At first, we conducted semi-structured interviews (decision process, evaluation of DA) with 9 physicians and 32 patients after counseling. The following feasibility study was a Cluster -RCT with 18 and 10 GPs in the intervention and control-group, respectively. Men aged

55-69 were consecutively asked to participate. Pre-screening discussions were performed either 'as usual' or with the DA. Men received a questionnaire (decision process, SDM, knowledge) after the decision and two weeks later.

Results: The DA was modified according to the feedback of our qualitative study. In our interviews some physicians and most men were not aware of overdiagnosis prior to the counseling with the DA. Understanding of overdiagnosis will be discussed within this presentation. However the knowledge about negative consequences of screening resulted in decisional conflict for some men. Interestingly in our quantitative pilot-study we found low decisional conflict in both study arms. Besides, results on knowledge, decisional conflict (DCS) and SDM (SDM-9) will be presented.

Conclusions: The transactional DA might contribute to better knowledge on screening benefits and harms in both, men and physicians. By improving the decision process (SDM, feeling informed) men are supported to individually weight their personal values and come to a decision. However the results of our pilot study are not powered to allow testing for significant differences between groups. The main study (Cluster-RCT) assessing decisional conflict as primary outcome has just been started.

0048 - Living on benefits: How cancer screening is portrayed in the UK national press Running title: 'Overdiagnosis coverage in the media'

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Abstract: Overdiagnosis is an inevitable part of cancer screening; however public awareness of it is low. The media could play vital role in informing the public.

Objectives: This study aims to investigate whether coverage of cancer screening by national newspapers gives a balanced account of the possible benefits and harms of screening.

Method: We searched for articles on cancer screening in English newspapers from April 2014 to March 2015. We counted the number of harms and benefits mentioned in each article to assess whether the article gave balanced or skewed view. We examined the lay gist (captured from the headline and first ten sentences); and expert gist (captured by the indicators in the whole article).

Results: Out of 1,744 articles assessed, 250 met the inclusion criteria. Of these, 101 in the lay gist and 38 in the expert gist had no mention of benefits or harms. In the lay gist, only 7% of articles were balanced, 72% were skewed towards benefits and 21% skewed towards harms. In the expert gist, 15% of articles were balanced, 53% were skewed towards benefits and 32% were skewed towards harms. Overall, 64% (160/250) of the articles covered at least one indicator of benefit and 43% (107/250) had at least one indicator of harm.

Conclusions: Saving lives (n=92) and early detection (n=73) were the most commonly reported benefits of screening. Of the harms overdiagnosis was covered only in 43 (17%), and false findings in 50 (20%) articles.

Newspaper articles emphasise the benefits of screening, while rarely giving balanced account of the potential benefits and harms. Coverage of overdiagnosis is limited. The scientific community may need to work with the media to present the public with more balanced information on cancer screening.

0052 - Low value testing in primary care

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Objectives: Low value testing, diagnostic tests where there is limited benefits or the potential harms outweigh benefits, may result in incidental findings, downstream testing, patient anxiety, and increased costs to the healthcare system. The objectives of this study are to measure rates and variability of three low value diagnostic tests in primary care as recommended by Choosing Wisely (CW): imaging for low back pain in the absence of red flags; cervical cancer screening for women <21 or >69; and repeat dual energy X-ray absorptiometry (DEXA) scans more often than every two years.

Methods: We used population-based administrative databases from Ontario, Canada to conduct this retrospective cohort study between April 1, 2008 and March 31, 2013. Billing claims data were used to assess the following proportions: patients with low back pain receiving a CT and/or MRI scan, women <21 or >69 receiving at least one Pap smear, and patients with an index DEXA scan receiving a repeat scan within two years. Additionally, we compared utilization rates across health regions and primary care practices across Ontario. Adjusted associations between patient and practice factors were assessed using hierarchical multivariable logistic regression models.

Results: Among individuals with an index DEXA, 21.0% (468,167/2,229,113) received a repeat test within two years; cervical cancer screening among women <21 or >69 years (8.0%; 592,809/7,417,444) and low value imaging for low back pain (4.5%; 12,148/271,588) were less frequent. Rates of imaging for low back pain varied 40-fold across practices from 0.8%-32.6%, while practice-level rates of repeat DEXA scans ranged from 4.0%-54.9%, and cervical cancer screening from 0.9%-35.2%. Regression results varied by CW recommendation. The median odds of receiving a low value test ranged from 1.3-1.6 if an individual were a patient of one randomly selected practice compared to another.

Conclusions: Despite guidelines recommending against their use, low value testing in primary care remains prevalent in Ontario. There is significant, unexplained practice-level variation in the frequency of low value testing for DEXA scans, back imaging, and cervical cancer screening. These results suggest areas for further research to understand the drivers of low value testing and opportunities to reduce low value care in primary care. There is a particular need for interventions aiming to reduce unnecessary DEXA testing.

0055 - Schonberg index to Predict up to 9-year Mortality of Community-Dwelling Adults Aged 65 and Older - Validation for use with Electronic Medical Records in Israel

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Abstract: Some medical interventions such as cancer screening, statins for prevention of cardiovascular disease, and intensive glycemic control have a time lag before patients may experience benefit. Patients with limited predicted life expectancy will probably not live long enough to experience the life-prolonging benefits of these interventions, but they are still at risk for the harms of these interventions. Estimating life expectancy is important for tailoring appropriate treatment, both during the clinical encounter, and also to prevent overdiagnosis and overtreatment when applying quality measures. Clalit Health Services (CHS) insures and provides healthcare to 52% of Israel's population (more than 4,300,000 beneficiaries). The CHS information system is comprehensive, comprising socio-demographic data; information on health care services utilization, drug purchases, laboratory and imaging tests, and an extensive, systematically validated, registry of chronic diagnoses. Aiming to estimate cancer overscreening in CHS members with limited predicted life expectancy, we used a modified version of the validated Schonberg mortality index, originally developed using self-reported data from the US National Health Interview Survey. Adults with >50% risk of mortality within 10 years, based on their health score, are considered to have an estimated life expectancy <10 years. The index includes 11 items, 8 of which were directly extracted from the CHS data warehouse (age, sex, BMI, hospitalizations, smoking status, history of COPD, diabetes and cancer). Subjective questions were proxied by available data: "difficulty walking several blocks" was replaced by a positive Get up and Go test, a Norton score >16, or need for support at home. "Need help handling routine chores" was replaced by elderly nursing eligibility, or history of a functional limitation. Perceived health was replaced by the Charlson score, which has been previously shown to correlate with perceived health. Using the modified index, we found that 11.6% of adults 65-74 have <10 years life expectancy. This is consistent with US data that found that 15.5% of adults 65-74 have <10 year life expectancy. In order to validate the modified Schonberg Index, and as the complete data set described above is only available since 2013, three year mortality trends will be compared to those of the original cohort. Further modifications of the index will be made, utilizing available data since 2007, where one half of the population will be used as a model, and the other for validation of 10 year mortality rates.

0056 - Overdiagnosis on endoscopic screening for gastric cancer in Japan

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Abstract: In Japan, gastric cancer screening using upper gastrointestinal series (radiographic screening) has been performed as a national program. In Japan, municipalities can decide the screening method referring to the national guidelines. Niigata city is the only municipality that has performed endoscopic and radiographic screening for gastric cancer since 2005. In other municipalities in Niigata Prefecture, Japan, only radiographic screening has been performed.

Objective: Endoscopic screening can diagnose earlier gastric cancer than radiographic screening. However, there is no study to investigate overdiagnosis on endoscopic screening for gastric cancer. To investigate overdiagnosis on endoscopic screening compared with radiographic screening, the trends of mortality and incidence for gastric cancer were compared between Niigata city and the other 30 municipalities in Niigata Prefecture.

Methods: The target age group was defined as being from 40-79 years, because the target population for gastric cancer screening was 40 years and over. The age-standardized mortality rates of gastric cancer were calculated for Niigata city and the sum of other 30 municipalities in Niigata Prefecture from 1992 to 2011. The age-standardized incidence rates for localized and regional/distant gastric cancer were also compared.

Results: Although the mortality rates of gastric cancer decreased in both areas, the percentage decrease was higher in Niigata city than in the other municipalities. In 2011, the age-standardized mortality rates for 40-79 years were 25.8 per 100,000 in Niigata city and 32.1 per 100,000 in the other municipalities. The incidence rates of regional/distant gastric cancer have been similar and have flattened in both areas. Although the incidence of localized cancer increased in both areas since 2005, the incidence rates of localized cancer have been higher in Niigata city than in the other municipalities.

Discussion: Although the incidence rates of regional/distant gastric cancer have been similar in both areas, the mortality rate for gastric cancer has decreased more in Niigata city. The impact of mortality reduction by endoscopic screening for gastric cancer might be more than radiographic screening. The gap between localized and regional/distant gastric cancer was more than in Niigata city than in the other municipalities. This might be suggested overdiagnosis more than in endoscopic screening than in radiographic screening. However, since the participation rates in gastric cancer screening have been below 20% in these areas, overdiagnosis on gastric screening cannot be identified correctly.

Conclusions: The gap between localized and regional/distant gastric cancer might be suggested overdiagnosis on endoscopic screening for gastric cancer.

0057 - Overdiagnosis of Overweight and Obesity: Cultural Dogma Trumps Evidence-Based Medicine

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Abstract: Healthy body weight, by modern diagnostic criteria (BMI = 18.5 to <25 kg/m²), is an uncommon condition in the U.S., enjoyed by fewer than 1 in 3 adults. The prevailing medical consensus assigns the great majority of Americans (~70%) to an unhealthy weight category – either **overweight** (BMI = 25-<30) or **obese** (BMI ≥ 30). The term “obesity epidemic” describes the astonishingly large numbers of people whose health is presumably impaired by excess body weight. Being very fat is, of course, unhealthy. Extreme obesity (BMI ≥ 40) is associated with reduced life expectancy and impaired quality of life. For such individuals, aggressive medical effort (e.g., surgery) to promote weight loss has sound scientific rationale and is supported by clinical trial evidence of improved outcomes. Though a legitimate cause for medical concern, extreme obesity afflicts a limited number of individuals (<6-8% of the US population), who represent just a small subset of the total *Overweight-Obese* group targeted by current guidelines as warranting medical attention for unhealthy weight. For the rest of this large group – those with BMI 25 to <40 – most may be victims of overdiagnosis.

Summary: Meta-analysis of mortality studies (JAMA, 2013) shows no reduction in longevity for BMI in range of overweight or mild obesity (combined 25 to <35). Overweight group actually shows **reduced** mortality vs. normal-weight group. Obesity is much less predictive of cardiac risk than conventional (e.g., Framingham) risk factors; widely used cardiac risk assessment tools do **not** consider BMI. Look AHEAD Trial (NEJM, 2013) halted early: No effect of weight loss on cardiac events in high-risk patients studied in large, 9-year randomized-controlled trial. Obesity Paradox:” Clinical conditions described in hundreds of publications where higher BMI predicts better clinical outcome. Harms of Overdiagnosis: Patient despair; eating disorders; wasteful diversion of medical effort.

Conclusion: The prevailing consensus view of overweight and mild obesity as serious public health threats is not evidence-based, but may be driven by a cultural obsession with fat. And it may do harm.

0058 - Evaluating Potential Overdiagnosis in Population Screening Programmes: Systematic Review Comparing Evidence Review Methods in 15 Countries

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Abstract: Randomised Controlled Trials (RCTs) with long term follow up provide the best evidence of the extent of overdiagnosis in screening programmes. However, decisions about whether to screen for rare diseases must be made in the absence of RCT evidence. Newborn blood spot screening involves testing a spot of blood from a baby's heel for a range of rare disorders using Tandem Mass Spectrometry. We investigated how evidence is used to make national policy decisions about which diseases to include in the newborn blood spot test, and how potential overdiagnosis is considered.

Methods: Where RCT evidence is not available, the evidence can be linked together to understand probable patient outcomes. We developed a framework of pathways to patient outcomes building on the work of Raffle and Gray, Harris et al., and Adriaensen et al. in screening, and di Ruffano et al. in test evaluation. We used systematic review methods to identify national screening decision-making organisations, and all policy and review documents related to the newborn blood spot test (no time limits). We analysed how the evidence for each patient pathway and outcome had been evaluated, and whether and how potential overdiagnosis was considered.

Results: There was large variation between countries, the median number of disorders screened for using the blood spot test was 19, ranging from 5 in Finland to 54 in the US. Methods of deciding which disorders to include involved expert panel consensus (Netherlands), systematic review with meta-analysis and economic modelling (UK), and using reviews from other countries (Italy). Only one of the 15 countries attempted to quantify the number of children that would be overdiagnosed, they used a comparison of prevalence between countries with and without screening which is subject to significant bias. Complete results will be available before the conference.

Conclusion: Decisions about which disorders to include in Newborn Blood Spot Screening are sometimes made without consideration of whether the cases detected at screening are similar to those detected symptomatically, and whether some of the screen detected cases may be overdiagnosed.

0059 - Reducing Use within Accountable Care Organizations

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Objectives: Changing payment policy represents one mechanism for reducing overtreatment. Using 2009-14 Medicare claims for a large Pioneer Accountable Care Organization (ACO), we examined whether ACO entry or entry into the ACO's intensive care management (iCMP) was associated with Medicare beneficiary outcomes.

Method: We examined within-beneficiary changes in outcome rates over time, and use later program entrants as concurrent controls. Specifically, we examined ED visits and medical spending, using negative binomial, logistic, and linear regression models with individual-level fixed effects, and adjusted for changes in comorbidity level, calendar month, and year. For ED visit rates, we also applied the NYU algorithm to identify visits for conditions treatable with timely primary care.

Results: In adjusted models, ACO entry was associated with a 6% decrease in ED visit rates (95% CI: 4% to 8% decrease), and 2% decrease in spending (95% CI: 1% to 2%). Among the higher risk beneficiaries who were eligible for the iCMP program, starting the program was associated with an 8% decrease in ED visit rates (95% CI: 4-12% decrease), and 8% decrease in spending (95% CI: 4% to 12%). Both ACO entry and subsequent iCMP entry were associated with lower odds of visits for outpatient treatable conditions (e.g., OR=0.81 with iCMP entry; 95%CI: 0.76-0.86).

Conclusions: Altering provider incentives through the ACO appears to have changed the pattern of care delivery and reduced overall treatment intensity as measured in dollars. We observed favorable changes for both ACO entry and

subsequent entry into the ACO's care management program. In particular, discouraging unnecessary use of high intensity sites such as the ED could help reduce overtreatment.

0060 - Inadequate breast milk supply, a new epidemic?

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Objectives: Domperidone is a gastric motility drug that is used 'off-label' to increase postpartum breast milk supply. It has been subject to safety advisories due to ventricular arrhythmias and sudden cardiac death, mainly in older people. Breastfeeding difficulties are common; benefits and harm of drug treatment versus lactation support remain unknown. Our aim is to examine population patterns of postpartum domperidone use in order to better understanding the conditions under which women are being diagnosed and treated for insufficient breast milk supply. A second aim is to examine potential benefits versus harms of domperidone versus breastfeeding support.

Method: We carried out a retrospective, population-based study including all women with live births between Jan. 1, 2002, and Dec. 31, 2011, using patient-level administrative data on filled prescriptions and use of medical services in the province of British Columbia, Canada. We used logistic regression to examine maternal characteristics, and Cox proportional hazards to assess hospitalisation for ventricular arrhythmia. We also reviewed the research evidence on benefits and harms of postpartum domperidone use.

Results: Over this 10-year period, 225,532 women had 320,351 live births; 45,418 (14%) filled domperidone prescriptions. From 2002-11, use grew from 8% to 20% of births. Dose and duration also increased. Domperidone users were more often older, primiparous, with multiples, pre-term births, or post C-section. There were 21 postpartum hospitalisations for ventricular arrhythmias, 6 domperidone-exposed, adjusted HR 2.3 (0.8-6.0). There is little research evidence supporting use: 4 placebo-controlled RCTs of up to 2 weeks, none assessing infant health, n=75 exposed in total.

Conclusions: By 2011, 1 in 5 postpartum women were prescribed domperidone. This is the highest documented prescription drug use to augment breast milk supply. Both prevalence and patterns of use raise concerns about overdiagnosis of lactational insufficiency. All domperidone-exposed women with postpartum hospitalisation for ventricular arrhythmia had a history of cardiac arrhythmia, suggesting incautious prescribing. Our results raise a note of caution concerning over-medicalisation of breastfeeding difficulties and the potential for harm from domperidone use.

0061 - Does computed tomography of chest (CT Chest) in the presence of pleural effusion provides additional information over chest X-ray to alter management?

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Abstract: Pleural effusion is common and can cause significant morbidity. It may be a transudate or exudate secondary to a number of pathologic processes, the common being congestive heart failure, pneumonia and malignant process. It is important to define the type of effusion and the underlying process to effectively manage the individual patient. As the differential diagnoses are wide, cost-effective systemic approaches to the diagnosis of underlying cause is important. Chest x-rays, ultrasound and CT scans are used to confirm suspected clinical findings. The final diagnosis often requires analysis of the pleural fluid/tissue obtained by pleural tap or during thoracoscopy. The purpose of additional testing should be to reduce the uncertainty and to provide additional diagnostic information that helps in reaching the correct diagnosis efficiently and safely. Timely diagnosis and patient safety are important issues in the management of such patients. Effective utilization of resources and cost of care are secondary issues but are equally important and need to be considered in the current healthcare environment when resources are finite. Exposure to radiation without any additional benefits to the patient is an important safety issue that must be considered when requesting CT scans.

Objectives: To conduct a critical analysis of chest CT reports and compare with the chest x-ray reports and to assess their usefulness and effectiveness in the management of patients with pleural effusion, and to ascertain the proper timing of the study, if required.

Method: We conducted a retrospective analysis of patients with a diagnosis of pleural effusion at Timmins and District Hospital, Timmins, Ontario, Canada from 1st January 2014 to 30th June 2015. During this period patients with diagnosis of pleural effusion who underwent chest X-ray and chest CT scan were identified and all chest X-rays and CT scans report findings were compared and correlated with relevant clinical parameters and utility or futility was assessed.

Results: A total of 95 patients with pleural effusion were identified who had a chest x-ray and CT scan. Of these, 50 (52.6%) were non-contrast studies and 42 (84%) of these non-contrast scans of chest did not provided any additional information over chest x-ray. Of the contrast studies, only third (15/45 or 33.3%) provided a clinically useful information over chest x-ray. Of the total, 72 (75.8%) CT scans of chest did not provide any additional information over chest X-ray that would have influenced the clinical decision making process.

Conclusions: A CT scan of chest in the presence of pleural effusion, before aspiration does not provide clinically meaningful additional information over the chest X-ray in at least 75% of cases. To effectively utilize resources and to avoid unnecessary radiation exposure, if CT scan of chest is required, it should be considered preferably after aspiration of pleural fluid or with contrast.

0062 - Words do matter: a systematic review on how different terminology for the same condition influences treatment decision making

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Objectives: Changing terminology for low-risk, screen detected conditions has now been recommended by several expert groups in order to prevent overdiagnosis and reduce the associated harms of overtreatment. However, the effect of terminology on patients' willingness to accept more conservative treatment options is not well understood. This systematic review aims to synthesise existing studies on terminology and its impact on treatment decision making.

Method: Studies were included that compared two or more terminologies to describe the same condition and measured the effect on treatment preferences and/or choices. Studies were identified via database searches from inception to February 2016, and reference lists. Two authors evaluated the eligibility of studies with verification from the study team, extracted and cross-checked data, and assessed the risk of bias of included studies.

Results: Of the 1142 titles identified, 6 studies met the inclusion criteria. Five studies were quantitative and one was qualitative. Five of the studies were of moderate-high quality. Studies covered a diverse range of conditions: ductal carcinoma in situ (3), gastroesophageal reflux disease (1), conjunctivitis (1), and a bony fracture (1). The terminologies compared in each study varied based on the condition assessed. Across all studies when a more medicalised term was used to describe the condition it led to an increased preference for more invasive treatments, and higher ratings of anxiety and perceived severity of the condition.

Conclusions: Different terminology given for the same condition influenced psychological outcomes and treatment decisions in the studies. Changing the terminology may be one strategy to reduce patient preferences for aggressive treatment responses to low-risk conditions.

0064 - Inappropriate use of HPV testing among Italian gynecologists

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Objectives: The aim of this study was to assess whether Italian specialists are following guidelines from major medical associations regarding HPV DNA testing in cervical cancer screening.

Method: We analyzed data from a survey regarding 421 gynecologists in 9 northern, central and southern cities across Italy. After approval by our ethical committee, an anonymous questionnaire was submitted to all participants immediately after the completion of a colposcopy and lower genital tract pathology course where HPV based screening algorithms were illustrated.

Results: 65 gynecologists use HPV test as the sole screening method in women under 30 years (15.4%). 111 order HPV test for ASC-US cytology under 20 years (26.4%). 118 order HPV test for high grade cytology (28.0%). 44 test for both high and low risk types (10.4%). 238 specialists do not suggest HPV testing for ASC-US cytology in older women (56.5%). After a negative HPV test, 112 specialists recommend repeating test within 1-3 years (26.5%) and 53 recommend testing the male partner (12.6%), which is also being recommended by 190 gynecologists for low grade cytology and a positive HPV result (45.1%).

Conclusions: Many gynecologists reported inappropriate uses of HPV testing, which may lead to unnecessary follow-up and potential overtreatments. As a consequence, a lot of women are getting unnecessary tests, raising medical costs and anxiety both in women and their families. Despite the efforts in explaining simple algorithms dealing with the new HPV based screening strategies, our data suggest that most Italian gynecologists interested in this topic are still not confident enough with the new guidelines. A simplification algorithm for cervical testing is urgently needed, to help health care providers to manage abnormal results, avoiding excess testing and useless treatments.

0065 - INTERVENCIÓN PARA MEJORAR EL USO DE BENZODIACEPINAS EN UN DEPARTAMENTO DE SALUD

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Abstract : Descripción de una intervención realizada en todo un departamento de salud para mejorar el uso de benzodiazepinas

Objectives : Comprobar la factibilidad de una intervención estructurada sobre médicos prescriptores a nivel departamental. Existe escasa bibliografía sobre este tipo de intervenciones a gran escala. Disminuir la prescripción de benzodiazepinas en un departamento de salud de 250.000 habitantes con un consumo de benzodiazepinas superior a la media de su comunidad autónoma. Informar a los médicos prescriptores de los pros y contras del tratamiento con benzodiazepinas de una manera sistemática.

Method : Estudio ecológico, pre-post intervención autorizado por CEIC del departamento.

Intervención educativa protocolizada a los médicos cuyos servicios son los mayores prescriptores (233 profesionales). Medición de la prescripción de benzodiazepinas antes y después de la intervención.

La duración de la intervención es de 13 meses (01/03/2015 a 31/03/2016) y consta de dos fases:

1. Presentación-exposición en todas las zonas básicas, en pequeños grupos, sobre uso prudente de benzodiazepinas. Intervención intensiva durante el mes de marzo de 2015.

2. Envío de material formativo trimestralmente desde Coordinación a todos los prescriptores. Intervención poblacional a través de redes sociales. Abril 2015 hasta marzo 2016.

Results : La prescripción disminuye en 10 de las 11 zonas básicas del departamento durante el primer semestre de 2015. Las DHD del grupo N05B (ansiolíticos) se reducen un 2% (de 74,60 a 73,19) y las del grupo N05C (hipnóticos y

sedantes) un 2,2% (de 26 a 25,45). En la comunidad autónoma han aumentado las DHD en ansiolíticos un 0,09% y en hipnóticos un 1,14%. Resultados definitivos en abril 2016.

La intervención se ha desarrollado de forma satisfactoria sin interferir en el trabajo clínico cotidiano.

La asistencia a las sesiones formativa fue superior al 60% en todas las zonas básicas de salud.

Conclusions : Ha disminuido la prescripción de benzodicepinas en el departamento en el primer semestre de 2015. En la comunidad autónoma sigue la tendencia ascendente.

Los datos mostrados son preliminares, son resultados finales se dispondrán en mayo de 2016. Está en estudio si existen cambios respecto a la variabilidad de ansiolíticos e hipnóticos tras la intervención.

0066 - Penny Wise, Pound Foolish: The fifteen minute visit

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Abstract: Productivity targets have been created to improve access to care and to address the economic strain on our health care delivery systems. Specifically, to achieve this productivity target, office-scheduling templates have been designed to shorten the length of patient encounters. Unfortunately, the evaluation of a new condition including an HPI, PE and counseling often requires more time. Providers often address the time constraints by recommending medically unindicted laboratory testing, imaging, treatments and consultations. These brief visits are "physician-centric". The provider can more efficiently maintain her/ his schedule and patient satisfaction scores by referring their patients and acquiescing to requests for testing or referral. The "patient-centric" visit allots sufficient time for the provider to perform an appropriate HPI and PE, discussion and counseling. These discussions frequently include an explanation of why a perceived treatment (antibiotics, advanced imaging) is not necessary and potentially harmful. A simple economic analysis can be performed on the potential economic effect of a time limited visit in the evaluation of a patient presenting with acute low back pain. Widely accepted guidelines for the management of acute LBP recommended a comprehensive HPI and PE, and if no red flags manage the patient with assurance of a rapid recovery, resumption of activities as tolerated and no imaging or therapy. A physician faced with time constraints can streamline visits, and satisfy patients by recommending an MRI of the lumbar spine and physical therapy services. A busy primary care physician, seeing four patients a week (40 weeks/year) with acute LBP, practicing under the efficiency model (MRI and PT) will generate approximately \$240,000.00 of unnecessary services. This analysis does not include additional costs generated to treat the imaging findings. Over diagnosis and overtreatment often begins in these brief encounters. It is a penny wise and pound foolish concept that fails to identify the downstream economic costs of brief visits. Brief visits lead to over diagnosis, unnecessary medical services and undermine the provider's ability to provide patient centered care and shared decision-making. Identifying clinically unimportant findings by obtaining unnecessary images often leads to misdiagnosis and a subsequent medial intervention. Shared decision making has been demonstrated to improve patient satisfaction and decrease medical interventions. Creating appropriate length office visits will achieve the triple aim of health care delivery described by Donald Berwick; improving the experience of care, improving the health of populations, and reducing per capita costs of health care.

Objectives: According to the Physician's Foundation, the average clinician sees twenty patients per day. Lower back pain (LBP) is the fifth most common complaint in primary care, and accounts for a large number of PCP visits. The development of an economic analysis of the costs generated by a primary care provider in the management of patients with acute low back pain when practicing in a physician-centric office efficiency model will highlight the economic costs and potential for inappropriate medical services resulting from an inadequate patient encounter.

Method: A conservative estimate model has been developed with assumptions related to the average number of patients with acute LBP that will be cared for by a primary provider. Published data estimates twenty encounters a day and one hundred per week. If four of these patients per week were being evaluated for LBP and the provider cared for patients forty weeks per year, the provider would have 160 acute LBP encounters per year. Utilizing the payments for services by an inner city hospital's care management organization the cost of potentially unnecessary expenses related to an office efficiency model can be established.

Results: Care management costs: Lumbar spine MRI: \$644.23; Physical therapy, 2 sessions a week / six weeks: \$840.00. 160 patients / year managed with an efficiency model of referral for MRI and physical therapy: Single provider additional yearly cost \$237,476.80

Conclusions: Limiting a primary care provider's ability to deliver patient centered care and to develop shared decision approaches to individual care creates significant real upfront expenses and downstream expenses. In addition, limiting a provider's ability to educate and counsel patients compromises a successful provider/ patient relationship, negatively affects patient adherence and leads to over diagnosis and unnecessary treatment.

0068 - Prevalence of differentiated thyroid cancer in autopsy studies over six decades: A Meta-analysis

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Abstract: Differentiated thyroid cancer (DTC) incidence has been reported to have risen 3-to 15-fold in the past 2 decades; however, it is unclear if this represents over-diagnosis or a true increase in incidence.

Objectives: To estimate the prevalence of incidental DTC (i)in published autopsy series and (ii)determine if this prevalence was increasing over time.

Method: A research synthesis of the autopsy prevalence of incidental DTC (iDTC). Pubmed, Embase, and Web of Science were searched from inception to December 2015 for relevant studies, supplemented by forward and backward citation searches, plus, for each included study, checking of the first 20 'similar articles' from Pubmed.

Two authors searched for all autopsy studies that had included patients with no known history of thyroid pathology and reported the prevalence of iDTC. Studies that reported atomic bomb or Chernobyl nuclear disaster survivors were excluded.

Results: We found 35 studies, conducted between 1949 and 2007, met the inclusion criteria and contributed with 42 datasets and 12,834 autopsies. Average age at autopsy ranged from 39 to 75 years. The overall prevalence of iDTC of 5.7%;(95%CI:3.9-7.5%) was heterogeneous but most of this heterogeneity was explained by the intensiveness of thyroid examination. Once the latter had been accounted for in the regression model, the prevalence odds ratio stabilized from 1970 onwards and no time effect was observed.

Conclusions: The current study confirms that incidental thyroid cancer is common, but the observed rising incidence is not mirrored by any change in prevalence within autopsy studies, and therefore is unlikely to reflect a true population level increase in tumorigenesis. This strongly suggests that the current rising incidence of iDTC most likely reflects diagnostic detection (overdiagnosis) increasing over time.

0070 - Estimates of excess cancer incidence and cancer deaths avoided in Great Britain from 1980 -2012: the potential for overdiagnosis.

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Abstract: Overdiagnosis is often described as the detection of disease that will not progress to cause symptoms or premature death. No consensus exists on the most appropriate method to estimate overdiagnosis. At a population level it can be estimated using incidence and mortality data with sufficient length of observation to account for lead time.

Objectives: We examined incidence and mortality patterns over the last 30 years for the most common cancers in Great Britain, with the aim of developing a method to identify potential overdiagnosis.

Method: Mortality data were available since 1950 while incidence data were obtained from 1979. We used log-linear regression to model the long-term trend in age-standardised cancer-specific mortality rates for the "pre-diagnostic era" (1950 - 78) and used these to predict mortality and incidence rates in the "diagnostic era" (1980 -2012). We used current ("diagnostic era") incidence and mortality data from Cancer Research UK to calculate excess incidence and deaths avoided by subtracting the observed from the predicted rates in ten cancers types for men and women separately. We used the ratio of excess incidence to deaths avoided to summarise our findings.

Results: Mortality in the diagnostic era closely followed the predicted trends except for breast cancer. In contrast, observed incidence was generally greater by several orders of magnitude to that predicted. Cumulative excess incidence ranged from between 16 cases per 100,000 for thyroid cancer to 1763 per 100,000 for cervical cancer. The estimated the number of deaths avoided as zero for the following cancers: oral (men and women), prostate (men), bowel (men) and kidney (women). For cancers where the ratio of excess incidence to deaths avoided could be estimated, these ratios varied from 1:1 (non-Hodgkin's Lymphoma (NHL) in women) to 107:1 (Uterine in women).

Conclusions: The use of long-term mortality data may be useful for identifying and quantifying overdiagnosis by ecological analysis. Our results show that the incidence of many of the most common cancers in Great Britain has increased significantly in the last three decades but this has not necessarily prevented cancer deaths. We suggest that much of the increased detection represents the overdiagnosis of cancer.

0072 - ESTIMATION OF THE EFFECT OF PROSTATE-SPECIFIC ANTIGEN (PSA) TEST ON PROSTATE CANCER INCIDENCE, SURVIVAL AND PREVALENCE IN TARRAGONA, SPAIN

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Objectives: In the last decades, prostate cancer incidence has increased dramatically in developed countries. The main cause is the increase of detection rates as a result of the widespread use of prostate-specific antigen (PSA) test from the early 90's. The most important side effect of using PSA test is overdiagnosis. The main objective is to estimate the overall percentage of patients who were diagnosed with prostate cancer during the period 1990-2011 in Tarragona due to the use of the PSA test and to estimate the effects of overdiagnosis on incidence, survival and prevalence.

Method: The study cohort included all invasive prostate tumours diagnosed between 1982-2011 in Tarragona province. The expected incidence rates were estimated applying the APC to the rates of the period immediately before the introduction of PSA test (1985-1989). For the period 1990-2011, the number of additional diagnosed cases due to the use of PSA test was estimated by applying to the Tarragona population data the difference between observed and expected incidence rates. Five-year relative survival for patients without overdiagnosis and the number of prevalent cases of prostate cancer at 2011 divided into additional and non-additional diagnosed cases were estimated.

Results: The additional diagnosed cases of prostate cancer by the use of PSA test represent 54.3% of cases diagnosed in the period 2007-2011. The proportion of overdiagnosed cases was higher the lower was the age of patients, by period, it increased from 26% (1992-1997) to 54% in 2002-2006 and 2007-2011 periods. The exclusion of overdiagnosed cases, produced a decrease five-relative survival from 93.7% to 85.7% in 2005-2009. The number of persons diagnosed with prostate cancer and alive at December 31th 2011 was 3829, 2360 of which (61.6%) correspond to additional diagnosed cases due to the use of PSA test.

Conclusions: As expected, overdiagnosis increased along the studied periods and was higher in the youngest age-groups. Probably, the major part of the observed improvement in global survival in Tarragona is due to a combined effect of overdiagnosis and lead time bias. More than 50% of prostate cancer prevalence corresponded to the effect of overdiagnosis due to the PSA test. Overdiagnosed patients were younger than the rest of patients with prevalent prostate cancer. Overdiagnosis constitutes a major public health concern and it is of interest to the Health Authorities to know quantitatively its effect on incidence, survival and prevalence of this cancer.

0074 - Four Citizen Juries on screenings in Italy: an effective method to inform health-care policy decisions. The experiences on prostate cancer and cystic fibrosis carrier screening.

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Abstract: Citizen juries are a method of deliberative democracy. The basic idea is that decisions about medical interventions that have a collective nature and impact on the community, as well as on the individual, should be shared with the public, put in a position to deliberate thanks to transparent and complete information. Some governments are using deliberative methods to engage publics in policy making or at least to collect public opinions. In Italy this process is still at the very beginning. We organized four citizen juries on screenings to assess the method and to collect public deliberations about them.

Objectives: The aim was to apply the citizen juries' method on controversial or complex topics and produce deliberations about the prostate cancer screening and the cystic fibrosis carrier screening.

Method: Four citizen juries were organized: the first responded to the question "Should the National Health Service discourage or recommend PSA as an individual screening test for prostate cancer in men 55-69 years old?" (supported by the National Agency for Regional Health Services), the other three responded to the question "Should the Health Service organize screening of the population with the aim of identifying healthy people who may have children with cystic fibrosis?" (funded by The Italian Cystic Fibrosis Research Foundation, #9/2011, #22/2013). Participants received information material and participated in a meeting with experts before the deliberation session ran by a facilitator.

Results: Regarding prostate cancer, the citizen jury (13 jurors) deliberated to discourage PSA testing by the NHS as individual screening for prostate cancer in 55-69-year-old men. They stated that the NHS should organize information activities aimed at general practitioners and citizens.

Regarding cystic fibrosis, the three citizen juries (44 jurors) deliberated to organize screening of the population by the Health Service, with the aim of identifying healthy people who may have children with cystic fibrosis (one unanimously, one by large majority, one by majority).

Conclusions: These experiences show that citizen juries are an effective and affordable method to produce deliberations in the societal perspective. They can give a valuable contribution to decision making on public health issues, in particular on complex or controversial topics. An effort to foster the value of this method among healthcare policy makers and other stakeholders has to be done. In Italy, these are the first experiences of citizens juries on healthcare topics. Health-care policy makers should consider this method to take into account the perspective of the general population before making their decisions.

0076 - Evaluation of a multifactorial intervention to reduce the consumption of benzodiazepines in primary care. A randomized cluster clinical trial.

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Abstract: Clinicians mainly prescribe benzodiazepines (BZDs) to treat anxiety and insomnia, or as adjuvants in the treatment of depression. International guidelines specifically recommend short-term use because long-term use can increase the risk of cognitive impairment, falls, fractures, and mortality. Despite these potentially harmful consequences, BZDs are often prescribed for long durations. The development of dependence may pose significant challenges to attempt discontinuation, however several primary care structured interventions led to significant reductions in long-term benzodiazepine users

Objectives: The aim of the present study is to assess the effectiveness of the implementation strategy of an intervention targeted to GPs to reduce BZD prescription.

Method Design: A cluster randomized clinical trial. Primary Healthcare centers will be randomly allocated to intervention or control group stratified by the basal prescription of benzodiazepines (in daily doses per 1,000 inhabitants) and the proportion of patients older than 65.

Sample size: To detect a clinically significant difference of at least 10% in the DHD prescribed in the intervention group, we need a sample size of 508 GPs covering 100,000 patients.

Study subjects: GPs currently working in the Health Services of Tarragona-Reus (Catalonia), Arnau de Vilanova-Liria (Comunidad Valenciana) and IB-Salut (Balearic islands).

Intervention: A multifactorial intervention addressed to GPs including two hours-workshop training about benzodiazepine prescription adequacy and the management of benzodiazepine withdrawal in long-term users. As a part of the intervention, GPs will receive monthly information about their benzodiazepine prescription. Control group will not receive specific training nor information.

Measurements: Primary outcome: Prescription of benzodiazepines in Doses per 1000 inhabitants per Day (DHD) at 12 months. Secondary outcomes: Percentage of patients with benzodiazepine prescription longer than 6 months.

Percentage of patients older than 65 with benzodiazepine prescription longer than 6 months. Feasibility, acceptability, adoption and fidelity of the intervention.

Conclusions: In this study our goal is to show that implementing an intervention targeted to GPs to reduce long-term benzodiazepine use is effective and may have benefits in health outcomes related to the misuse of benzodiazepines.

0077 - U.S. States' Dense Breast Notifications: Incomprehensible and Confusing

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Background and Objectives: Women in 23 U.S. states now must also receive notifications of breast density with mammogram results. Dense breasts can mask cancer on mammography (masking bias), and are an independent cancer risk factor, but neither evidence nor guidelines indicate whether or what supplemental screening is appropriate. Characteristics of these dense breast notifications (DBNs) may affect their clarity and potentially lead to overdiagnosis. Thus, we examined DBN characteristics across states, to inform future policy.

Methods: We compared the content, readability, and understandability of DBNs, noting mention of supplemental screening, masking bias, density as a cancer risk factor, and required recipients. We measured readability using the Flesch-Kincaid reading level in MS Word and the Dale-Chall readability score, and assessed understandability using the Patient Education Materials Assessment Tool. We obtained the proportion of adults in each state lacking basic prose literacy skills from available statistics, comparing DBN readability with state population literacy level.

Results: Most states (n=19, 83%) mandate specific language; 4 (17%) only mandate required *components*. Seven states (30%) require a generic DBN for *every* woman receiving a screening mammogram (others only require notification to those with dense findings). All DBNs mention masking bias, 17 (74%) mention the association with increased cancer risk, 15 (65%) mention 'supplemental screening' as an option. Of 13 states mandating language regarding supplemental screening, 6 (46%) inform women that they might *benefit* from such screening; 4 mention specific modalities.

Flesch-Kincaid readability levels ranged from grades 7 - 19.4 (mean: 11.1), most exceeding the recommended 8th grade literacy level; about 20% of the population reads below a grade 5 level. Dale-Chall readability scoring produced slightly higher scores overall (range: grades 9-10 - 13-15). All DBNs scored poorly on understandability (PEMAT; range: 11% - 33%). There was widespread discordance between states' DBN readability and corresponding basic literacy levels. Only 3 states' DBN literacy level fell < 8th grade; some of the highest DBN readability levels occurred where state literacy levels are lowest.

Conclusions: Incomprehensible patient notifications may create confusion for women regarding supplemental screening, exacerbate disparities in breast cancer diagnosis and outcomes, or lead to overdiagnosis. Future efforts should focus on enhancing the understandability of such messages, so all women are clearly and accurately informed about their density status, its impact on their breast cancer risk, and the harms and benefits of supplemental screening.

0078 - The overdiagnosis of what? Barring the expansive conception of disease

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Abstract: Widening definitions of disease result in overdiagnosis on many levels, e.g., professional, personal, and societal. Each level prompts special attention and specific actions in order to prevent the problems with overdiagnosis. Common to all measures is to eliminate irrational blind beliefs.

Objectives: Overdiagnosis hinges on the conceptions of disease as widened definitions of disease result in overdiagnosis. However, there are many paths from broadening disease to overdiagnosis. In order to address the problems with overdiagnosis, we need to differentiate and deal with these routes distinctively. Accordingly, the objective is to highlight the paths from disease to overdiagnosis and to suggest obstructions.

Method: Analyzing the connection between the conception of disease and the extension of overdiagnosis via conceptual analysis and application of theories of disease (from the philosophy of medicine) as well as basic principles in the theory of diagnostics.

Results: Widening the concept of disease is identified in several realms of human malady: the realm of the professional (*disease*), the personal (*illness*), and the societal (*sickness*). Within each of these several processes are expanding the conception of disease, resulting in overdiagnosis. Within the professional field, advances in diagnostic technologies, lowering cut-offs, augmented attention, and extended testing increases overdiagnosis. In the personal realm health anxiety, disease focus, and biomedicalization of happiness boost overdiagnosis. Medicalization, healthism, and an increased tendency to use health care to provide welfare foster overdiagnosis in the societal realm. On each level expansion has to be barred.

Conclusions: Expanding the concept of disease results in overdiagnosis on many levels. Each level prompts special attention and specific actions in order to prevent the problems with overdiagnosis. Common to all measures is to eliminate blind beliefs.

0079 - Molecular characterization for early stage lung adenocarcinoma

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Abstract: Our group focuses on the behavior of early stage adenocarcinoma of the lung and not on the distinction between benign and malignant nodules. We assembled a unique multidisciplinary group of experts to tackle this

problem using innovative approaches. We are developing a retrospective and a prospective repository for tissue (ADC fresh frozen tissues, blood) and images from which we derive detailed quantitative structural imaging analysis, targeted genomic analysis and single cell analysis to interrogate the functional genomics of these tumors. The integration of this multidimensional data imaging/molecular/cellular/epidemiology will allow us to identify and validate cellular and molecular determinants of tumor behavior in the context of their inter- and intra-tumor heterogeneity. Thus far, 116 tumors were successfully tested for MDM2 copy number by dual color FISH. Eleven tumors (9.4%) clearly demonstrated copy number gain, with absolute copy number varying from 3 to 20 copies per nuclei. When tested against clinical outcome by overall survival with Kaplan Meier survival analysis in category (no-gain, aneuploid and amplification), MDM2 copy number amplification was associated with shorter overall survival in all ADC stages ($p=0.017$), when limited to stage I ($n=106$), this association is more significant ($p=0.001$). This is also true in a cox proportional hazard regression model using average MDM2 copy number independent of MDM2/CEP12 ratio. With these results, we hope to build integrated models of ADC behavior, validate a new genomic molecular test and propose prospective studies that would eventually offer a different intervention based on these predictions and therefore reduce overtreatment and ultimately increase the rate of cure and reduce healthcare cost. This work was supported by R01CA163772 and UO1 CA196405

Objectives: Our understanding of the biological underpinnings of the progression of the early stage of adenocarcinoma (ADC) remains limited. In preliminary data, a strong correlation between MDM2 copy number (CN) gain and invasiveness by Affymetrix SNP 6.0 array in a cohort of 43 patients with ADC-in situ and minimally invasive ADC when compared to 735 publically available cases of invasive ADC. We hypothesized that MDM2 CN gain could predict aggressive behavior of lung ADCs.

Method: Tumors were tested for MDM2 CN alteration by dual color FISH including a centromeric probe for chromosome 12 in tissue microarrays. A total of 131 tumors were tested in 2 cores each and scores were correlated with clinical outcomes. The tumor FISH spot counts were evaluated in a blind fashion by two investigators. The scoring of the FISH signals was done following individual nuclei FISH spot count in at least 100 nuclei.

Results: 116 tumors were successfully tested for MDM2 copy number by dual color FISH. Eleven tumors (9.4%) clearly demonstrated copy number gain, with absolute copy number varying from 3 to 20 copies per nuclei. When tested against clinical outcome by overall survival with Kaplan Meier survival analysis in category (no-gain, aneuploid and amplification), MDM2 copy number amplification was associated with shorter overall survival in all ADC stages ($p=0.017$), when limited to stage I ($n=106$), this association is more significant ($p=0.001$). This is also true in a cox proportional hazard regression model using average MDM2 copy number independent of MDM2/CEP12 ratio.

Conclusions: Using a dual-color FISH, we demonstrated that MDM2 gene amplification is associated with poorer survival in patients with lung ADC. This association is strengthened in patients with early stages (I or I and II combined) of lung ADC. This work has implications in decision making for management of early stage lung adenocarcinoma. This work was supported by R01CA163772 and UO1 CA196405

0081 - Cancer overdiagnosis: discussing our disagreements

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Abstract: Cancer overdiagnosis research is fraught with disagreement, even among those researchers who agree that some cancers are diagnosed unnecessarily. There are at least two factors at the root of these disagreements: there is no agreed-upon definition of what constitutes overdiagnosis and no agreement on how to determine the magnitude of overdiagnosis. There is agreement that overdiagnosed disease includes disease with no metastatic potential (that is, indolent disease). Screen- or serendipitously-detected disease that has metastatic potential but would never present symptomatically due to a competing cause of mortality is considered by most to be overdiagnosed as well, although discussions often omit this source. There are conflicting views as to whether overdiagnosed disease must be a consequence of screening, and whether overdiagnosed disease must be asymptomatic at the time of diagnosis. Differences in what constitutes overdiagnosis certainly affect estimates of its magnitude, but of greater consequence is the misconception that overdiagnosis is a fixed quantity: it varies, at a minimum, by modality and regimen (in the case of screening), diagnostic evaluation, and prevalence of other causes of mortality. Also, it is unlikely that different data sources (surveillance, randomized controlled trials, statistical modeling) produce comparable estimates, even if all else is held constant. There are heated debates as to which analysis unearths the "true" quantity, implying that an unconditional truth does exist. We propose the establishment of a Preventing Overdiagnosis working group that would discuss these disagreements, identify common ground, and make recommendations for reporting practices.

0082 - A decision aid for mammography screening in Germany - development of information about overdiagnosis

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Objectives: All women in Germany between the ages of 50 and 69 receive a biennial written invitation to mammography screening. The Institute for Quality and Efficiency in Health Care (IQWiG, Germany) was commissioned to produce an invitation letter and accompanying decision aid. Both include a description of the advantages and disadvantages of mammography screening to support an informed choice. This description also entails the provision of understandable information on the frequency of overdiagnosis.

Method: A decision aid based on the criteria and methods of IQWiG and the International Patient Decision Aid Standard Collaboration (IPDAS) was developed and user tested. Four focus groups of 37 women aged 50-69 were conducted and qualitatively analyzed using the Maximized Qualitative Data Analysis Program (VERBI-Software MAXQDA 10). Following revision of the material, further user testing took place in two focus groups held with 16 women who had already participated in the first test. Additionally, one focus group with six experts was conducted. The decision aid will also be tested in a survey of 1000 women (July 2016).

Results: Women expressed surprise about the information regarding overdiagnosis; its existence and consequences have been unknown so far. All women had difficulties understanding the concept of overdiagnosis. Most of them confused "overdiagnosis" with "false-positive results". Nevertheless, they rated the information as relevant. The decision aid was revised. One visual example was developed to explain overdiagnosis. The reception of the revised material was more positive. However, some women still had difficulties in understanding, even after verbal description. These were mainly women with lower education. The results of the survey will be available in August 2016, and will then be reported.

Conclusions: Revision of verbal description after receiving user feedback and integrating examples can increase the understanding of overdiagnosis. However, communicating the consequences of overdiagnosis seems to require actions that go beyond the possibilities of print information. Such steps could be taken to implement an internet version of the decision aid.

0084 - A THIN database investigation into cardiovascular risk scoring and the prescribing of statins in UK General Practice.

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Abstract: Evidence suggests that, in patients without CVD but at sufficient risk of CVD, the benefits of statins outweigh the risks. In 2014, the National Institute of Health and Clinical Excellence lowered the threshold for recommending statins from a 20% 10-year risk of CVD to 10%. This change was received with significant opposition from clinicians and the media amongst fears that it would result in overtreatment of millions of people. This research uses routinely collected data to examine trends in risk scoring and statin prescribing over the last few years and will model the impact of risk scoring on the initiation of statin treatment.

Objectives: To understand how calculating QRISK2 score influences the prescribing of statins in UK primary care and describe trends in statin use between 2012 and 2015.

Method: Using The Health Improvement Network, we identified a cohort of patients who could be eligible for statin treatment and had a QRISK2 score coded. They were matched to patients who consulted their GP but did not have a QRISK2 score coded. The outcome was the subsequent initiation of a statin in a 60 day followed up period following consultation. Primary analysis consisted of descriptive statistics to identify trends with subsequent predictive modelling using multivariable logistic regression to determine the impact of QRISK2 scoring on initiation of statins. We are also able to describe who is, and who is not being prescribed statins and the trends in prescribing over time.

Results: At this time, only preliminary results are available. The modeling data is not yet complete but it is anticipated that this will be complete within a few months. The data so far demonstrates a rapid increase in the rate of QRISK2 coding since 2012 whilst the rate of statin initiations have almost halved since a peak in 2006 and continue to show a downward trend.

Conclusions: There is no evidence that reducing the threshold for prescribing has resulted in increased prescribing of statins and that the use of risk scoring is increasing which is likely to result in more appropriate and effective prescribing.

0086 - Amyloid PET Scans: Another Expensive Imaging Test We Don't Need?

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Objectives: To evaluate Positron Emission Tomography (PET) to image amyloid, a constituent protein of neuritic plaques in aging brains, as a proposed diagnostic test for patients with dementia and so-called Alzheimer's disease (AD)

Method: We reviewed academic literature and protocols, policy documents, and public media focusing on amyloid imaging and related science. The research use of amyloid imaging was reported in 2004. The dominance of the amyloid hypothesis of so-called AD drove enthusiasm for its early use clinically, particularly to identify people with preclinical AD and to study treatments with amyloid-related therapies. In 2013, the Center for Medicare and Medicaid Services (CMS) turned down a request by Lilly for reimbursement of amyloid scans to rule out AD, as there was no evidence that the scans made a difference in treatment plans or patient outcomes.

Results: The role of amyloid in AD has become increasingly criticized. Moreover, AD appears not to be one condition and is intimately related to "normal" aging. Even at autopsy, most elderly people with dementia have a mix of vascular and other neurodegenerative processes. After the CMS decision, the Alzheimer's Association, pharmaceutical companies, trade associations, and academics petitioned for funds, resulting in The Imaging Dementia Evidence for Amyloid Scanning Study (IDEAS). It will be cost \$100 million, most of which will be paid by CMS. Plans are to enroll over 18,000 patients over 4 years at over 200 sites across the U.S.

Conclusions: IDEAS is an expensive open-label, unblinded, non-randomized cohort study. The investigators are trying to document a change in treatment plan. Outcomes for IDEAS will include changes in drug treatment and counseling about safety and future planning, and the impact of the scans on hospitalizations and emergency room

visits. However, it is possible that misinterpretation of the validity of the scans will lead to poor practices, such as not treating patients adequately or preventing appropriate hospital evaluations. The design and associated ethical issues of the IDEAS study can be analyzed using the framework of Responsible Innovation.

0087 - An Escalating Thyroid Cancer Epidemic in Canada from Over-diagnosis: National Data Analysis from 1992 to 2013

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Abstract: Thyroid cancer incidence rates are increasing in many developed countries while mortality is remaining stable. Many studies suggest the epidemic of small papillary thyroid cancer correlates with the greater use of diagnostic imaging including high-resolution ultrasound and the investigation and treatment of small thyroid nodules. Currently, the rapid increase in incidence of thyroid cancer is higher than most other cancers. Given these trends, we are investigating the epidemiology of thyroid cancer in Canada.

Methods: Using the Canadian Cancer Registry (CCR), we analyzed the thyroid cancer incidence and mortality data by gender, age and province from 1992 to 2013.

Results: Over the past twenty years, thyroid cancer incidence rates in Canada have increased from 6.8 to 22.9/100 000 in females and from 2 to 7.2/100 000 in males. In 2013, both females and males have the highest incidence rates in Ontario at 35.4 and 10.8/100 000 respectively while the lowest are in British Columbia at 12.4 and 5.1/100 000. Age specific incidence rates in Ontario females 50 to 54 years old is 65.2/100 000 while in British Columbia it is 22/100000. In Canada, the mortality rate has remained stable between 0.40 and 0.55/100000 over the past 13 years (CCR).

Discussion: Canada has a developing epidemic of diagnosed and treated thyroid cancer without any change in mortality. Thyroid cancer incidence rates are higher in females than males, age specific incidence rates are highest from 40 to 60 years old especially in females, and these incidence rates vary among provinces. There is no reason to believe that differences between provinces in risk factors like radiation, iodine consumption, ethnicity, or gene mutations could cause this rising increased incidence in thyroid cancers. Rather it seems to be due to regional variation in practice patterns leading to over-diagnosis.

0089 - Why we fail to act - Perspectives of general practitioners and consultant pharmacists on deprescribing in primary care

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Abstract: Polypharmacy-related harm persists as a major issue for older people in developed countries. Clinician supervised withdrawal of low-utility medicines, or deprescribing, aims to manage inappropriate polypharmacy and improve patient outcomes. General practitioners and consultant pharmacists who undertake comprehensive medication reviews are well positioned to partner with community based older people to facilitate deprescribing.

Objectives: This study explored perceptions of general practitioners and consultant pharmacists as to barriers and enablers to deprescribe in community-dwelling older people with polypharmacy and their attitudes towards a deprescribing framework within routine care.

Method: Seven focus group discussions with 32 general practitioners and registrars and 15 consultant pharmacists purposively recruited from metropolitan South East Queensland were conducted between October and December 2014. Thematic analysis guided by the Framework method was used to inductively code data in verbatim transcripts, from which refined themes were developed.

Results: Fear of negative consequences of deprescribing, time constraints and crowded clinical agendas promote therapeutic inertia. Prominent enablers to deprescribing include strong therapeutic relationships with patients and a clear trigger to review therapy. The deprescribing framework is considered a useful tool for reflection and learning. Patient, clinician and health system issues intersect in a complex way to determine highly individualised clinical decision making. Each clinician will uniquely reconcile therapeutic uncertainty to mitigate clinical risk. The balance between action and inaction regarding deprescribing is shaped by many factors but underpinned by how each clinician conceptualises the issue and associated harms of polypharmacy.

Conclusions: Feasible, locally relevant deprescribing initiatives involving general practitioners and consultant pharmacists need to take account of highly individualised decision making and variable barriers and enablers to prescribing change. The findings of this study, added to those of systematic reviews of prescribers' and patients' barriers and enablers to deprescribing, have informed the design of a multi-faceted intervention whose feasibility and value for patients and clinicians is currently being studied in primary care settings.

0093 - RESULTS OF APPLICATION A PATIENT-CENTERED PRESCRIPTION MODEL ASSESSING THE APPROPRIATENESS OF CHRONIC DRUG THERAPY IN OLDER PATIENTS

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Abstract: Polypharmacy is often associated with overdiagnosis and over-prescription, and consequently with poor quality of prescribing.

Objectives: The main objective of this study is to identify potentially inappropriate prescribing (IP) in a group of older patients and to optimize them according to care goals of each patient through a model which combines both the

clinical judgment and the scientific evidence in a pragmatic and systematic approach (see abstract detailing this process: A Patient-Centered Prescription Model).

Method: These were three descriptive observational studies: two studies in an Acute Care Elderly (ACE) Unit and another one in a nursing home. Variables collected for the analysis included age, sex, admitting diagnosis, medication information and end-of-life (EOL) status. Each patient's pharmacotherapeutic plan was assessed through application of the Patient-Centered Prescription (PCP) Model, a systematic three-step process carried out by geriatricians and a clinical pharmacist:

- Step 1 - Patient Centered Evaluation
- Step 2 - Diagnosis Centered Evaluation
- Step 3 - Medication centered Evaluation

Results: In ACE, 382 patients, average age of 86.7 years, 28% of them met criteria for EOL. In nursing home (NH), 110 patients, average age of 86.4, 60% met criteria of EOL. Average of prescribed drugs: in ACE 7.16, in NH 10.37. No significance with EOL patients. Patients with polypharmacy (≥ 5 drugs) and excessive polypharmacy (EP) (≥ 10 drugs): in ACE 80% (18.32% EP). In NH 95.5% (56.4% EP). No significance with EOL patients. Patients with at least one IP: in ACE 39.8%, in NH 92.7% ($p < 0.05$). In both cases EOL patients were significantly more likely to have IP.

Conclusions: Patients in nursing homes present more polypharmacy and more indication of at least one IP ($p < 0.001$). EOL patients present more frequently a potential indication of at least one IP. The PCP Model is a framework that helps minimizing IP in a high-risk group older patients through a suitable approach to individualize pharmacotherapy:

- During admission drug therapy regimens were modified in 93.44% of cases with IP in ACE: prevalence of polypharmacy decreased significantly and the prevalence of EOL patients with ≥ 10 drugs decreased to a half ($p < 0.05$).

- The project in nursing home has not finished yet.

0095 - Pharmaceutical industry-funded education on overdiagnosed conditions

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Abstract: Commercial factors are considered one of the drivers of overdiagnosis. Since 2007, pharmaceutical companies have been required to provide detailed reports on sponsored educational events targeting health professionals. Australia is unique in the level of detail publicly available on industry-sponsored health education. However, there has been little evaluation of these reports, as data were not available in an analysable format. We created a usable dataset and present an overview of sponsored events during the last four years.

Objectives: To present a descriptive analysis of four years of industry-sponsored educational events, including illustrative pilot case studies of relevance to the debates about overdiagnosis

Method: To create a dataset of pharmaceutical industry-sponsored events, we converted publicly available company reports for the periods October 2011 to September 2015 from pdfs into excel files, joined these into a large dataset, and cleaned the data, resolving reporting discrepancies. We calculated descriptive statistics using SPSS, and used excel text filtering, searching on condition names, combined with manufacturer website searches, to examine whether companies that provide education on a condition also market drugs to treat it. For an initial pilot analysis, we used a convenience sample of conditions highlighted in the overdiagnosis literature: osteoporosis, depression, and overactive bladder.

Results: From Oct 2011 to Sept 2015, 47 companies sponsored 116,846 educational events in Australia, on average 608 per week with 30 attendees per event. Food and drink were provided at over 90%, including 6,487 sponsored dinners. Medical specialists attended 64% of events, nurses 40%, doctors in training 35% and GPs 23%. The average cost was AUD \$74.50 per person. There were 1,124 events on osteoporosis, 1,061 (94%) hosted by five companies that market osteoporosis drugs. Of 1,360 events on depression, Servier, which markets agomelatine, sponsored 57%. Astellas, which markets mirabegron, and CSL, solifenacin, sponsored 94% of overactive bladder events.

Conclusions: Australian transparency rules provide a useful lens with which to understand patterns of drug industry sponsored educational events for health professionals. This preliminary analysis found that sponsored events are common, with food and drink almost always provided. Although brand names were rarely mentioned, a pilot analysis of potentially-overdiagnosed conditions found that most events were sponsored by companies with on-patent products to treat highlighted conditions. This raises a strong note of concern about commercial influences on education guiding diagnosis and treatment, and suggests the need for more research on commercial drivers of overdiagnosis.

0096 - Impact of the Polycystic Ovary Syndrome (PCOS) disease label on medical decision making and psychosocial outcomes

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Objectives: Polycystic ovary syndrome (PCOS) is a metabolic disorder that impacts reproductive and cardiovascular outcomes. Following widening of the diagnostic criteria and increases in imaging sensitivity, diagnosis of PCOS has dramatically increased from 4-8% to up to 21% of reproductive-aged women. Although diagnosis provides benefit in terms of early intervention to reduce long-term risks, the rapid increase in diagnosis has raised concerns about unnecessary disease labelling, as women with PCOS have poorer psychological outcomes than women without the

diagnosis. This experimental study aimed to assess the impact of the PCOS disease label on intention to have an ultrasound and psychosocial outcomes.

Method: 181 female students were randomised online to receive one of four hypothetical scenarios of a doctor's visit in a 2 x 2 design (PCOS disease label vs. no disease label) and (information about unreliability of ultrasounds to test for PCOS vs. no information). The study measured intention to have an ultrasound (scale 1 to 10), negative affect, self-esteem, perceived severity of condition, credibility of the GP, and interest in a second opinion. Participants were then presented with a second doctor's opinion, where the possibility of PCOS overdiagnosis was mentioned. Change in intention and severity were measured, followed by demographics.

Results: Participants given the PCOS label had significantly higher intention to have the ultrasound (mean = 6.62 vs mean = 5.76, $p=.033$), perceived the condition to be more severe (17.17 vs 15.82, $p=.019$) and had lower self-esteem than those not given a disease label (25.86 vs 27.53, $p=.031$). Additionally, those presented with information about ultrasound unreliability had lower screening intention than those who received no information (5.56 vs 6.81, $p=.001$). After receiving information about overdiagnosis, both intention and perceived severity decreased, regardless of condition (mean difference = 0.94, $p<.001$, and mean difference = 0.66, $p<.001$, respectively).

Conclusions: These findings demonstrate the potential negative consequences of being labelled with PCOS. Given the increase in number of women being diagnosed, it is crucial we carefully consider the impact of the label before diagnosing more women with broadening diagnostic criteria when clinical benefit of diagnosis may be uncertain.

0102

Prevalence of incidental breast cancer and precursor lesions in autopsy studies: A Systematic Review

Status: Pending

Category: Review of Previously Published Work

Author's preference: Either Poster or Oral

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Abstract: The potential for over-diagnosis of breast cancer has been demonstrated in a previous review of autopsy studies (Welch Ann Intern Med. 1997). Since that review, changes in clinical practice include: more women participating in screening worldwide, more women undergoing surgery for non-invasive disease (such as carcinoma in situ and atypical hyperplasia) and the inclusion of older women (>70 years of age) in screening programs.

Objectives: To estimate the prevalence of incidental breast cancer and precursor lesions in published autopsy series and determine if these differ for women <70 and ≥70 years of age.

Method: A research synthesis of the autopsy prevalence of incidental Breast cancer (invasive cancer, ductal cancer in situ and lobular cancer in situ) and precursor lesions (atypical ductal hyperplasia and atypical lobular hyperplasia). Pubmed and Embase were searched from inception to December 2015 for relevant studies with no language restrictions, supplemented by forward and backward citation searches of included studies. Two authors searched for all autopsy studies that had included patients with no known history of breast pathology and reported the prevalence of incidental breast cancer or precursor lesions.

Results: We included 13 studies, conducted between 1948-2010, which contributed 14 datasets and 2,363 autopsies. The median prevalence of incidental breast cancer/pre-cursor lesion was 7.4% but varied considerably between studies (range 0-27.1%, includes: invasive cancer, in situ cancer and atypical hyperplasia). The intensiveness of examination (number of sections used) was the strongest predictor: median prevalence 20% for ≥18 sections (n=7) compared to 1.5% for <18 sections per case (n=7). There were insufficient data to assess if prevalence of incidental cancer and precursors differed for women ≥70 years compared with women <70 years, but rates appear at least as high.

Conclusions: The current study confirms that incidental breast cancer and its precursors are common in women who were not known to have breast disease during life, including those >70 years. These data have policy and practice implications for the risk of over-diagnosis with mammography screening.

0104 - There is Not Evidence that "Screening" with Self-Report Questionnaires for Presently Experienced Health Problems and Symptoms Improves Health: A Review of Randomized Controlled Trials Included in Major Screening Guidelines and Recommendations

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Abstract: The idea that medical screening can improve health is premised on the availability of medical tests that accurately identify early-stage disease in asymptomatic people and the ability of early treatment to prevent disease progression that would otherwise occur. Recently, the screening paradigm has been extended to include "screening" for presently experienced health problems and symptoms, rather than asymptomatic early disease, using self-report questionnaires. The use of questionnaires has been proposed to detect presently experienced health problems (e.g., alcohol misuse) and symptoms (e.g., depressive symptoms) that have not been reported by patients or noticed by healthcare providers and that are not necessarily progressive.

Objectives: To determine if there is evidence that screening with self-report questionnaires for presently experienced health problems and symptoms improves health outcomes.

Method: We evaluated guidelines and recommendations on questionnaire-based screening from the United States Preventive Services Task Force (USPSTF), the Canadian Task Force on Preventive Health Care (CTFPHC), and the

United Kingdom National Screening Committee (UK NSC). For each guideline and recommendation, we determined if screening was recommended and if there were randomized controlled trials (RCTs) that demonstrated improved health outcomes for patients randomized to be screened versus a non-screened comparator group with similar treatment options for identified cases.

Results: We reviewed 217 guideline statements with 299 separate recommendations. Fifteen guideline statements with 22 recommendations on questionnaire-based screening (alcohol misuse, drug use, depression, suicide risk, general psychiatric illness, autism, developmental delay, intimate partner violence) were identified. The UK NSC made 8 recommendations against screening. The CTFPHC made 3 recommendations against screening. The USPSTF made no recommendation for or against screening in 7 cases and made 4 recommendations for questionnaire-based screening (adult alcohol misuse, adult depression, adolescent depression, intimate partner violence). For each positive USPSTF recommendation, either the CTFPHC or UK NSC or both recommended against screening. There were few RCTs on questionnaire-based screening. There were negative RCTs on screening for developmental delay and intimate partner violence. Additionally, there was one depression screening RCT that was published and cited by the USPSTF as a positive trial. In this small trial, however, registered primary outcomes were changed post hoc to convert equivocal results to positive results, and the reported depression treatment effect was approximately 6 times typical effects.

Conclusions: No credible evidence has found that screening with self-report questionnaires for presently experienced health problems improves health. This practice may, however, result in substantial overdiagnosis and overtreatment.

0107 - Overdiagnosis of Coronary Artery Abnormalities among Children with Kawasaki Disease

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Abstract: Kawasaki Disease (KD) is an acute vasculitis of childhood associated with coronary artery abnormalities (CAA) and is the leading cause of acquired heart disease among United States (US) children. Among the many statements of the 2004 American Heart Association KD guidelines were: 1) Creation of an "Incomplete KD" diagnosis, broadening the definition of the disease and 2) Recommendations for early and repetitive echocardiography testing in KD patients. We hypothesize that these measures have led to increased diagnosis of CAAs among US children.

Objectives: Our objective was to compare trends in CAA detection to trends in patient outcomes among children with KD.

Method: Retrospective cohort of hospitalized children age 0-18 years receiving care for KD between 2000-2014 in 46 US children's hospitals. The main outcomes were CAA and a composite bad outcome for serious morbidity related to CAA, both calculated as cases per 1,000 patients with KD. Outcomes were measured during the incident KD visit and all subsequent visits to the same children's hospital. Individual patients could not contribute more than one case to either of the two outcome measures. Poisson regression was used to calculate changes in outcomes over time, as an incidence rate ratio (IRR).

Results: A total of 18,037 children were diagnosed with KD between 2000-2014. The rate of CAA increased from 58 per 1,000 in 2000 to 112 per 1,000 in 2014- a 6% per year increase (IRR 1.06, 95% CI 1.04-1.07). The mean rate of a CAA related bad outcome was 18.5 per 1,000 (95% CI 16.7-20.4) and was stable over the time period (IRR 0.99, 95% CI 0.96-1.02). The most common morbidities experienced by the 279 children who suffered a bad outcome were ischemic heart disease, heart failure, and conduction disorders.

Conclusions: Over the last 15 years, CAA have been increasingly diagnosed among US children with KD, but bad outcomes related to CAA are completely stable over the same time period. This finding suggests that US children with KD may not be benefiting from increased diagnosis of CAAs; that is CAAs are being overdiagnosed.

0109 - Impact of a positive hypertrophic cardiomyopathy gene result in asymptomatic family members: exploring potential for overdiagnosis due to genetic testing

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Objective: Hypertrophic cardiomyopathy (HCM) is one of the most common genetic heart diseases, with a prevalence up to 1 in 200. A genetic diagnosis in an index case allows first-degree relatives to undergo genetic testing in addition to clinical surveillance. Adult family members with no clinical evidence of HCM who receive a positive genetic test result are considered 'at-risk', but therapies are not initiated in the absence of a phenotype. This study explored the experience of genetic testing for this new group of 'genotype positive, phenotype negative' (G+P-) patients to document potential benefits and harms.

Methods: Nineteen G+P- patients were recruited from a specialist genetic heart disease clinic. Semi-structured interviews were conducted face-to-face or by phone, and transcribed audio-recordings were coded using Framework Analysis.

Results: Participants reported the main benefit of genetic testing was for the next generation, and worried more about children than themselves. Genetic test results were viewed as beneficial yet had multiple subtle but potentially important impacts on participants' lives, including: avoiding strenuous exercise, monitoring their heart rate, and increased awareness of heart symptoms. Advice from medical professionals was often contradictory, leading to uncertainty about risk and management. Implications for insurance and family planning related to whether participants self-identified as having a current medical condition/disease.

Conclusion: While genetic testing has clear potential to benefit relatives who receive a negative result, a positive result in the absence of clinical signs or prevention strategies is unclear, and can lead to misconceptions. Better understanding of the patient experience is needed to inform pre-test counselling and post-result clinical management of families. This is likely applicable to many other genetic testing settings.

0110 - Who chooses laboratory tests? The physician or the computer?

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Abstract: Computerized health records can both help and harm the quality of health care. In the Leumit Health Services HMO physicians have several ways to choose lab tests. This can be done on the home page of the lab by choosing either specific groups or ticking off specific tests. There is also a search feature which includes all the tests available in the labs. Gamma glutamyl transferase (GGT) appears in the "liver tests" and also in the "general chemistry", and also via the search feature. The use of GGT as a screening test for liver function is controversial. Its main utility is in cases where alkaline phosphatase is elevated. In April 2014 a decision was made to remove GGT from the main lab screen (so that it could only be sent if searched for specifically) and two months later it was returned, at first completely, and then partially.

Objectives: We hypothesized that the convenience of ticking off GGT on the main screen would cause larger numbers of physicians to order the test as compared to having to search specifically for the test. When the ways of ordering GGT were decreased, a consequent decrease in the tests ordered that month was expected.

Method: Leumit has a central laboratory which serves the entire country. We were able to compare the numbers of GGT tests ordered during different periods of time during which the parameters were changed on the main lab screen.

Results: There was a dramatic decrease in orders when GGT could only be ordered by the search function – from almost 36,000 to 1000 per month. When GGT was added back to one place on the main screen the numbers jumped to 18,000 and back to over 35,000 when GGT returned to both places.

Conclusions: Changes in the convenience of ordering a laboratory test which is not indicated for routine screening led to dramatic changes in the number of tests sent. Although it is too soon to see if this leads to missed diagnoses, according to the literature this is not the case. Convenience is a positive thing when it saves precious time but if it leads to over-testing we shall not have gained much.

0111 - Two Year Sustainability of an Educational Intervention to Reduce Unnecessary Stress Ulcer Prophylaxis

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Objectives: Over-prescription of stress ulcer prophylaxis (SUP) remains a persistent problem in the hospital setting. Nonessential SUP raises the risk of iatrogenic illnesses, including pneumonia, *c. difficile* infection, and spontaneous bacterial peritonitis (SBP) among cirrhotic patients, and can lead to elevated healthcare costs. We previously described the immediate effects of an educational intervention intended to reduce unnecessary SUP administration. Two years since instituting the intervention, we reevaluate its long-term sustainability.

Method: This is a retrospective cohort study evaluating the two year sustainability of an intervention to reduce unnecessary administration of SUP. The intervention involved a brief, ten-minute presentation of published SUP guidelines to house staff, and posted flyers indicating the same. Prior to the intervention, records of 103 patients were reviewed for unnecessary SUP orders. Immediately following the intervention, records of 88 newly admitted patients were reviewed. One year following the intervention, records of 94 newly admitted patients were reviewed. Two years following the intervention, records of 92 recently admitted patients were reviewed.

Results: The pre-intervention rate of inappropriate SUP was found to be 83.8%. Immediately following the intervention, the rate of inappropriate SUP fell to 46.8% ($p < 0.001$). One year later, the rate of inappropriate SUP fell to 26.2% ($p < 0.001$). Two years later, the rate of unnecessary SUP fell further to 9.7%.

Conclusions: A straightforward, low cost, and easily replicable educational intervention can dramatically reduce the rate of inappropriate SUP in the hospital setting. Further, the effects of the intervention appear to be sustainable two years out from the institution of the intervention. The estimated cost savings from this intervention is approximately \$134,000/year. We likewise anticipate small reductions in the rates of pneumonia, SBP, *c. difficile* infection, and other morbidities associated with acid suppression therapy.

0112 - Clinical Guidelines and Recommendations from the American College of Physicians: Their Role in Improving Health Care Value and Reducing Overdiagnosis.

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Objectives: To describe the structure, process and products of the American College of Physicians (ACP) Clinical Practice Guideline Committee and their role in improving health care value and reducing overdiagnosis. ACP is a national organization of internists, the largest medical-specialty organization, in the United States. ACP's goal is to provide clinicians with recommendations based on the best available evidence; to inform clinicians of when there is no evidence; and finally, to help clinicians deliver the best health care possible.

Method: ACP develops several types of clinical recommendations: Clinical practice guidelines, Clinical Guidance Statements, and High Value Care Advice. Recommendations are developed by committee members using scientifically rigorous methods and based on assessments of the strength and certainty of evidence related to the

balance of benefits and harms (and costs, if possible) of health care interventions. ACP places importance on the value of diagnostic or therapeutic interventions, with value being a function of evaluating benefits, harms, and costs together. A high value intervention can be expensive while a low value intervention can be cheap, when incorporating benefits and harms in the equation along with the cost. ACP often includes sections on High Value Care advice in order to reduce harms of care including overdiagnosis.

Results: We will describe the structure of the ACP clinical policy committees and the processes used to develop these recommendations including the emerging role of public members and public juries. We will highlight specific recommendations that include our methods for assessing the strength of evidence, level of recommendation and methods to clearly communicate our recommendations. We will describe the "dissemination impact" of statements based usage and media encounters. We will focus on high value care advice sections including our emphasis on reducing harms and costs associated with overdiagnosis and overtreatment. We will highlight several ACP recommendations where less care was determined to be better care including: periodic pelvic examinations in asymptomatic average risk women, screening for chronic kidney diseases, diagnosis and treatment of sleep apnea, evaluation of pulmonary embolism and high value cancer screening.

Conclusions: ACP strives to improve the value of health care delivered to adults and reduce the harms of overdiagnosis through development and communication of clinical recommendations. Public involvement will take an increasingly important role in these processes.

0113 - Gemeinsam Klug Entscheiden. Choosing wisely - together. An initiative of the Association of the Medical Scientific Societies (AWMF) and its member societies in Germany

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Abstract: Overdiagnosis and underdiagnosis and consecutively overtreatment and undertreatment challenge health care systems and harm patients. Clinical Practice Guidelines sometimes address this issue but have not yet been efficient enough to drive significant change. Under the heading "Choosing Wisely", campaigns have been launched to enforce this. However, there is uncertainty about their methodological background. The AWMF, the umbrella organisation of 173 medical specialty societies in Germany, adopted a variant: "Gemeinsam Klug Entscheiden" ("Choosing Wisely-Together") as an additional implementation tool. "Choosing Wisely- Together " underlines multidisciplinary and patient involvement, endorses existing initiatives that address the issue of over- and underuse in Germany and builds mainly on guidelines that comply with international methodological standards (1, 2,3)

1. Nothacker M, Muche-Borowski C, Kopp IB. 20 Jahre ärztliche Leitlinien - was haben sie bewirkt? Z Evid Fortbild Qual Gesundhwes. 2014;108(10):550-9

2. Strech D, Follmann M, Klemperer D, Lelgemann M, Ollenschläger G, Raspe H, Nothacker M. When Choosing Wisely meets clinical practice guidelines. M. Z Evid Fortbild Qual Gesundhwes. 2014;108(10):601-3.

3. Qaseem A, Forland F, Macbeth F, Ollenschläger G, Phillips S, van der Wees P. Guidelines International Network: Toward International Standards for Clinical Practice Guidelines. Ann Intern Med., 156 (7) (2012), pp. 525–531

Objectives: To provide methodological guidance for medical specialty societies planning to develop recommendations with the goal to address and prevent overuse as well as underuse of health services To emphasize the focus on health care aspects with high potential for improvement and communication between patients and doctors.

Method: An interdisciplinary ad hoc commission of AWMF has developed a manual describing a methodology for selecting negative or positive recommendations with high potential for improvement from existing high quality guidelines and other trustworthy evidence sources. Following a Delphi-process, 7 selection criteria have been defined: clarity of the recommendation, perceived under- or overdiagnosis or -treatment, quality of the evidence, grade of the recommendation, influenceability by providers, practicability and risks for unintended consequences.

The manual has undergone public consultation and has been tested in different projects. Additionally, a lay version template for communication with patients has been compiled according to the principles of "Good Practice Health Information"

(4) Deutsches Netzwerk evidenzbasierte Medizin. Gute Praxis Gesundheitsinformation. Berlin 2015, <http://www-ebm-netzwerk.de>)

Results: An evaluation of comments on the consultation version and subsequent modifications of the manual will be outlined. Examples of recommendations from specialty societies for geriatric patients as well as patients with digestive and metabolic diseases and patients with coronary heart disease will be presented. Their conformity with the selection criteria will be delineated, especially focusing on the available data base for assessing the potential of improvement for the aspects addressed. In addition, the lay version will be presented and discussed.

Conclusions: We propose a structured methodology for Choosing Wisely initiatives. Recommendations for "Choosing Wisely – together" are on the way in Germany- Methodological challenges, implementation and evaluation have to be faced. Next steps include the exploration of a concept for broad dissemination and publicity.

0115 - Reducing inappropriate use of multiple medicines (polypharmacy) in older people: pilot study of a communication tool to support decision making

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Objectives: Medicine reviews have the potential to reduce inappropriate and/or harmful medicines in older people with comorbidity. However there is lack of involvement of older people in this process. We have developed a Conversation Guide to be used in the context of a home medicine review (HMR) by pharmacists to promote engaged communication between older people, companions, pharmacists and GPs. The aim of this Guide is to increase involvement of older people in medicine decisions related to reducing medicines and inappropriate polypharmacy.

Method: Stage 1 pilot: An iterative development process involved piloting the Guide with a convenience sample of 5 pharmacists and 6 older patients (aged 75+) taking 5+ medicines, addressing feedback before testing the next version. Stage 2 pilot: 10 pharmacists who conduct HMRs will use the Guide with 25 older patients to discuss how their medicines fit with their priorities and life goals, and encourage discussion around trade-offs. Post-HMR, patients and pharmacists will be interviewed to explore acceptability/satisfaction and rate utility/content. Transcribed audio-recordings of the interviews will be coded using Framework Analysis.

Results: Stage 1 pilot: Pharmacists found the Guide acceptable and a useful addition to HMRs, especially among patients with limited knowledge about their medicines. Questions were developed with consideration that some people may have a degree of cognitive impairment, but several patients had difficulty understanding complex concepts. Questions about quality of life and the trade-off between length of life for less medications or side effects often elicited a philosophical response or confusion. Stage 2 pilot: Full results will be reported at the conference.

Conclusions: Participants reported the Guide fits in with the HMR encounter relatively easily and it was particularly useful for older people with limited knowledge about their medicines. The Guide may be useful to understand a patient's overall outlook about their medicines but some of the concepts were too complex to relate back to medicines. The results will inform further revision of the Guide before a randomized controlled trial evaluation.

0118 - The elephants in the room – the role of cognitive biases in overdiagnosis and overtreatment

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Abstract: Among the many drivers of low value care, the role of cognitive biases in clinician decision-making deserve greater attention. Strategies frequently adopted to counter low value care – such as education programs, guidelines, and audit and feedback – are based on rationalist principles which assume a reflective and scientific response from clinicians (ie system 2 thinking). However, under the pressures of everyday practice, clinical decision making often defaults to mindlines and heuristics (ie System 1 thinking) based on highly personal and internalised beliefs which are vulnerable to various forms of cognitive bias. Based on a review of relevant literature and the authors' experience in leading overuse minimisation projects, several biases are commonly encountered which will be illustrated with clinical examples. These include: clinician regret of omission (or loss aversion), availability heuristic, optimism and outcome bias, confirmation bias and framing effects, innovation (or novelty) bias, endowment effects and sunken costs fallacy, extrapolation bias, affect and authority bias, certainty and reassurance needs, and groupthink. These biases make it difficult for clinicians to reconcile new evidence of overuse with highly ingrained prior beliefs and intuition, creating cognitive dissonance which then leads to cognitive reactance – a tendency to resist perceived attempts by others to control their behaviour and limit their autonomy. Such reactance poses a major challenge to the overdiagnosis campaign in its attempts to gain greater traction among practising clinicians. Overcoming such reactance requires cognitive biases to be exposed and understood, and then responded to with various debiasing strategies. These may include cognitive autopsies and huddles for sharing discomfort with uncertainty and omission regret, 'teachable moment' narratives of patient harm that invert availability heuristics, emphasising gains over losses in clinical outcomes, reframing overuse messaging from negative to positive, presenting avoidance of low value care as innovative renewal, offering alternative forms of care to nullify endowment effects and sunken costs fallacy, building equipoise for more research to counter extrapolation bias, using normalisation of deviance and nudge techniques to preserve autonomy, and deploying value-based, shared decision-making to challenge biased beliefs. Examples of such approaches will be presented. While not denying the importance and credibility of a rationalist perspective on overuse of medical care, cognitive and psychosocial factors that influence clinician decision-making deserve more attention. Psychologists, sociologists, political scientists, and other experts within the emerging field of so-called 'behavioural economics' need to be involved in joint efforts to minimise overuse of care.

Objectives: To characterise the different forms of cognitive bias that may compel clinicians to overdiagnose and overtreat. To understand the differences between system 1 and system 2 thinking and the circumstances under which the former may dominate over the latter and render clinician decision-making more vulnerable to cognitive biases. To consider cognitive de-biasing strategies that may counter non-normative reasoning and minimise cognitive dissonance and subsequent reactance when presented with evidence of overuse in routine care. To consider how such strategies can be usefully combined with current rationalist based campaigns of education, feedback and incentives aimed at curbing overdiagnosis and overtreatment

Method: Literature review using snowballing technique combined with expert opinion of clinicians leading overuse awareness and minimisation campaigns in Australia. Themes have been further refined following presentation to two interactive forums of professional groups with interest and responsibility in overuse of care (one at state level and another at national level).

Results: Various forms of cognitive bias exist which include clinician regret of omission (or loss aversion), availability heuristic, optimism and outcome bias, confirmation bias and framing effects, innovation (or novelty) bias, endowment effects and sunken costs fallacy, extrapolation bias, affect and authority bias, certainty and reassurance needs, and groupthink. Debiasing strategies comprise: cognitive autopsies and huddles for sharing discomfort with uncertainty

and omission regret, 'teachable moment' narratives of patient harm that invert availability heuristics, emphasising gains over losses in clinical outcomes, reframing overuse messaging from negative to positive, presenting avoidance of low value care as innovative renewal, offering alternative forms of care to nullify endowment effects and sunk costs fallacy, building equipoise for more research to counter extrapolation bias, using normalisation of deviance and nudge techniques to preserve autonomy, and deploying value-based, shared decision-making to challenge biased beliefs. Examples of such approaches will be presented.

Conclusions: While not denying the importance and credibility of a rationalist perspective on overuse of medical care, cognitive and psychosocial factors that influence clinician decision-making deserve more attention. Psychologists, sociologists, political scientists, and other experts within the emerging field of so-called 'behavioural economics' need to be involved in joint efforts to minimise overuse of care.

0120 - Impact of ESSENCIAL recommendations in primary care.

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Objectives: The implementation of Essencial project started in 2015. It's a public policy initiative to identify low-value clinical practices and elaborate recommendations to avoid unnecessary care. Launched in Catalonia in 2013, is being implemented to promote change in clinical practice in primary care (PC), to improve the quality of care and sustainability of health care system. The objective is to evaluate the impact and trends of recommendations implemented by primary care teams (PCT).

Method: Uncontrolled before-after study was designed. 11 PCT of Institut Català de la Salut (ICS) participated in pilot project (18 month follow-up). Intervention started in April 2015, included: 1) identification of clinical leaders to promote and to lead project inside PCTs (determine barriers and facilitators to implement recommendations), 2) selection of recommendations to be implemented by each PCT (proposed interventions), 3) measurement and monitoring indicators of recommendations, feedback monthly to PCT using primary electronic health record as source of information. Poisson regressions models were fitted to study comparison rates between baseline (3 months previous intervention) and 8 months post intervention (December).

Results: 11 PCT (323 professionals) participated. 9 recommendations were selected: 1) statins for primary prevention of cardiovascular disease, 2) PSA screening, 3) antiosteoporotic (biphosphonats) in women with low risk of fracture, 4) proton pump inhibitors in polimedicated patients, 5) antidepressants in mild depression, 6) long-lasting benzodiazepines for insomnia, 7) periods between bone densitometry, 8) vitamin D in elderly people and 9) ACE inhibitors and ARBs in heart failure. Two recommendations had declined: antiosteoporotic treatment decreased 21% (95%CI, 0.66-0.94; P=0.009) and PSA screening 14% (95%CI, 0.77-0.95; P=0.005). Bone densitometry increased 23% (95%CI, 1.05-1.44; P=0.007). Remaining recommendations decreased with no statistically significant changes.

Conclusions: Short follow-up period. Each team has chosen its own recommendations, which involves small number of teams for recommendation and heterogeneity of interventions, according to specific characteristics of their organizations. Results provide information about early impact of Essencial recommendations. Implementation has begun to make a contribution reducing unnecessary care. However, is not possible to attribute these results only to project. There are some initiatives at PC aligned with Essencial in terms of reducing overdiagnosis and overtreatment. Professionals are key actors in change of clinical practice, although there is a need to strengthen interventions in patients and at organizational level.

0121 - Interventions to reduce unscheduled hospital admissions among adults: an overview of systemic reviews.

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Objectives: Over the last 15 years the UK has experienced a 47% increase in unscheduled hospital admissions. This increase in the use of acute health services has financially and organizationally strained the healthcare system. Furthermore, hospitalization is disruptive to the lives of patients and represents a threat to their safety as in-patients are at risk of medical errors, adverse events, and hospital-acquired infections. Reducing unscheduled hospitalisations is a priority for the National Health Service. However, it is unclear which interventions can help to reduce and manage admission rates. Therefore, our objective was to conduct an overview to find, assess, and summarize all published peer-reviewed systematic reviews of randomized controlled trials that examine the effect of a health intervention on unplanned admissions among adults (> 16 years old).

Method: Four databases were searched from inception to February 2016: Ovid MEDLINE, Pubmed, Cochrane Database of Systematic Reviews, and the Cochrane Database of Abstracts of Reviews of Effects. To identify additional relevant articles we searched reference lists of included studies, contacted experts, and searched the publication pages of major health research funders, think tanks, and charities in the UK. We only included reviews that identified unscheduled hospitalisations as a pre-specified outcome. We assessed the quality of included reviews and assessed the quality of evidence within each review.

Results: Two authors independently screened 10575 abstracts and 1290 full text articles. Ultimately, 609 reviews were included in the study. To date, we have identified several interventions that have been shown to significantly reduce unscheduled admissions including medications, monitoring devices, treatment devices, and self-management

strategies. Ultimately, we will create a hierarchical list of interventions based on estimates of absolute admission reductions and the quality of the evidence. We will also compare, contrast, and discuss the interventions with consideration given to other relevant factors including the quality of the reviews, and heterogeneity within reviews. **Conclusions:** We will produce a list of effective, evidence-based interventions to reduce unscheduled hospitalisations. This list will inform research into the current use of the interventions in practice. The results could be used to guide resource allocation decisions and inform local implementation and optimization of interventions. If the results of this overview are translated into changes in patient care and healthcare practices then patients will benefit from the reduced burden of hospitalization either through improved disease treatment and management or better preventative care.

0122 - Mammographic Screening for Breast Cancer and PSA Testing for Prostate Cancer: Damaging and Wasteful Symmetry

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Objectives: "Catch It Early", mantra of the long war against cancer since the 1971 Cancer Act, represents the widespread but largely unsupported belief that destroying cancers in their pre-clinical phase invariably saves lives. This ideology has spurred widespread adoption of cancer screening programs since the 1980s. Population mammography screening for breast cancer and PSA screening for prostate cancer are in the vanguard of this movement. Now, with almost perfect synchronicity, both strategies are under intense scrutiny. A growing movement advocates review of these routine population screenings, concerned that the harms of "over-diagnosis" (death from other causes without symptoms from the "discovered" disease) outweigh population screening benefits. Although both programs were set up in good faith, no one could have predicted the extent of over-diagnosis and over-treatment generated by them. The objective of this study is to describe the financial toxicity and low value caused by over-diagnosis of these two cancers in the U.S.

Method: We estimated the direct financial costs of overdiagnosis of breast and prostate cancers based on annual population screening rates and average cost of treatment.

Results: About 50% and 70% of screen-detected breast and prostate cancers, respectively, are over-diagnosed, representing 70,000 breast cancers and 200,000 prostate cancers annually. Herein, we assume the direct cost of serial mammographic screening, biopsies, breast conserving surgery, radiotherapy, and adjuvant therapy for breast cancer is \$50,000- \$100,000 per woman (\$5.25 billion annually). For prostate cancer, the direct costs for radical prostatectomy or definitive radiotherapy plus anti-androgen therapy consumes at least \$50,000 per man (\$10 billion annually). Thus, the approximate cost of population-screening-induced over-treatment of these two cancers approaches \$15.25 billion annually (about \$50.00 for every man, woman, and child in the country), in return for the inconvenience of unnecessary diagnoses, treatments, and treatment side effects and no substantial gain in length of life. In the U.S. medical costs and resultant financial toxicity are the most frequent cause of personal bankruptcy.

Conclusions: Population screening and associated overtreatments are important drivers of medical care costs in the U.S., accompanied by the anxiety and toxicity of radiation therapy, surgery, hormonal therapy, and chemotherapy for 270,000 individuals. This level of annual waste exceeds the entire GDP of some 77 of the 195 countries on earth. Application of individual risk-based screening strategies is required to avoid this problem and to detect cancers of significance.

0125 - Actors and factors influencing treatment with drugs for attention deficit and hyperactivity disorder (ADHD)

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Abstract: In Catalonia, the population 6 to 17 treated with ADHD drugs increased by 188% during the period 2006-2014. The percentage of people treated ranged from 1.1% to 6.2% between Health Regions, and from 0.6% to 10% in small areas.

Objectives: The aim is to assess how some individual and ecologic factors determine the probability of being treated with ADHD drugs.

Method: A population based study. Data were obtained from the Minimum Datasets of Primary Care and Ambulatory Mental Health Care and from the Catalan Pharmacy Database. The study included 822.450 people aged 6 to 17 visited by a primary care team in the period 2012-2013, which represented 88.6% of the total population of this age group. A binomial logistic regression model was fitted including sex, age and month of birth, as individual variables. Small areas of residence were used to attribute an average socioeconomic status. Proclivity to diagnose ADHD, consultations per inhabitant and total budget were used as variables of the corresponding centers. The proclivity for ADHD diagnose was defined as percentage of total patients visited for a center with an ADHD diagnose. Non-users of primary health care services are not included in this study. This limitation involves bias if we consider that non-users do not have the same socioeconomic profile of users. The study includes no activity and prescription by private mental health professionals.

Results: Age is the factor that has most influence on ADHD treatment (OR_{adj}:1.13, CI95%: 1.13-1.14), followed by center's proclivity for ADHD (OR_{adj}:1.13, CI95%: 1.13-1.14). The third variable with most effect is sex female (OR_{adj}: 0,34, CI95%: 0.33-0.35). Other factors with a relevant association to ADHD treatment are the high socioeconomic

status (OR_{adj}:1.40, CI95%: 1.34-1.46), taking the middle class as reference category, and the month of birth (OR_{adj}:1.05, CI95%: 1.04-1.05).

Conclusions: The study has evidenced that some individual and collective features, which should not affect the decision of prescribing ADHD drugs, actually do have a relevant influence on it. The percentage of patients with ADHD varies widely between centers, ranging from 1.13% to 47.69% of all the people visited in one year. The proclivity for ADHD diagnose has a similar or even greater effect than other variables with a known influence, such as age or sex. The results of this study should be taken into account in order to avoid overtreatment with ADHD drugs among the youngest population.

0128 - Mammography screening effectiveness and overdiagnosis in the Netherlands

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Objectives: Effective cancer screening reduces cancer mortality through reducing the incidence of advanced cancers. Since 1989, 80% of Dutch women 50 to 75 years of age participate to the national biennial mammography screening program. We analysed data on stage-specific breast cancer incidence in the Netherlands.

Method: The Integraal Kankercentrum Nederland (IKZ) provided the data on breast cancer incidence by stage from 1989 to 2012. We computed age-adjusted incidence rates of in situ, stage 1 and stage 2-4 breast cancers in the Netherlands. Quantification of trends was done by computing average percent changes (APC) and their (95% confidence interval) after log-transformation of rates. We estimated the excess numbers of breast tumours associated with screening by comparing the rates of in situ tumours or stage 1 cancers diagnosed each year in women aged 50-74 years with rates found in women aged 75 years or more.

Results: The incidence rates of stage 2 to 4 cancers was 167 per 100,000 in 1988 and 166 per 100,000 in 2012. The APC in trends in women aged 50 years or more was 5.88% (4.78%; 7.00%) for in situ tumours, 3.24% (2.64%; 3.85%) for stage 1 cancer, and -0.16% (-0.36%; 0.04%) for stage 2-4 cancers. From 1989 to 2012, 23% of cancers found in women 50 to 74 years of age would represent overdiagnosis, climbing to 32% after introduction of digital mammography in 2007. 45% of breast cancers screen-detected from 1990 to 2007 would represent overdiagnosis, moving to 55% after the generalisation of digital mammography.

Conclusions: The Dutch mammography screening programme has had practically no impact on the burden of advanced breast cancers occurring in women aged 50 years or more, which suggests a marginal effect on breast cancer mortality. The amount of overdiagnosis is substantial.

0129 - Effectiveness of lung cancer screening with low-dose computed tomography: A systematic review and meta-analysis

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Objectives: This study evaluated the influence of screening with low-dose computed tomography (LDCT) on lung cancer mortality and incidence.

Method: A systematic review and meta-analysis was performed with random-effect models to estimate summary relative risks (SRR), 95% confidence intervals (CI), and the I² statistic for heterogeneity. Overdiagnosis was computed as the difference in lung cancer incidence between intervention and control groups divided by the incidence in the intervention group. Prospective studies on LDCT screening reporting data on stage IA lung cancers were systematically reviewed. A systematic literature search was conducted up to 2nd of March 2016 using Pubmed database. For mortality outcomes, randomised controlled trials that compared LDCT screening to regular follow-up with X-ray, usual care, counselling on tobacco smoking or no particular intervention were included. Studies had to report statistics on either overall mortality, lung cancer mortality or lung cancer incidence. To estimate the level of overdiagnosis, prospective studies following patients screening with LDCT were included.

Results: Nine randomised controlled trials were identified. In trials with three screening rounds or more, 30% to 66% of lung cancers were stage IA in intervention groups. In control groups, 8% to 13% cancers were stage IA, except for the National Lung Screening trial (NLST) (21%). Overdiagnosis ranged from 11% (in the NLST) to 65%. In four trials, the SRR for lung cancer mortality was 0.94 (95%CI 0.72 to 1.22), with I²=36%. Exclusion of the NLST led to a SRR of 1.10 (95%CI 0.81 to 1.50) with I²=0%. In five trials, the SRR for overall mortality was 1.00 (95%CI 0.85 to 1.17), with I²=50%. In 20 prospective studies including 87,535 subjects who received LDCT screening, stage IA lung cancers represented 33% to 100% of all lung cancers.

Conclusions: With significant reduction of lung cancer mortality and a low level of overdiagnosis, results of the NLST are in sharp contrast with results of all other studies, in which no reduction of lung cancer mortality and high overdiagnosis rates were observed. There is currently little consistent evidence that LDCT can reduce the risk of lung cancer death, while overdiagnosis is a recurrent concern in prospective studies conducted so far.

0132 - Why are fat people the focus of medical attention?

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Abstract: Although the World Health Organization claims obesity to be among the most serious health threats we are facing it is not obvious that medical intervention is benefitting those who are labelled obese. Epidemiological and long-term treatment results suggest that the medical approach to obesity seems to neither improve the health of the fat

person in the long-term nor lower prevalence figures of obesity. In this talk I will reflect on the medicalization of the fat person and draw attention to certain social forces that might partly explain why she is increasingly the subject of medical attention. I will draw on the works of Sadler et al. (2009) where they draw out forces and values in society that drive medicalization. By using their definitions and insights and applying them to the obesity debate it is possible to speculate on the forces that drive the medicalization of obesity. I will discuss issues like: the "promise for cure", "healthcare as a commodity", "desire for power", "Eudaimonia", "individualism vs. communalism", "depoliticizing politically difficult social problems" "technological values" and finally on "medicalization as a drive to transcend human-existential limitations". By reflecting on these points it is possible to draw attention to important social forces that are at play in addressing obesity. There are those who protest the medicalization of the fat person. One important reason for rejecting this medicalization is the fact that fat people are stigmatized and marginalized in today's societies. By medicalizing a marginalized group it may be marginalized even further. Because of this potential harm that the medical profession might cause and in light of questionable benefits that fat people have received from them over the last decades it is important to reevaluate the role of the doctor in addressing what has been labelled as the "obesity epidemic".

Objectives: This oral presentation/seminar is intended to cast light on the obesity debate and to reflect upon the possible harms and benefits of medicalization of fat persons

Method: Health care professionals, both clinicians and to those working in public health, and fat activists

0136 - Impact of delisting diagnostic imaging studies for uncomplicated low back pain in Ontario

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Objectives: Uncomplicated low back pain (LBP) is very common. Imaging tests rarely identify a treatable cause and lead to unnecessary healthcare costs, radiation exposure and possible overdiagnosis. We previously presented an analysis of the early impact of the withdrawal of insurance coverage for imaging tests for LBP in Ontario, Canada. Here we present longer term follow up in greater detail and compare the effects in family practitioners and specialists and by different imaging modalities.

Method: We analysed all imaging tests ordered for a population of 13.5 million for 36 months before and after the coverage restriction in April 2012. Linkage to a physician data-base enabled identification of FP and SP. We analysed and compare the impact of the policy change on the practices of family practitioners (FP) and specialists (SP) using interrupted time series analyses.

Results: In the case of FP, ordering of lumbar spine X-ray (LSXR), fell by 0.81 tests/month/FP ($P < 0.0001$), after the restriction, from an already declining baseline of 3.0 to 2.5 tests/month/FP. After a small rebound ordering has remained stable at 1.5 to 2.0 tests/month/FP. Ordering of LSXR by SP was lower (1.0/month/SP) and unaffected by the restriction. Ordering of spine CT (SCT) by FP fell prior to the restriction, from 0.75 to 0.6 tests/month/FP. The intervention resulted in a further fall of 0.1 test/month/FP ($P < 0.0001$), followed by a stable ordering rate of 0.5 to 0.6/month/FP. The restriction had little impact on ordering of SCT by SP, which had been declining slowly and remained at around 0.5 to 0.6/month/SP. Ordering of limited spine MRI (LSMRI) by FP rose from around 0.7 to 1.0 tests/month/FP prior to the restriction, fell sharply by 0.18/month/FP ($P < 0.0001$) and started to rise again at a lower rate than previously. Ordering of LSMRI by SP had been stable at around 1/month/SP, fell by 0.1/month/SP ($P = 0.0009$) after the restriction and then climbed back to the pre-intervention levels.

Conclusions: Overall, the restriction in coverage caused a larger decrease in the ordering practices of FP than those of SP and a larger and more sustained reduction in the use of older imaging tests (LSXR and SCT) than MRI.

0138 - Overdiagnosis of osteoporosis? Views of Australian women in community focus groups

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Objectives: While there is on-going research into communicating about the risk of overdiagnosis in cancers, to date there has been little investigation of how best to present information about overdiagnosis of non-cancer conditions. We chose to use focus groups on osteoporosis - a risk-based condition where there was controversy surrounding disease definitions and concern about potential overdiagnosis - to learn more about community awareness of overdiagnosis, in order to help develop strategies to better inform people about the risk of overdiagnosis in non-cancer conditions.

Methods: Authors iteratively developed and piloted the structure and presentations for a 2 hour focus group, with input from 2 external reviewers. The 1st hour covered open discussion in 4 parts: What is Osteoporosis?; Risk factors; Medications; Overdiagnosis. The 2nd hour contained 4 short presentations on these topics, followed by discussion. Women aged 50 - 80 without a diagnosis of osteoporosis were randomly recruited from the Gold Coast in Australia. We conducted 5 focus groups with 41 women. Thematic analysis of transcripts used the "framework analysis" method described by Ritchie et al. eds. in *Qualitative Research Practice*, 2014.

Results: Preliminary results suggest: low understanding of overdiagnosis; faith in early diagnosis; and a view osteoporosis can't be overdiagnosed because test results are "clear cut", with little change following a short presentation on overdiagnosis. Following a presentation flagging debate about whether osteoporosis is best described as "risk factor" or "disease", women expressed preferences for risk factor. "Disease means somebody else is going to have control over what you do. Risk factor means you can make the decision." Women felt uneasy "normal" bones were defined as young bones, were disinclined to medications after seeing benefits, and had strong interest in non-medical prevention.

Conclusions: Communicating about overdiagnosis of risk-based conditions including osteoporosis may require a different approach to communicating about cancer overdiagnosis. While low bone density is commonly promoted as "disease" there may be community receptiveness to describing it as a "risk factor", among other factors, for future fracture - reducing medicalization and laterally addressing the problem of overdiagnosis. Our findings of strong antipathy to a disease definition unadjusted for age - "if you're 50, you would think that you would be benchmarked against 50. I mean otherwise you're going to get huge overdiagnosis" - adds weight to calls for reform of disease definition processes.

0139 - Why do some colorectal cancer screening participants choose not to undergo colonoscopy following a positive test result?

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Abstract: Colorectal cancer (CRC) is one of the most common cancer types in high-income countries with a high mortality rate. Therefore, a national CRC screening programme was implemented in Denmark in 2014 using an immunological faecal test (iFOBT) as the screening test. During the first 10 months of screening 64% of the invited citizens chose to participate and 6.8% of those received a positive result. The participants having a positive screening test were offered a colonoscopy with 85% accepting this invitation. Of the remaining 15% approximately 5% were already diagnosed with inflammatory bowel disease, 5% suffered from severe multimorbidity and were not eligible for a colonoscopy and the last 5% chose not to undergo the procedure for other reasons. So far it has not been possible to identify studies investigating why some screening participants choose to refrain from undergoing a colonoscopy after they have been tested positive and therefore have an increased risk of having CRC.

Objectives: The aim of this study was to investigate why participants opted out of the colonoscopy following a positive screening iFOBT result.

Method: We conducted semi-structured, qualitative interviews. The interviews were conducted in the homes of the informants, and were audio-recorded and transcribed. The interview data was read and coded using Strauss and Corbin's (1998) concept of open -, axial -, and selective coding, which identified core themes, generally shared in all interviews, forming the basis of the findings section.

0142 : Promoción del *Right Care* en un Centro de Atención Primaria

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Abstract: El proyecto *Essencial* es un ejemplo de la corriente *Right Care*, implantado en diferentes centros sanitarios de Catalunya mediante recomendaciones sobre prácticas de poco valor clínico promoviendo las basadas en la evidencia. Desarrollado a dos niveles hasta la fecha: en equipos de atención primaria y a usuarios del sistema.

Objectives : Disminuir la prescripción mal indicada de las benzodiazepinas para el insomnio en mayores de 65 años, y la de antidepresivos en episodios leves en adultos sin factores de riesgo adicionales en un Equipo de Atención Primaria.

Method : Estudio de intervención antes y después : en un equipo de atención primaria de la provincia de Barcelona (14 médicos y 14 enfermeras). *Variables:* 1) La prescripción de benzodiazepinas de semivida larga en gente mayor de 65 años diagnosticados de insomnio; 2) Prescripción de antidepresivos en fase inicial de episodios depresivos leves en adultos sin factores de riesgo. Se realizaron dos sesiones formativas al equipo incluyendo material docente, pautas de desprescripción y tratamiento alternativo, en junio para las benzodiazepinas y en septiembre para los antidepresivos.

Results : Reducción del porcentaje de prescripción de las benzodiazepinas en un 2,5% a los tres meses de la intervención (de 8.45% hasta un 5.95% post-intervención). Reducción del porcentaje de prescripción de los antidepresivos, en un 3% a los 3 meses de la intervención (de un 47% a un 44% post-intervención).

Conclusions : La promoción del *Right Care* en atención primaria a través de la implantación del proyecto *Essencial* ha reducido la inadecuada prescripción de benzodiazepinas y antidepresivos, por lo que puede ayudar a reducir prácticas de poco valor clínico y optimizar el manejo de las patologías en la práctica asistencial. Es preciso valorar el análisis de las variables a largo plazo complementado con sesiones recordatorias para mantener o reducir en un mayor porcentaje estas prácticas de poco valor, así como extender la estrategia a otros niveles asistenciales y integrar a los pacientes de modo habitual en este tipo de estrategias.

0143 - Shared Decision Making about multiple medicines: the attitudes and experiences of healthy and frail older adults and their companions

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Objectives: Multiple medication use (polypharmacy) is common amongst older adults even though they are less likely to obtain the same benefit from medicines as younger adults. Inappropriate polypharmacy and associated harms have the potential to contribute to adverse drug reactions, impaired cognition, falls and hospitalisations in the older population. There is increasing evidence that reducing polypharmacy by not starting medicines, tapering or stopping - "deprescribing" - can be safe and beneficial. We explored decision making about polypharmacy with healthy and frail

older adults, through discussions about their experiences and attitudes towards making decisions about medicines and their thoughts on deprescribing.

Method: Semi-structured interviews were conducted with 20 healthy and 10 frail older adults (aged 75 years +) and 15 of their companions; all with varying socio-economic backgrounds and levels of education in NSW, Australia. Healthy older adults were recruited by their general practitioners and frail older adults were recruited from a rehabilitation ward in hospital. Interviews were conducted in the participant's home. Transcribed audio-recordings were thematically coded and a Framework Analysis method was used to ensure rigour.

Results: The following themes emerged across all older adults: 1) positive attitudes towards taking multiple medicines, including the view that medicines improve quality of life; 2) high levels of trust in clinician decision making about medicines; 3) discussions about stopping or tapering medicines were commonly reported; mostly triggered by side-effects; 4) discussions about not starting medicines were often considered counter-intuitive; 5) a subgroup were more actively involved in medicine decisions and questioned their GP about medicines. In frail older adults: 6) self-perceived lack of knowledge about medicines hindered discussions; 7) several received conflicting advice about medicines. Overall, companions expressed similar views.

Conclusions: The older adults in this study had positive attitudes towards their medicines, limited knowledge of benefits and harms, and limited involvement in decision making, despite an overall wish to be informed. There were additional challenges amongst frail older adults, who were generally less involved in medication decisions, and their perceived lack of knowledge about their medications was identified as a barrier to shared decision making.

0146 - Oportunidades para aumentar el valor de nuestras intervenciones: Recomendaciones NO HACER de semFYC

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Objectives : El uso de pruebas diagnósticas y tratamientos innecesarios conlleva etiquetar a personas sanas como enfermas, a aumentar la iatrogenia y al consumo excesivo de recursos sanitarios. Durante los tres últimos años la semFYC ha puesto en marcha el programa "No Hacer" con el objetivo de identificar y difundir aquellas recomendaciones sobre prácticas clínicas que se deberían evitar.

Method : Durante el periodo 2014-16, semFYC ha publicado tres documentos con Recomendaciones NO HACER, dos de ellos orientados a las consultas de atención primaria y un tercero orientado a situaciones en los servicios de urgencias, emergencias y atención continuada. Cada año, los expertos miembros de los grupos de trabajo de semFYC, elaboran un listado de pruebas diagnósticas y tratamientos candidatos a No Hacer. La lista inicial se reduce a 15 recomendaciones cada año, mediante un proceso Delphi modificado. Las pruebas diagnósticas y tratamientos priorizados son evaluados con el sistema GRADE (Grading of Recommendation, Assessment, Development and Evaluation).

Results : Se alcanzó consenso en: uso antibióticos en infecciones respiratorias, bacteriuria asintomática y sondaje vesical; terapia hormonal y estatinas en prevención cardiovascular; AINEs y paracetamol; benzodiazepinas en personas mayores; prevención primaria y toxicidad gastroduodenal, terapia antiplaquetaria y stent arteria coronaria, corticosteroides y exacerbaciones EPOC, bifosfonatos y riesgo fractura, heparina bajo peso molecular; control diabetes; hiperuricemia asintomática; cribado cáncer próstata y de cuello de útero; pruebas imagen en dolor espalda, sinusitis, cefaleas, crisis asmáticas, dolor abdominal, esguince tobillo. Intervenciones en el contexto del traumatismo craneales leves, urgencias hipertensivas, síndrome coronario agudo, hemorragia digestiva y por traumatismo, parada cardiorespiratoria y lavado gástrico.

Conclusions : Las recomendaciones priorizadas por el programa 'No Hacer' de semFYC ponen de relieve aquellas pruebas diagnósticas y tratamientos que no están justificados en base a su eficacia, seguridad y coste. Las recomendaciones y los informes que las sustentan, sirven para darlas a conocer y a la vez sensibilizar a los médicos de familia sobre aquellas acciones que ellos y sus pacientes deberían tratar de evitar

0147 - Appropriateness of MRI in Austria: identification of overuse

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Objectives: Magnetic resonance imaging (MRI) plays a vital role not only in diagnosis of diseases and injuries, but also in the monitoring of disease progression and treatment success. Currently, however, the appropriateness of diagnostic imaging is increasingly debated. With more than 100 MRI exams yearly per 1,000 population, Austria is leading in MRI utilisation in comparison to other OECD countries. Inappropriate use may lead to costs without increasing diagnostic yields: not only the cost of the exams itself, but also ensuing treatment or follow-up costs, increase in waiting times and additional costs if patients are on sick leave. Given the large number of indications, the absence of high quality evidence and the established wide use of the technology, a conventional HTA approach was not feasible. We have therefore taken a different approach to explore options and strategies to drive the appropriate use of MRI in Austria.

Method: First, we screened databases for evidence based recommendations *against* the use of MRI in specified indications and compared to the Austrian referral guideline „Orientierungshilfe Radiologie". Second, we performed a literature review to identify which tools and strategies are used for utilisation management of MRI and their reported effects from pilot studies and third, we conducted interviews with relevant Austrian stakeholders, in which we explored their perspectives on current and possible future measures to steer appropriate use of MRI in Austria.

Results: Our screening of recommendations against the use of MRI identified several indications where recommendations differed from current referral guidelines in Austria. Current steering instruments of imaging

utilisation are the centralised planning of MRI equipment, a cap on expenses, which is not coupled to performance criteria and a pre-authorisation system in which 99% of referrals are authorised. Our interviewees supported the introduction of educational measures for referrers and patients; the expansion of decision support and the facilitation of communication exchange. Current pre-authorisation is not perceived as a measure driving appropriate use.

Conclusions: The study is meant as a basis for discussion. Our recommendations include prospective data collection on appropriateness of MRI use in Austria, consensus building on criteria for appropriateness and adaptation of the Austrian referral guideline; decision support for referrers and patients, awareness raising on risks of inappropriate imaging and increased integration of radiologists in decision-making processes. Next step in the project is an analysis of MRI utilization variabilities across Austrian regions and - age standardized - correlation analysis with elective surgery.

0148 - What is the evidence for legacy effects of statins? A Systematic Review

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Abstract: Reports of long term follow-up after placebo controlled RCTs of statins may tell us whether there are benefits from being randomized to the active drug which are detected after the trial is finished, and may be attributed to drugs being started at a younger age in the active group than the placebo group ("legacy effects"). Legacy effects have been used to support the case for starting statins for primary cardiovascular disease prevention at an early age, even in adolescence, but it is unclear whether such effects actually exist. Post-trial hazard ratios that favour the group originally randomised to active treatment provide evidence of legacy effects of the drugs.

Objectives: To summarise the evidence for and against the existence of 'legacy effects' of statins in published reports of long term follow-up after placebo controlled RCTs.

Method: A research synthesis of post-trial reports after placebo controlled RCTs of statin drugs for cardiovascular disease prevention. We ran forward citation searches of statin RCTs included in the Cholesterol Treatment Trialists' Collaborators (limited to citations by an investigator of the original RCT). We also ran Medline and Embase searches from inception to April 2016 for relevant studies with no language restrictions. Two authors searched for all follow-up studies of RCTs of adults which randomised at least 1000 individuals to statin or placebo, and which reported on mortality outcomes.

Results: We included 8 studies, with reports published between 2004 and 2016, which included follow-up data on over 50,000 individuals who had participated in a placebo controlled RCT of a statin drug, with average length of follow-up between 1 and 15 years. Only one trial (ASCOT-LLA) had a post-trial hazard ratio for reduction in all-cause deaths which was statistically significant, and this appeared to be mediated through non-cvd deaths. No trials had significant post-trial hazard ratios for reduction in cardiovascular deaths. The meta-analytic post-trial hazard ratios were not significant for reduction in either all-cause mortality or cardiovascular mortality.

Conclusions: Published data do not provide statistical evidence that statins have legacy effects on cardiovascular mortality or all-cause mortality. There is currently little data to support the notion that offering statins to young adults has life-extending benefits, and such an approach risks mass medicalization and overtreatment of the population.

0149 - Effects of a Lung Cancer Screening Decision Aid on Overdiagnosis Knowledge and Screening Intent in Primary Care Patients

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Objectives: Lung cancer screening with low dose computed tomography (LDCT) can reduce mortality in high risk current and former smokers. However, screening can also cause harms including overdiagnosis/overtreatment of lung "cancers" that would not have otherwise caused symptoms. We are currently conducting a single-site, one group pre-post study in screening-eligible patients to evaluate the effect of a lung cancer screening decision aid on patients' knowledge about the potential benefits and harms of screening and on their intent to initiate screening.

Method: Participants are patients in one US academic primary care practice who meet US Preventive Services Task Force eligibility criteria for screening (55-80 years old, at least 30 pack-years smoking and currently smoke or quit < 15 years ago). Participants view a 6-minute, multi-media decision aid providing graphical and oral information about the benefits and harms of lung cancer screening. Outcome measures assessed using questionnaires administered before and after decision aid viewing include: overdiagnosis knowledge (7 item scale), the Screening Attitudes Scale-Benefits (SAS-B, a measure of general enthusiasm for cancer screening 30 point scale), and intent to initiate lung cancer screening (single 5-point Likert item, dichotomized for analysis). We also explored the association between overdiagnosis knowledge and screening intent using simple logistic regression.

Results: Characteristics of participants (n=30) enrolled to date: mean age 64; 50% female; 53% white, 34% black, 13% American Indian; 50% ≤ high school education; 53% current smokers; mean 50 pack-years smoked. The mean number of correct overdiagnosis knowledge items increased from 1.8 to 3.8 out of 7; difference 2.0 (95% CI 1.3-2.7). Mean cancer screening enthusiasm (SAS-B) scores decreased from 19.9 to 18.4; difference 1.5 (95%CI 0.5, 2.5). The proportion of participants with high intent to initiate screening decreased from 77% to 60%; absolute difference 17%, (95%CI -0.03%, 37%). Greater overdiagnosis knowledge was associated with lower screening intent: OR 0.57 (95%CI 0.33, 1.00).

Conclusions: A decision aid increased primary care patients' knowledge regarding overdiagnosis resulting from lung cancer screening. Decision aid viewing was also associated with modest reductions in both enthusiasm for cancer

screening in general and in intent to initiate lung cancer screening in particular. Decision aids may be useful tools for helping patients understand the potential harm of overdiagnosis/ overtreatment related to lung cancer screening. Further study is needed to understand how best to communicate about overdiagnosis/overtreatment and how improved understanding may influence screening behavior.

0150 - Variability in home respiratory therapies in Catalonia

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Abstract: Home respiratory therapies (HRT) have been used for the last fifty years. At the beginning only long-term oxygen therapy (LTOT) was available but since the 80's, continuous positive airway pressure (CPAP) for the treatment of sleep disorders has been broadly used. Due to the lack of accurate epidemiological studies it is very difficult to define the appropriate prevalence of this treatment. Various studies confirm a great variability, so it is reasonable to think that overuse in some areas coexists with underuse in others.

Objectives: The aim of this study was to characterize the prevalence of HRT and the variability in prescriptions analysing administrative data.

Method: This study compared HRT prescription rates in the different healthcare territories of Catalonia (Spain). Patients were identified using the Catalan Health Service (CatSalut) billing database, selecting cases in which HRT was invoiced to CatSalut in 2014 and 2015. Cases were assigned to geographical areas according to each patient's area of residence. The denominators were calculated using population data from the CatSalut central registry of insured persons. Crude cumulative activity rates (per 1000 inhabitants) were calculated.

Results: The mean prevalence for CPAP users was 11.2 per 1,000 inhabitants (male: 16.01, female 4.94). From 2014-15, CPAP users increased by 8.0%. The areas most likely to be treated with CPAP were Ripollès, Baix Llobregat Litoral and Sant Boi and Berguedà, without sex differences.

The mean prevalence for LTOT users was 2.27 per 1,000 inhabitants (male: 2.46, female 1.93). From 2014-15, LTOT users increased by 2.8%. The areas most likely to be treated with CPAP were Pallars, la Cerdanya, l'Alt Urgell, and Berguedà. The activity per patient/day presented no differences between men and women and remained stable over the previous year among both CPAP and LTOT users.

Conclusions: The analysis of HRT based on available administrative data may give an overall view of the problem, and reveal variations in a relatively simple, inexpensive way. Data analysis showed a sustained increase in the prevalence of CPAP users. Moreover, relationships with other available data, like hospital admission rate, poverty indicators or mortality could be made to identify overuse and underuse.

0154 - "Doing more does not mean do better" Project: some ambiguities may not prevent overdiagnosis and overtreatment

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Objectives: As the USA Choosing Wisely/CW initiative, in Italy Slow Medicine/SM promotes "Doing more does not mean doing better". Every Scientific/professional association is invited to explicit five common practices of low-value/at risk of harmful effects, to facilitate shared choices with patients.

The Project leverages two determinants of human behavior, affecting physicians too: ethics and sense of belonging. The latter acts effectively in the scientific/professional community, rewards those who follow formally shared recommendations and provide medical/legal cover for possible litigation.

We aim to point out some risks, considering the health interests of the community and the sustainability for the NHS.

Method: We identify two main risks, comparing some recommendations with the available evidence.

- **Whitewashing.** There is a push to ride a successful initiative. The "top-five" listed by a scientific society give credibility to all the *other* practices not listed, including questionable ones. The practices chosen may be marginal, and sometimes they are expressed ambiguously.

Examples: "Do not prescribe antibiotics for acute upper airway infections. Assess their opportunities for patients *at risk* of lower respiratory tract infections". But *everyone* is *at risk* of cough/bronchitis!

"Avoid routine prescribing PPIs for patients *without other risk factors* for ulcer disease". But risk...

Results: Factors include being smoker, senior, Hp carrier... (20%, 20%, and 50% of Italians, respectively). Such wording (and similar) legitimize indiscriminate prescriptions.

- **Some bad compromises** between the evidence and usual practice, presented as new authoritative standards for doctors, formulated by their Scientific Society and corroborated by SM.

Example: "In the absence of red flags, avoid lumbosacral spine MRIs for low back pain *in the first 6 weeks*". Many will interpret as "deliver a MRI *by the 7th week*". Instead, systematic reviews and consistent NICE guidelines indicate MRI only to drive surgical options, after 6-12 months' failure of effective structured medical therapies.

Conclusions: To counteract these risks: interact with competence, referring to evidence, filtering the tests/procedures listed. Clarify that the tests/procedures of each Society are not necessarily the most important/inappropriate, that they can be less than five and less central, provided that are evidence-based without compromises.

Write "at least", to distinguish inacceptability thresholds from *other* that can be discussed, without confusion with "new-standards-to-follow". Add comments/positions of other independent bodies. This would help to guide the readers; increase the proposals' quality, with the awareness of being under scrutiny; avoid the belief that only the specialists of the involved discipline are qualified to speak.

0156 - DEPRESCRIBIR FÁRMACOS QUE NO APORTAN BENEFICIO AL PACIENTE

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Abstract : Se presentan los resultados de una intervención estándar para aumentar la adecuación del uso de determinados grupos farmacológicos priorizados comparados con los resultados de esta misma intervención combinada con intervenciones específicas para los inhibidores de la bomba de protones y los bisfosfonatos. El objetivo es facilitar su deprescripción en caso de utilizarlos en situaciones que no aportan ninguna ventaja clínica para el paciente.

Objectives : Evaluar el impacto de una intervención multifactorial para aumentar la adhesión a las recomendaciones priorizadas por nuestra dirección territorial del Institut Català de la Salut (ICS) relacionadas con la utilización de medicamentos que no aportan beneficio al paciente y facilitar su deprescripción.

Method : Estudio intervención antes-después de enero 2014-diciembre 2015 en 64 equipos de atención primaria (EAP), 1.287.397 habitantes. Recomendaciones priorizadas (indicadores del Estándar de Calidad Asistencial-EQA-del ICS):

- Bisfosfonatos en mujeres postmenopáusicas con riesgo bajo de fractura.
- Estatinas en población con riesgo coronario bajo o moderado.
- Inhibidores de la bomba de protones (IBP) en pacientes polimedcados o mayores de 65 años sin factores de riesgo gastrointestinal.
- Prescripción inadecuada de antibióticos en otitis media aguda (OMA) en pediatría.

Criterios de inclusión/exclusión: indicadores del EQA.

Intervención:

1) Estándar:

- Para los facultativos: sesiones formativas; identificación de pacientes; feedback de resultados individuales y por EAP.

2) Específica:

- Bisfosfonatos: alerta en la estación clínica de trabajo sobre duración de tratamiento superior a 5 años.
- IBP: Campaña informativa para la población (flyers, pósters y/o presentaciones en pantallas de televisión de los EAP).

Variables:

- Principales: Variación de los porcentajes de pacientes con tratamiento inadecuado de los 4 grupos farmacológicos del EQA.
- Secundarias: Variación de las Dosis diaria definida/habitante/día (DHD) de bisfosfonatos, hipolipemiantes, IBP y antibióticos en pediatría.

Análisi: T-Student (DHD) y Prueba de los rangos de Wilcoxon (indicadores EQA); $p < 0,05$.

Results : La variación de la inadecuación fue estadísticamente significativa en todos los casos ($p < 0,0001$).

Bisfosfonatos reducción de 0,41 (2,04 % a 1,63%) y se produjo en 60 de los 64 EAP; IBP reducción de 4 (60,3% a 56,3%) y todos lo EAP disminuyeron; antibióticos reducción de 3,8 (38,3% a 34,5%) y la reducción se produjo en 20 EAP. Para las estatinas se produjo un aumento de 1,37 (7,80% a 9,17%) y sólo 3 EAP redujeron en % de inadecuación. En la valoración de las DHD, las diferencias fueron significativas ($p < 0,0001$), excepto en antibióticos ($p = 0,095$). Se produjo disminución de 0,91 DHD en bisfosfonatos (8,94 a 8,03); de 8 DHD en IBP (117,46 a 109,44); de 0,39 DHD en antibióticos (6,22 a 5,83) y en estatinas se produjo un aumento de 0,56 DHD (103,9 a 104,5).

Conclusions : La intervención estándar combinada con una intervención específica ha ayudado a la adecuación y deprescripción de fármacos que no aportan valor en determinadas circunstancias, siendo más efectiva la que se realizó una intervención informativa directamente a los pacientes.

0159 - Fear of the dark: Tendency to overuse CT-imaging of the aorta in search for an explanation of unclear chest pain.

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Objectives: Aortic dissection is a well-known life-threatening condition that calls for immediate attention and intervention. Classic presentation symptoms include severe chest pain and hemodynamic compromise. The mortality remains high around 25-30 % [1]. However, chest pain is a very common problem in the emergency department, and the overwhelming majority of patients have more benign causes for chest pain. Computed tomography angiography (CTA) is becoming more accessible and expectations of full diagnostic investigation in the population are increasing. We hypothesized that the CTA imaging would sometimes be used in unclear cases of chest pain even when pretest likelihood ratio was too low to motivate such a high dose of radiation and when cost-benefit calculation could not support it.

Method: We performed a retrospective patient record study investigating all acutely performed CTA-examinations during 2006-2015 in a Swedish university hospital. Outcomes of CTA examinations were compared with presenting symptoms, age, gender and known risk factors for aortic dissection. All data were extracted from patient records.

Results: During 2006-2015 there was a significant increase of CTA examinations for suspected aortic dissection. The increase could not be explained by an increase of actual morbidity since the number of treated patients for aortic dissection did not increase to the same degree during the period. During the whole period CTA was sometimes used

even when scientific evidence would rather suggest another cause for the patient's symptoms. Preliminary data suggest that patients undergoing CTA of the aorta during the end of the investigated period were younger and had fewer risk factors than patients examined earlier.

Conclusions: CTA of the aorta was more and more frequently used in the investigation of chest pain during the period. There was no sign of increasing incidence of aortic dissection motivating the increase of CTA usage. Therefore the driving mechanism for extended CTA usage must be sought elsewhere. Possibilities include lower tolerance for missed diagnosis among doctors and patients, increased reliance on X-ray-imaging instead of clinical judgment, and/or an increasing inability to assess and rely on pretest likelihood ratio.

0160 - Overdiagnosis and the progress of diagnostic reform

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Abstract: In this paper I argue that if we are to address the problem of overdiagnosis then we must strengthen the regulatory regimes that govern diagnostic innovation.

Objectives: In this paper I argue that if we are to address the problem of overdiagnosis then we must strengthen the regulatory regimes that govern diagnostic innovation.

Method: Draws on a decade of research on the diagnostics regulation in Europe and North America including 200+ semi-structured interviews with industry, clinicians, scientists, regulators, and participation in regulatory reform.

Results: The historical development of the regulatory regimes for diagnostics should be understood as part of a broader progress of "diagnostic reform" involving a diverse network of actors who have sought to inculcate new experimental ideals and practices amongst those engaged in the process of diagnostic innovation. The progress of diagnostic reform can be traced back to the 1970s and the emergence of Health Technology Assessment (HTA), following concerns about the rapid adoption of new diagnostic imaging technologies in healthcare. However, in the late 1990s the dramatic growth of genomic research fuelled a prolonged policy discussion about how regulatory loopholes have allowed new diagnostic tests to enter routine clinical practice without independent evaluation of their safety and effectiveness. As part of this policy deliberation, diagnostic reformers have highlighted a variety of common failings in diagnostic R&D, including underpowered studies, various types of bias, insufficient research on clinical outcomes, over-fitting of data in retrospective analyses and a lack of prospective controlled studies. The last decade has seen initiatives to address these concerns, such as the ACCE test evaluation framework, the STARD framework for reporting diagnostic studies and efforts by some funding agencies to provide a more structured framework for translation of biomarker discoveries into clinical diagnostics. Nevertheless, major regulatory loopholes persist: in Europe many new diagnostics are not subject to pre-market evaluation because they are classified as low-risk; and in the USA, the FDA has chosen not to exercise its authority over laboratory-developed tests (LDTs). However, both regimes are in transition: a new EU regulation will greatly increase the number of tests subject to pre-market scrutiny, and in the USA the FDA plans to begin regulating LDTs.

Conclusions: Diagnostic reform may be at a pivotal moment, and those who wish to mitigate the dangers of overdiagnosis should engage with the current reform process and assist in the development of scientific standards that clarify evidentiary requirements and the development pathway for new diagnostic tests.

0161 - Doctor G: a graphic medicine project promoting statistical literacy to contrast overdiagnosis

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Abstract: Efficient health care requires informed people, however many doctors and most patients fail to understand the available medical evidence due to statistical illiteracy, that is the inability to catch risks and probabilities.

Hence, promoting health literacy is crucial to reduce the number of unnecessary or even potentially harmful tests and treatments. How to communicate numbers, probabilities and odds in a simple and efficient way? We believe comics can be a valuable tool.

Objectives: Basic statistics is the key to better cope with numbers we face in everyday life, including those we need to understand to get a better health care.

The goal of our project is twofold. On one hand, to help health professionals fully understand risks and benefits of any treatment they propose to patients. On the other hand to give patients the concepts to develop a critical point of view necessary to ask for right questions and make informed decisions.

Method: Comics represent a popular way to communicate risks compared to most used but much more complex tools to give information out (scientific articles, books, leaflets). Comics are characterized by a synthetic style which catch people's interest and imagination. Moreover, comics increase learning as information are supported by a combination of text and images typically referring to a shared social context. This latter aspect is crucial to lower people's defensive attitude against complex topics.

Results: We recently published a book entitled "Doctor G", a 132 pages graphic novel containing 5 health statistics episodes intermingled with 3 forensic statistics episodes. The story deals with the importance of being informed while making decisions and gives many examples of how numbers can be misleading. Inspired by true medical events and important people (doctors, statisticians, etc.) in the field of medicine, the book aims at imparting the readers the message that medicine is not an exact science and may cause overdiagnosis and overtreatments.

Conclusions: Statistical thinking is not for few chosen people, but rather a tool for everyone. To ensure that it is within everyone's reach, statistical information has to be presented in a clear and intuitive way. Patients and doctors don't have to be afraid of statistics but be able to use it to make informed decisions. We believe that comics can help people better understand this point.

0163 - Opinions of physicians on discontinuation of medications at the end of life: a questionnaire study

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Objectives: We investigated physicians' opinions on and experiences with medication discontinuation during the last phase of life and identified factors for the continuation of potentially inappropriate medications at the end of a patient's life.

Method: A random sample of general practitioners and medical specialists working in three different regions in the Netherlands were asked to fill out a structured written questionnaire, including two vignettes, in which the patient's attitude towards death was varied, and a number of statements.

Results: Questionnaires were returned by 321 physicians (response rate: 37%). The majority of them (73%) agreed with the statement that patients who are in the last phase of life use too many medications. One vignette was about a patient with a life expectancy of three months. Physicians significantly less often discontinued medication to treat active and chronic diseases when the patient strived for a longer life (7,6%, and 79%), then when the patient accepted his upcoming death (20%, and 92%). For medications with a preventive goal, most respondents would discontinue, regardless of patient's preference (90-94%). In addition, no significant difference was shown if the patient's life expectancy was only one week. Under these circumstances, medications to treat active diseases were discontinued in 78-80%, and medications to treat chronic diseases in 92-95%. Opinions on whether or not to discontinue anticoagulant therapy in a vignette about a patient with atrial fibrillation who was expected to die within a few weeks due to pancreatic cancer, varied widely: 47% agreed with discontinuation, 34% disagreed. A number of physicians who disagreed with discontinuation was afraid for the development of thrombo-embolic complications in the last weeks of life. Other important factors determining continuing medications in patients with a limited life expectancy included concerns about giving the patient the feeling that he is abandoned, and lack of time to evaluate the list of medications.

Conclusions: Physicians think that patients use too many medications at the end of life. In vignettes, physicians are prone to withdraw many medications in case of limited life expectancy. Reasons for continuing potentially inappropriate medications include uncertainty of diminishing patient's physical condition, anxiousness of hurting patient's feelings and lack of time.

0165 - Towards a better paradigm for breast cancer screening: establishing risk-based strategies and informing women and health professionals about benefits and harms

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Abstract: The workshop aims to discuss and establish what actions can be implemented in order to improve breast cancer screening programs. Information from recently closed and current studies will be used as starting point for discussion. After a brief introduction, there will be three 15-minute presentations followed by 15 minutes discussion each.

Objectives: The new paradigm of early detection of breast cancer will stand on three pillars: 1) New classification of lesions, 2) Risk-based strategies, and 3) Shared decision making (SDM).

The objectives of this workshop are twofold: 1) To share experiences in planning and implementing risk-based breast cancer screening, and 2) To present and discuss the current evidence on the effect of providing information about benefits and harms of screening to women and health professionals.

Method: We will present the results of a modeling study to illustrate that the current "one size fits all" screening strategies are far from optimal in terms of incremental harm-benefit and cost-effectiveness ratios. We will also present a systematic review on interventions addressed to informing women on benefits and harms of breast cancer screening, especially communicating about overdiagnosis and overtreatment. Finally, we will share our experience designing a decision aid for women facing the decision to be screened and piloting it as a preliminary step of a randomized controlled trial. Proposed topics for discussion: a) Pros and cons of organizing risk-based mass screening for breast cancer; b) In national health systems, who should be the health care professional for SDM? When should the SDM process start? How the information on benefits and harms of breast cancer screening can reach health professionals? c) Ways to communicate effectively without generating anxiety; d) Ways to present information on outcomes; e) Smartphone apps to provide information or decision support for women and health professionals. There are many barriers to maximizing the value of mass breast cancer screening and there is a need for better informing women and health professionals on the adverse effects of screening. We will share experiences from others who work in this area and invite discussion. We will summarize and communicate to stakeholders the conclusions and proposals of the workshop.

0166 - Are we overdiagnosing myocardial infarction?

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Abstract: The introduction of high sensitivity troponin (hs-Tn) assays allows earlier detection of myocardial infarction (MI) and reduces the risk of missing the diagnosis, but increases its incidence.

Objectives: The purpose of this study is to examine how well the introduction of hs-Tn tests meets criteria for recently developed early markers of overdiagnosis.

Method: We tested a 6-item framework, developed for identifying early markers of overdiagnosis, by using existing data on the utilisation of hs-Tn testing for the diagnosis of MI.

Results: Hs-Tn testing for myocardial infarction meets 5 of the 6 criteria:

1. Emergence of a new technology with incremental sensitivity: The test's higher sensitivity allows more rapid discharge of patients presenting with suspected MI who have a negative test result.

2. Expanding uptake or change in practice following introduction of the investigation: The test has been recommended by the European Society of Cardiology and is in use in over half of the hospitals in Australia. It is awaiting FDA approval.

3. Increasing incidence of the condition, especially of small, localised, and/or early stages of the condition: The incidence of MI diagnoses in regions where the test has been introduced has increased, with estimates up to 64%

4. Improved case fatality rates: Death rates per cases diagnosed are lower in patients diagnosed with the hs-Tn tests than with the older tests in Australia and Scotland.

5. No change in population level long-term or proxy outcomes: Population level mortality rates are not yet known.

6. Increasing treatment rates & complications: Use of hs-Tn test has increased resource use, eg revascularisation procedures, in Australia and Scotland

Conclusions: Hs-Tn testing for MI meets 5 of the 6 early markers of overdiagnosis, but this final criterion is critical in differentiating between a more effective test and a test that is resulting in overdiagnosis. We will present data on Australian mortality trends at the meeting. Patients diagnosed with MI using the new test are generally symptomatic and have a prognosis that is worse than those who have a negative test result. This raises issues for the categorisation of MI and the changing spectrum of patients diagnosed, and also for how overdiagnosis is identified.

0167 - Underuse of risk assessment and overuse of CTPA in patients with suspected pulmonary thromboembolism

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Background: Increasing use of computerised tomography pulmonary angiography (CTPA) in patients with suspected pulmonary thromboembolism (PTE) has not translated into lower mortality or improved clinical outcomes, suggesting possible overuse. Use of pre-test clinical prediction rules and D-Dimer assays may assist in identifying patients with a higher probability of PTE who warrant CTPA. The extent to which these tools are used in hospital settings, and their diagnostic utility in ruling PTE in or out in unselected patients, are uncertain.

Methods: All consecutive patients who underwent CTPA at a tertiary hospital between August 1st and December 31st 2013 were studied retrospectively. Use of D-dimer assays and clinical prediction rules for PTE were evaluated by review of clinical notes. For each patient, a modified Wells score (mWS), revised Geneva score (rGS) and PISA model were calculated retrospectively and performance characteristics for PTE were determined in reference to results of CTPA. Results for the mWS and D-dimer assays (when performed) were used to estimate overuse of CTPA according to risk category.

Results: Of 344 patients undergoing CTPA, 53 (15.4%) were diagnosed with PTE. Use of a pre-test PTE clinical prediction rule was documented in only 5.0 % of cases. Of 269 low risk patients (78.2% of total cohort) who had a calculated mWS ≤ 4 , only 64 (23.8%) had a D-Dimer assay performed, and only 30 (11.1%) had PTE on CTPA. Among 75 patients with a mWS > 4 , 23 (30.7%) had PTE on CTPA ($p < 0.001$). Compared to other prediction rules, a high risk mWS had the highest positive predictive value (31%) for PTE in this cohort, with all rules demonstrating similar negative predictive values for low risk scores of between 87% and 89%. After adjusting for 11% false negative rate for PTE in patients with low risk mWS, avoidable overuse of CTPA was possible in up to 190 (55.2%) patients.

Conclusion: In patients presenting to or in hospital with suspected PTE, failure to use and adhere to pre-test clinical prediction rules – in particular the mWS – coupled with D-Dimer assays may subject more than half of these patients to unwarranted use of CTPA.

0169 - Unnecessary hospitalisation and investigation of low risk patients presenting to hospital with chest pain

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Objectives: To describe the clinical characteristics, risk level, methods of evaluation and medium term outcomes of consecutive patients with chest pain admitted to the Medical Assessment and Planning Unit (MAPU) of a large tertiary hospital. To characterise patients who were shown to have a low risk of ACS and were potentially eligible for safe discharge early in their hospital stay.

Method: Retrospective study of all consecutive patients admitted with chest pain for further evaluation to the MAPU at Princess Alexandra Hospital between February 1st and June 1st 2012. The hospital has 640 acute beds and services a catchment population of 600,000. During this period, hospital practice was to admit patients with probable or definite

ACS to inpatient cardiology beds (in the absence of bed block), and to admit the remaining patients with chest pain to MAPU under cardiologist direction. Patients underwent initial ECG and first troponin assay (Access AccuTnI sensitive assay by Beckman Coulter) in ED and, if these investigations were negative for ACS, patients were then admitted to MAPU; if positive, patients were admitted to either MAPU or inpatient cardiology beds. During the study period, no formal guidelines existed which mandated calculation of TIMI scores on all patients, or prescribed how patients should be further investigated, with choice of testing or use of telemetry left to the discretion of the treating consultant. Data were collected from medical notes, discharge summaries, and electronic pathology (Auslab) and radiological (WEB1000) databases and comprised demographic details, initial description of chest pain (being either atypical or typical for ischaemia based on history), results of serial ECGs, troponin assays and cardiac investigations performed (including exercise stress test, rest or stress echocardiogram, myocardial perfusion scan, computerised tomographic coronary angiography [CTCA], and invasive coronary angiography), use of telemetry and length of hospital stay. TIMI scores were retrospectively calculated for all patients, with a range of 0-7, with low risk ascribed to scores of 0 or 1. Outcomes during the index admission were diagnosis of ACS and all-cause death, yield of diagnostic tests, and frequency of coronary revascularisation (either percutaneous coronary intervention [PCI] or coronary artery bypass grafting [CABG]). Outcomes at 6 months follow-up were major adverse cardiac events defined as diagnosis of ACS, all-cause death and readmission for cardiac diagnoses to any public hospital throughout the state, as ascertained using state-wide public hospital electronic databases via Viewer software. As access to death registries was not available, entries in Viewer reporting deaths within 6 months or confirming survival by virtue of any recorded clinical encounter beyond 6 months were used to ascertain all deaths.

Results: 321 patients were studied of mean age 58.4 (+/-SD 14.1) years. Mean length of hospital stay was 1.6 (+/-SD 1.2 days). 73 (22.7%) patients had a previous diagnosis of coronary artery disease (CAD). 54 (16.8%) patients described ischaemic chest pain, the remainder atypical pain. Mean (+/-SD) TIMI score was 1.8 (+/- 1.7), with 165 (52.0%) patients having a TIMI score of 0 or 1 (TIMI = 0, n=103; TIMI =1, n=64). At discharge, 31 (9.6%) patients had a confirmed diagnosis of ACS. Among patients with TIMI score of 0 or 1, seven (4.2%) had confirmed diagnosis of ACS at discharge, comprising 22.5% (7/31) of all patients with ACS.

Initial investigations in emergency department: 31 (9.6%) patients were provisionally diagnosed in ED as having ACS, of whom 25 (80.6%) had a final diagnosis of ACS confirmed at discharge, including five patients with TIMI score of 0 or 1.

Subsequent course of patients with initially negative investigations in ED: Of 290 (90.3%) patients with initially negative investigations in ED who were admitted to MAPU, six (2.1%) were subsequently confirmed as having ACS. 159 (54.8%) patients were deemed low risk with TIMI score of 0 or 1 of whom only two (1.2 %) were subsequently diagnosed as ACS.

Non-invasive testing

112 of 290 patients (38.6 %) underwent non-invasive testing, with positive results for CAD seen in only 4 (3.6%). Among 159 patients with TIMI score 0 or 1, tests were performed in 52 (32.0%) of which one (0.6%) was positive. Among 131 patients with TIMI scores of 2 or above, 60 (45.8%) underwent testing, positive in three (2.3%). The only significant difference between tested and non tested patients was a higher prevalence in the latter of past CAD (28.6% vs 5.3%, p<0.001).

Invasive testing and management

15 patients (4.7% of 321) underwent coronary angiography, of whom 11 were diagnosed as having ACS in ED, with 10 demonstrating CAD. Among all 290 patients with initially negative investigations, only four (4.0 %) underwent coronary angiography, all confirming CAD, comprising two of 159 (1.2%) patients with TIMI score of 0 or 1.

Follow-up period: Of 290 patients with initially negative results in ED, at 6 month follow-up two (0.7%) had died, unrelated to CAD. 47 (16.2%) patients were readmitted, with only one (TIMI score =4) having confirmed diagnosis of ACS (0.3%).

Conclusions: The majority of patients with chest pain who are admitted to a MAPU after initially negative investigations in ED are at low risk of ACS, either in hospital or following discharge. Current testing procedures for ruling out CAD in such patients seem to be chosen on an ad hoc basis and have a very low positivity rate for CAD. Risk stratification and clinical assessment protocols centred on TIMI scores and initial troponin assays may identify those at lowest risk who can be safely and quickly discharged from ED, and avoid admission to in-patient wards and subsequent low yield cardiac testing.

0171 - Stories of overdiagnosis: men's experiences of choosing not to have surgery for prostate cancer

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Objective: There has been continuing concern about overdiagnosis and overtreatment of prostate cancer worldwide. This study examines the narratives of 10 Australian men diagnosed with prostate cancer between 1-20 years ago. These men, against advice from their urologist, chose not to have treatment by radical prostatectomy and instead adopted their own strategies of active surveillance and alternative treatment, and remain healthy today. They provide insight into the often hidden experience of an 'unnecessary' diagnosis of prostate cancer.

Method: This was a qualitative interview study using face-to-face interviews with 10 Men aged 59-78 who all received a confirmed diagnosis of prostate cancer (with PSA levels ranging from 2-13) and were strongly recommended to follow surgical management with a radical prostatectomy by their urologist. All men in the sample elected not to have surgery and instead devised their own less invasive management plan. Men were recruited via an online information and support group for men with prostate cancer seeking non-surgical management and using snowballing techniques.

Results: All participants were highly educated, with successful careers (eg. company owners). Their experiences with diagnosis varied, but common themes included: 1) being unaware of the initial PSA test/uninformed about its consequences; 2) feeling rushed and pressured into prostatectomy once diagnosis was confirmed; 3) significant negative impacts on work (eg. quitting work/selling the business), quality of life (radical lifestyle change), and relationships (eg. marriage break-up); 4) persistent anxiety (eg. night waking 15 years post-diagnosis) and 5) deep cynicism towards conventional medicine and associated financial conflicts of interest. Several participants had travelled overseas for expensive alternative tests and treatments.

Conclusion: Overdiagnosis of prostate cancer remains a problem as men continue to undergo PSA testing uninformed about its consequences. Participants interviewed in this study described the dramatic impact a diagnosis of prostate cancer had on their lives, in some cases entirely changing their work and family life. With continuing health and non-progression of their prostate cancer over many years, several participants were deeply cynical about conventional medicine and aware of potential conflicts of interest among urologists recommending surgery only. Of concern was the uncritical support expressed by some men for expensive alternative (less aggressive) unproven therapies for prostate cancer.

0173 - Trends of head CT imaging, detection of intracranial bleeding and skull fractures, and outcomes in pediatric isolated head injury

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Abstract: Motivated by a desire to reduce radiation exposure to children, head computed tomography (CT) for pediatric head injury has decreased over the last 5-7 years in the United States.

Objectives: To analyze the impact of a reduction in head CT imaging on the detection of abnormalities and outcomes for children with isolated head injury.

Method: Multicenter retrospective cohort of children <18 years old presenting for head injury to emergency departments at 30 United States children's hospitals between 2001-2014. Children who did not have a diagnosis, procedure, or imaging code on presentation for a body part other than the head were assumed to have isolated head injury. Patients transferred out of the index children's hospital were excluded. Outcomes were ascertained using billing data and included rates of head CT, intracranial bleeding or skull fracture, hospitalization, neurosurgical intervention, mortality, and re-visit within 7 days of the incident visit. Linear regression was used to calculate the absolute change in each outcome per year.

Results: A total of 370,388 children presented with head injury between 2001-2014, of whom 263,591 met our definition of isolated head injury. Among this cohort, head CT imaging decreased 1.54% per year (95% CI -1.48 to -1.60%). Over the same time period, the detection of skull fractures (-0.17%/yr 95% CI -0.14 to -0.20%) and intracranial bleeds (-0.12%/yr 95% CI -0.10 to -0.14%), hospitalization (-0.25%/yr 95% CI -0.22 to -0.28%), and neurosurgery (-0.03%/yr 95% CI -0.02 to -0.04%) also decreased, while rates of re-visit (-0.01%/yr 95% CI -0.02 to 0.01%) and mortality (0.00%/yr 95% CI -0.01 to 0.01%) were unchanged.

Conclusions: For children with isolated head injury, a reduction in head CT imaging was accompanied by decreased detection of intracranial bleeding and skull fractures, and decreased interventions, with no adverse impact on mortality or re-visits. Our findings suggest that the benefits of limiting unnecessary head CTs extend beyond avoidance of radiation exposure and may also include protection of children from overdiagnosis and overtreatment of intracranial abnormalities.

0175 - Does following guidelines for patients admitted to hospital with low risk chest pain lead to unnecessary stress testing and coronary angiography?

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Objectives: Chest pain is a common presenting complaint to the emergency department; as well as reason for hospital admission. With some exceptions, the American College of Cardiology and American Heart Association recommend evaluation with stress testing of patients in these situations. We believe admission of low risk patients for evaluation of chest pain/rule out Acute Coronary Syndrome (ACS) has led to a high proportion of false positive stress tests and subject patients to unnecessary catheterizations. Our goal is to retrospectively evaluate this hypothesis.

Methods: A retrospective chart review was performed on patients with no existing diagnosis of coronary artery disease admitted for chest pain/ACS rule out. Charts were reviewed for hospital course; including electrocardiogram, lab testing, stress testing, and invasive testing such as coronary angiography. Descriptive statistics have been performed and are available below. We will further perform a retrospective scoring with the Duke risk score and evaluate its potential utility as a point of care tool to avoid unnecessary testing, and a financial analysis of current evaluation strategy as a potential driver for unnecessary testing. These will be finalized for presentation in September.

Results: 715 eligible patients were identified over a 6 month period. We included both men and women between the ages of 30 and 70 who had no prior history of CAD and were admitted for ACS workup. The average age was 55; 341 patients had stress tests (48%); 72 of the 341 stress tests were read as positive (21% of those tested; 10% of those admitted) and an additional 29 were inconclusive. A total of 58 patients went on to further testing with catheterizations (17% of those stress tested; 8% of those admitted), of which 20 were positive for obstructive CAD (6% of those stress

tested; 3% of those admitted). The false positive rate of those patients who had positive stress testing and went on to catheterization was 67% (33% Positive predictive value).

Conclusions: Our results are consistent with our hypothesis that stress testing in our center has a high rate of false positive results, and a low PPV. We believe this occurs based on overreliance on guidelines, and lack of evaluation of pretest probability. Placing patients on a management pathway without considering pretest probability may result in unnecessary invasive testing, risks, costs, and use of medical resources.

0176 - Impact of extending screening mammography to older women: information to support informed choices

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Objectives: To compare benefits and harms of extending screening mammography to older women in Australia

Method: Markov process model, with data from BreastScreen Australia, the Australian Institute of Health and Welfare, and the Australian Bureau of Statistics. Age specific outcomes expressed per 1000 women.

Results: For every 1000 women screened biennially over 20 years from age 50 to 69, 442 receive an abnormal result; 386 of which will be a false positive. Of the 292 women who undergo biopsy, 74 breast cancers are diagnosed. There are about 4 fewer deaths from breast cancer compared with women who decline screening, but this must be weighed against the 22 women in whom a breast cancer will be overdiagnosed and overtreated. By comparison, among 1000 women aged 50 who attend biennial screening up to age 74 years, 543 receive an abnormal result, 464 of which will be a false positive. 351 women will undergo biopsy, 101 of whom will be diagnosed with breast cancer. There are 5 fewer deaths but 30 overdiagnosed cancers. Whilst the benefit of screening 1000 women until age 74 is 1 less breast cancer death, this must be weighed against the potential harms of the additional 78 women who will receive a false positive result and 8 more women who will have an overdiagnosed breast cancer that is treated.

Conclusions: Inviting older women to screening mammography in Australia is likely to lead to a small decrease in breast cancer mortality, while increasing false positives and overdiagnosis substantially.

0177 - The Israeli Society for the Reduction of Overdiagnosis (ISROD) - Foundation and Challenges

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Abstract: The recognition of overdoing as a major side-effect of modern medicine has been raised recently as a burden for optimizing clinical care. Projects such as "Choosing Wisely" in US and Canada, special sections in leading journals ("Less Is More" in JAMA or "Too Much Medicine" in the BMJ), societies for overdiagnosis prevention - all constitute the beginning of the solution for reducing unnecessary tests and treatments. The Israeli Society for the Reduction of Overdiagnosis (ISROD) was established this year under the auspices of the Israeli Medical Association, involving physicians from different medical fields. After describing the initial "labor pains" last year in establishing this society, we hereby report on the results and challenges encountered during the first year promoting solutions, educational programs and research.

Present and Future: ISROD is divided into a few teams focusing on Guidelines & Recommendations, Media and Press communication, Public & Patients education, Professional Medical Education, Research, Online Information and Working with Policy Makers and Healthcare Regulation. In the last months the teams are meeting together and began to work, and we expect to have more results until the conference time.

Among the issues we deal with are:

- Identifying tests and treatments in overuse in Israel and draw up clinical guidelines.
- Establishing an Israeli program in a style of "Choosing Wisely".
- Public campaign (e.g. short explanatory video, collaboration with the press).
- Setting up a website to serve as an information-base for public and medical staff.
- Physician education via workshops.
- Research and study the extent of this phenomenon in Israel.

Conclusion: Overuse in medicine is a new major issue that must be considered on the patient-physician level, as well as the public health viewpoint. We faced different challenges in the establishment process during the first year.

Working with policy makers and the media required communication techniques like Social Marketing. Educating patients that sometimes medical tests are not helpful and can even be harmful must be undertaken carefully, in order not to damage confidence in the healthcare system and patients' satisfaction. Involvement in clinical guidelines and recommendations writing in a "Choosing Wisely" style required collaboration with physicians from many different medical fields - what was their reaction? When considering research, we asked how to decide on study directions that will contribute to our aims? We would like to share with you our experience, results and challenges in this important and interesting process.

0181 - Measurement error of HbA1c for screening diabetes among healthy Japanese adults

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Abstract: HbA1c is often used to screen for diabetes in healthy adults. However, as the HbA1c assay is known to have quite large short-term variability, clinicians need to be aware of these characteristics during clinical application. Nonetheless, the magnitude of measurement error for HbA1c in healthy adults remains unclear.

Objectives: This study aims to investigate the precise degree of measurement error for HbA1c, applying age and gender stratification to further investigate HbA1c measurement error in subgroups.

Method: This retrospective open cohort study included Japanese individuals aged 30-74 years old, who visited a private preventive health center at least twice between 2005 and 2014, excluding those on diabetes medication, or with baseline HbA1c >6.5 or CVD at first visit. We calculated measurement error by using the estimated mean population HbA1c value and the value at each observation point for each subject. We then estimated a common standard deviation from all measurement errors calculated from all subjects.

Results: Among 66,160 healthy adults, 31,760 (48.0%) were male; mean (SD) of age, baseline HbA1c and BMI were 46.5 (10.4) years, 5.4 (0.3) %, and 22.3 (3.2) respectively. The overall measurement error was estimated to be 0.17%. When we applied age and gender stratification, respective error estimates for 30-44, 45-59, and 60-74 years old men were 0.16, 0.17, and 0.17 and 0.18, 0.18, and 0.17 among women.

Conclusions: We found that HbA1c includes a 0.17% measurement error overall. Measurement error was higher among younger women, though gender differences were not seen in the elderly. Before making treatment decisions, clinicians should be aware that HbA1c includes substantial measurement error which also varies by gender.

0182 - Diagnostic quality standards: reducing overdiagnosis in primary health care

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Abstract: Clinical practice variability among physicians may lead to overdiagnosis and overtreatment and therefore have a significant impact both on patient's health and on health care systems budget. Evidence-based clinical guides must be clearly communicated to health care professionals as a first step to reduce unnecessary medical interventions/treatments. Monitoring the implementation of these clinical guidelines provides valuable information on how these guidelines are applied.

Objectives: Assess the results of the Catalonian Diagnostic Quality Standards (DQS) as an evidence-based tool for reducing overdiagnosis in primary health care.

Method: DQS were defined through literature review, selecting those with more robust scientific evidence, then implemented in the primary health care as a professional based online tool in order to survey their clinical practice. Physician's diagnostic accuracy is evaluated through a score system where more points are attributed when clinical practice approaches DQS. Professionals can access to their weekly results through the electronic medical records software and list their non-complying patients. This score is also calculated for the whole primary health care center. DQS results from 272 Catalonian primary health care centers were monitored monthly during period 2013-2015. Eleven DQS were studied: adequate diagnostic of arterial hypertension, diabetes, COPD, asthma, obesity, cardiac failure, anemia, hypercholesterolemia, osteoporosis, primary hypothyroidism and dementia. DQS criteria definitions are shown on Table 1. Evolution of diagnostic accuracy was assessed through the resolution percentage over time with linear regression, using SPSS v 18.

Results: All eleven indicators showed an increased monthly coefficient of variation (CV) ranging from 0.08 (SE +/- 0.04) in anemia to 1.27 (SE +/- 0.116) in osteoporosis, for a global increase in the resolution mean of 14.8% from January 2013 to December 2015 ($p < 0.01$). A decreasing gap was noted for the percentage of resolution of arterial hypertension (-10.5%; January 2015) and increasing gaps were registered for osteoporosis (+25.6%; September 2013), obesity (+17.9%; July 2014), and hypercholesterolemia (+13.20%; January 2015) as a result of changes in the DQS definitions. Overall, these gaps did not modify substantially the CV after the definition changes were implemented. CV for each DQS are shown on Table 2 and monthly evolution of resolution percentage in Graphics 1 and 2.

Conclusions: Despite other possible external concurrent factors, online DQS seems to be a good tool for reducing overdiagnosis and subsequent overtreatment in primary health care centers of Catalonia.

0183 - QPI tool: an intervention in primary care to enhance prescription quality

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Objective: The aim of the study is to assess how the integration of a tool designed to improve the quality of prescription in the procurement model of the Catalan Health Service, can contribute to the reduction of drug overuse by the Primary Health Care Teams (PHCT). Currently, a pharmaceutical budget is assigned to each health supplier making them co-responsible of pharmaceutical expenditure. Benefits and losses are adjusted by the end of the year with the Quality Prescription Index (QPI) by monitoring and weighing three main domains (drug overuse, new drug incorporation and drug selection).

Methods: Drug overuse, new drug incorporation, and drug selection have been measured using the QPI tool. These domains are divided in a total of 12 indicators and scored with a maximum of 100 points (a higher score indicates a better quality of drug prescription). The drug overuse quantifies four pharmacological indicators (anti-inflammatory, benzodiazepines, antiulcer and osteoporosis drugs) with a maximum score of 25. In this context, a higher score correlates with a lower degree of drug overuse. Data was obtained through the Catalan Pharmacy database of official prescriptions dispensed in the community pharmacies from all the PHCT during 2014 and 2015.

Results: Global QPI measurements suggest an overall improvement of the prescription quality overtime. Hence, the percentage of PHCT with ≥ 80 points increased from 1.6% (in 2014) up to 19.2% (in 2015), mainly due to the drug selection parameter. The overuse outcome analysis follows the same tendency, showing a significant score increase

in three indicators. Thus, 22.7% of PHCT obtained the highest score in anti-inflammatory prescription in 2014, whereas in 2015 it increased up to 62.7%. Similar results were observed using benzodiazepines and antiulcer indicators being 14.2% (2014) vs 47.4% (2015), and 1.4% (2014) vs 14.5% (2015), respectively; yet no difference was found regarding osteoporosis overuse.

Conclusions: Herein we showed that the direct integration of this tool in the procurement model of the Catalan Health System determines the supplier and its professionals to enhance global prescription quality, in particular drug overuse. In conclusion, the Catalan model intends to encourage the improvement of healthcare quality, prescription variability between PHCT, and pharmaceutical expenditure, by sharing the benefits and losses.

0185 - Evaluation of the impact of Medical and Policy reviews in tackling overtreatment in musculoskeletal conditions using a predictive modelling approach

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Abstract: Bupa is committed to being the most customer centered organisation in health & wellbeing world. In musculoskeletal condition area Medical and Policy reviews help deliver the right care and reduce unnecessary treatment.

Objectives: The objective of this work has been to develop initiatives that deliver more suitable care to our patients, particularly focusing on areas where unwarranted variation of care has been identified. This translates into more cost-effective pathways and preventing overtreatment.

Method: MSK Medical Reviews confirm appropriateness for funding when the procedure falls outside published evidence-based guidelines. Expert clinical advisors review each individual case and its clinical evidence and determine the most appropriate course of action and eligibility for funding. MSK Policy Reviews ensures correct policy application in complex areas. Previously these initiatives were evaluated by comparing current and previous years' volumes and adjusting for the differences in covered member volumes. This method did not account for the differences in claiming behaviour, which led us to explore other solutions. A predictive modelling approach was adopted to evaluate initiatives using members' data before their introduction. This estimated member's probability of having a certain procedure based on their demographics, clinical and claiming information 12 months before their eligibility for the review. Data collected since the initiative introduction was then scored using the model and the estimate of unnecessary treatment volume was calculated as a difference between predicted and actual volumes.

Results: MSK Medical and Policy reviews ensured the compliance to evidence-based guidelines and policy. Furthermore unnecessary treatment was avoided resulting in reduction of medical costs between 3% and 25%. Both initiatives proved to be instrumental in managing patients' needs and ensuring the appropriateness of their treatment pathway.

0186 - The making of a patient: an analysis of a neuropsychiatric patient's case(informed consent given)

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Abstract: Overdiagnosis and, in its wake; overtreatment, are increasingly acknowledged as clinical problems in western medicine. A growing body of literature has demonstrated that these connected phenomena are related to a variety of diagnoses in the adult population. However, the problem also affects the pediatric population but has been less examined in this patient group. Overtreatment in children may have lifelong disabling impact on the individual child but may also affect a society's economy negatively. By means of a case report, this paper seeks to illuminate how a strictly biomedical perspective may contribute to pediatric misdiagnosis. The actual history concerns a boy who had been referred for EEG at a tertiary pediatric neurological clinic in Norway with suspected epilepsy. Confirming a diagnosis of epilepsy may be challenging, as a detailed seizure-description is essential and often depends on parental reports. In children, EEG examinations may also often be non-informative and, not infrequently, over-interpreted as pathological. Also, there is an increasing tendency for children with attention deficits and behavioural difficulties to be referred for EEG assessment, in order to verify whether epileptic discharges are contributing to their symptoms. Behavioural difficulties and attention deficits may be associated with epilepsy, but the prevalence of such difficulties due to an abnormal EEG is uncertain. The diagnosis of epilepsy is in many cases continuously being discussed and negotiated even between trained clinicians before it is set. Sometimes the parents are an active part of this negotiating process because the diagnosis of epilepsy may offer a socially acceptable framework for children's emotional or behavioural deviations from what is considered normal in their society. By means of a detailed analysis of a patient's story we seek to demonstrate how the results of a technical procedure, an EEG, were interpreted as expression of neurobiological disease without any contextual information taken into consideration. A reductive diagnostic practice combined with an expectation of a biomedical explanation on the side of the parents, may result in mislabeling problems that spring from sociocultural conditions, rather than biomedically defined disease. We argue that ignoring contextual information while relying on technical examinations only, may lead to misdiagnosing and overtreating children.

0187 - Análisis de coste efectividad y de los daños causados por sobrediagnósticos de un programa de cribado de aneurismas de aorta abdominal.

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Objectives : Se denomina aneurisma de aorta abdominal (AAA) a la dilatación de la aorta infrarrenal ≥ 3 cm de diámetro. Hay controversia sobre el coste-efectividad de un programa de cribado AAA respecto a la alternativa de no cribado. Objetivo del estudio: revisar la literatura nacional y internacional existente, evaluar el impacto (en términos de salud y económicos) de la aplicación de un programa de cribado de aneurisma de aorta abdominal (AAA) en España teniendo en cuenta los daños causados por los efectos adversos (complicaciones y sobrediagnósticos), y comparar los resultados del estudio con otros programas de cribado existentes en Europa.

Method : Se realizará una revisión de la literatura científica de los últimos 10 años. El análisis de coste-efectividad considerará distintos subgrupos de la población, ecografía de cribado realizada con ecógrafo portátil en atención primaria o en el hospital y evaluará los daños causados por sobrediagnósticos (cirugías innecesarias y muertes). Se empleará un modelo de análisis de decisiones de Markov, según el esquema de Kim et al.. Se empleará un horizonte temporal a corto, medio y largo plazo. Se realizarán análisis de sensibilidad considerando la variabilidad de los parámetros del modelo. Se establece la perspectiva del Sistema Nacional de Salud.

Results : La búsqueda bibliográfica seleccionó un solo estudio realizado en España (Rozas et al, 2007) que indicó resultados favorables en la reducción del número de intervenciones quirúrgicas urgentes, de las roturas de AAA y de la mortalidad específica por esta causa en una población de estudio de 100.000 hombres residentes en Galicia de 65 a 74 años. En términos de la razón coste-efectividad se estimó un resultado de 77.852€ por año de vida ganado (AVAC) a los cuatro años. Con los nuevos datos epidemiológicos de AAA españoles identificados se efectuarán los análisis de coste-efectividad de AAA planteados.

Conclusions : Los estudios de simulación a largo plazo (10 años, 30 años) realizados por Kim et al. y Glover et al. predicen una mejora en la razón coste-efectividad por efecto de la reducción en de los costes fijos que se incurren durante los primeros años de implementación del programa de cribado. El estudio de Rozas et al (2007) no tiene en cuenta las técnicas quirúrgicas endovasculares, menos invasivas. En un recién artículo de Johanson et al. se remarca la necesidad de considerar los daños de los falsos positivos en la evaluación de la coste-efectividad del cribado de AAA en España.

0188 - "Doing more does not mean doing better" Project: Italian Diabetologists' Association (AMD) take the opportunity to promote overdiagnosis and overtreatment

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Objectives: As the USA Choosing Wisely/CW initiative, in Italy Slow Medicine/SM promotes "Doing more does not mean doing better". Every Scientific/professional association is invited to indicate five common practices of low-value/at risk of harm, to facilitate shared decisions with patients. The Project leverages two determinants of human behavior, affecting physicians too: ethics and sense of belonging. The latter acts effectively in the scientific/professional community, rewards those who follow official widespread recommendations, and provide medical/legal cover for possible litigation. One of the Italian Diabetologists' "top five", however, seems rather a defense of their core business.

Method: We have critically analyzed the AMD practice n. 2 and its rationale. "Do not require **routinely** the **daily** blood glucose self-measurement..." (Comment: the glycemic self-measurement is **not** evidence-based and has adverse effects with oral drugs; systematic reviews demonstrate its utility only in insulin-treated patients) "...in people with type 2 diabetes **treated with drugs that do not cause hypoglycemia...**". **Rationale:** "if treated with drugs that don't cause hypoglycemia" (Comment: this insistent statement supports the use of the new very expensive incretins, instead of the cheaper, effective, more studied and reasonably safe gliclazide or repaglinide), "...once the glycemic objective is achieved..." (Comment:

Results: Italian diabetologists' guidelines advocate HbA1c targets $<7\%$ for most patients, and $<8\%$ only for some. But a Cochrane systematic review¹ shows that a target $<7\%$, vs a mean of $7,6\%$, greatly increases the risk of hypoglycemia, without clear microvascular benefits, and in trials with public sponsors it increases the total and cardiovascular mortality² "the **daily** self-monitoring... sometimes can generate anxiety" "(But the daily self-monitoring avoidance) has **many exceptions:** for **example**, a learning exercise, acute illness, worse glycemic control, introduction of hypoglycemic drugs..." (Comment: they offer any excuse for continuing the daily self-monitoring **even** with medications that do not cause hypoglycemia!)

Conclusions: This is an example of how, with the "top five", some professional societies capture a triple goal:

1. **Whitewashing:** jumping on the bandwagon of Slow Medicine, they give credibility to all the *other* practices not listed, including very questionable ones. Moreover, some of the chosen practices are marginal compared with their core business.
2. **Legitimize indiscriminate prescriptions** for inappropriate self-monitoring, invoking every possible exception to its even timid reduction.
3. **Promote profitable prescriptions**, that is the most expensive new antidiabetic drugs, of doubtful or unknown medium to long-term security, overemphasizing the argument that would not cause hypoglycemia.

0190 - Differences in disease definition across medical specialties

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Objectives: Physicians play key roles in defining what is, and what is not, a disease. We investigated associations between physicians' characteristics and their perceptions' regarding whether somatic syndromes (chronic fatigue syndrome, fibromyalgia, irritable bowel syndrome, overactive urinary bladder, premenstrual syndrome, and restless legs syndrome) and physiological states (elevated blood pressure, elevated cholesterol, and osteoporosis) should be considered diseases.

Method: We conducted a cross-sectional mailed survey among a random sample of Finnish physicians. Respondents' used a five point Likert scale to provide their view regarding claims: "[This state of being] is a disease". We examined associations between physicians' specialty, age, sex and academic education and their responses.

Results: Of 1,500 physicians contacted, 1,496 were eligible and 741 (50%) responded. For this analysis we focused on four biggest groups: 120 general practitioners, 70 specialists in internal medicine, 70 psychiatrists and 51 surgeons. Functional somatic syndromes, such as fibromyalgia and irritable bowel syndrome were less likely considered as a disease by surgeons (43% considered both fibromyalgia and irritable bowel syndrome as a disease) than by internists (61% and 52%, respectively), general practitioners (66% and 55%) or psychiatrists (64% and 61%). Internists more often (91% and 60%) considered osteoporosis and elevated cholesterol as diseases than did general practitioners (80% and 53%), psychiatrists (71% and 55%), or surgeons (67% and 51%). No substantial differences were found in perceptions for elevated blood pressure (84% - 93%) between specialties. Physicians' age, sex and academic education were unassociated with their ratings.

Conclusions: Physician specialty is associated with views regarding disease definition and this may further be associated with interactions with patients and management approaches. Surgeons tend to have a narrower definition of disease than other doctors.

0191 - Trial participation as a strategy to avoid over-diagnosis

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Objectives: Several methods are used in the diagnosis of urinary incontinence in order to evaluate function of the lower urinary tract and guide decisions about the most appropriate management. These include both non-invasive tests and some that require catheterisation. These latter are commonly referred to as invasive urodynamic tests (IUT) and come with certain costs, including the potential for embarrassment, pain and infection. The appropriate position of IUT in the diagnostic pathway is not currently clear due to a lack of high quality evidence, yet its use is relatively widespread and it tends to constitute 'normal care'. Drawing on data collected as part of a trial of IUT, we show how receiving something less than normal care (i.e. clinical assessment without IUT) was an attractive prospect for many participants.

Method: Qualitative interview study within a mixed-methods feasibility study. Interviews were conducted with a purposive sample of 29 patients who had participated in a trial comparing assessment with IUT to clinical assessment without IUT. Analysis was based on the constant comparative method.

Results: The likelihood of having invasive tests as part of the diagnostic process was something many patients were aware of and worried about. They understood that trial participation meant they might avoid having these tests, and for about one-third, this was the primary factor motivating participation. A further third mentioned they were not looking forward to tests (if allocated to them) or were lucky to have missed them (if allocated to basic clinical assessment). None of the women appeared to have discussed their desire to avoid having invasive tests with their clinicians.

Conclusions: Being asked to participate in a clinical trial comparing invasive urodynamic testing to basic clinical assessment with non-invasive tests surfaced a previously undeclared preference for avoiding the invasive urodynamic tests that tend to comprise usual care. None of the women we interviewed appeared to have discussed their desire to avoid having invasive urodynamic testing with their clinicians prior to receiving the invitation to participate. This is mirrored by the clinician-focused elements of the feasibility study in which there was often a clear preference on the part of clinicians for use of invasive urodynamic testing (not always for reasons of pure clinical utility) and importantly no mention of involving patients themselves in decisions about whether or not to do so in any particular clinical case. While some interventions may only be available within the context of a trial (such as experimental tests or treatments), the option to decline a particular intervention (whether therapeutic or diagnostic) should always be available to patients and care must be taken to ensure that potential participants are aware that trial participation is not the only possible means of avoidance.

0192 - OVERDIAGNOSIS OF CLINICALLY IRRELEVANT CANCERS

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Objectives: Mammography may detect tumors earlier, and lead-time is the time that mammography is moving time of diagnosis. The average estimated lead-time varies from 1 to 7 years for breast cancer. Observational studies and observation of tumor growth indicate short lead-times, while mathematical modelling of tumor growth gives much longer lead-time estimates. Cancer overdiagnosis is defined as the detection of tumors that never would give symptoms during the patient's lifetime. Based on the assumption that many tumors have very long lead-times, it is being argued that to calculate overdiagnosis women must be followed in 10-15 years after a screening program has been stopped to adjust for earlier diagnosis. Adjusting for long lead-times gives lower estimate of overdiagnosis.

Furthermore, when calculating overdiagnosis in cohort studies and assuming long lead-times, it is also common to adjust for other risk factors (underlying incidence increases, differences in risk factors and improved screening sensitivity) but this may introduce bias if the adjustment is not justified.

Method: Earlier diagnosis is only beneficial if it prevents dissemination. Before the era of mammography screening, about 75 percent of all breast cancer deaths occurred among women initially diagnosed with advanced cancers (metastatic disease or tumors over 20 mm in diameter). The effect on the rate of advanced disease should come immediately. An alternative to estimate lead-time is to estimate the reduction in the rates of clinically relevant tumors; ie tumors that grow and disseminate. First we estimate the reduction in the rate of metastatic breast cancers as well as tumors above 20 mm after the prevalence screening round in Denmark, and analogously the reduction in the rate of metastatic disease in Norway. Then we estimated the level of overdiagnosis as the incidence increase of localized disease divided by the total incidence before screening started.

Results: There were no significant reduction in the rate of advanced breast cancers neither in Denmark nor in Norway. The level of overdiagnosis of invasive breast cancers was about 50 percent in both countries, and higher if including DCIS.

Conclusions: The classical method for calculating overdiagnosis relies on several questionable assumptions, and includes adjusting for earlier diagnosis of clinically irrelevant cancers. This new approach also adjusts for earlier diagnosis but only for clinical relevant tumors and is less likely sensitive to bias.

0193 - Atlas de variaciones de la práctica clínica: ¿una herramienta para identificar posible sobre o infra-tratamiento? El caso de las artroplastias en Catalunya

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Objectives : El estudio de las variaciones de estos procedimientos quirúrgicos desde una perspectiva poblacional, nos puede ofrecer un nuevo y rico punto de vista para la evaluación de servicios sanitarios. En general, los procesos de baja variabilidad corresponden a situaciones donde hay un amplio acuerdo clínico sobre la pauta de tratamiento o intervención. Por el contrario, los procedimientos de variabilidad elevada pueden incorporar un importante componente de discrecionalidad médica y de desigualdad en el acceso a los servicios sanitarios, apuntando a posibles situaciones de sobre-tratamiento o también infra-tratamiento. El objetivo fue identificar y describir la variabilidad en las hospitalizaciones por artroplastias primarias de rodilla y de cadera en los centros públicos de Cataluña.

Method : Las fuentes principales de datos fueron el conjunto mínimo de datos al alta hospitalaria (CMBD-AH) y el Registro de Artroplastias de Cataluña (RACat) de 2005 a 2012. Se calcularon tasas de actividad, razones de uso estandarizadas y estadísticos de variabilidad. Se compararon las tasas de uso (numerador: ingresos hospitalarios) de los habitantes de un territorio (denominador: área básica de salud), con independencia del centro en el que fueron tratados. Además tanto las tasas como las razones de uso han sido plasmadas en mapas para una mejor visualización de los resultados.

Results : El caso de las artroplastias de rodilla dibuja, en general, un escenario de variabilidad moderada, aunque es destacable entre los menores de 60 años. Las artroplastias totales de cadera presentan un escenario de variabilidad moderada, ligeramente menor a la observada para la artroplastia de rodilla. Es en los pacientes mayores de 80 años donde esta variación es mayor entre áreas. Esto puede explicarse, en parte, por las condiciones de fragilidad de los enfermos y la preferencia por tratamientos más conservadores después de valorar la necesidad de cirugía principalmente en función del dolor y la limitación funcional; así como por unos criterios de indicación diferentes en las fracturas de fémur subcapital en los pacientes mayores.

Conclusions : Parte de las variaciones observadas en estos casos pueden ser injustificadas y podrían denotar sobre-tratamiento cuando la situación clínico-funcional y/o las preferencias de los pacientes descartarían la cirugía o recomendarían abordajes menos agresivos. Aunque directamente no puede deducirse de los estudios de variaciones que en un lugar concreto se estén sobre-utilizando recursos o que en otro no se estén cubriendo las necesidades de la población (no se dispone de una tasa óptima), determinadas características de las tasas pueden ser útiles para enmarcar posibles políticas como la promoción de la toma de decisiones compartidas entre pacientes y profesionales.

0194 - Future screening: Predictive, preventive, personalized and participatory (P4) medicine meets a proactive quaternary (P4) prevention – an examination of visions and early results

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Objectives: Novel technologies, e.g. genomics, other high-throughput "omics" technologies and digital health technologies such as mobile health apps, are now enabling continual and multi-dimensional monitoring of the whole life process in what amounts to a new form of screening of unprecedented sensitivity and scope. Scientists are proposing to revolutionize individual-centric disease prevention by computationally analysing big data on each person. This concept, known variously as personalized medicine, precision medicine or *P4 medicine* (predictive, preventive, personalized and participatory) is a moving target, which, although it is fast becoming clinical reality and commercialized, still mostly exists as a vision of the future. At the same time, *quaternary prevention*– incidentally also abbreviated "P4" – has typically lagged behind technoscientific developments in its aim to prevent overdiagnosis,

waste and harm. By examining P4 medicine, we here introduce a more proactive quaternary prevention, which focuses on “early diagnosis” and risks posed by scientific visions and early biomedical developments that continually define the future of medicalization and overmedicalization.

Method: Material describing the visions of P4 medicine as well as early results from the Institute for Systems Biology’s pilot Hundred Person Wellness Project (HPWP) is critically analysed in light of challenges related to medicalization and predictive and preventive medicine, including overdiagnosis.

Results: P4 medicine and the HPWP pioneers the most radical medicalization in history, measuring billions of data points in each individual. Where previous disease prevention guidelines have diagnosed a large population as “at risk”, the HPWP diagnosed 100% of its 107 participants with multiple “actionable possibilities”, indicating a need of medical attention, including patterns of cardiovascular risk, inflammation, nutritional deficiencies (e.g. vitamin D) and prediabetes. There is a clear lack of evidence of clinical utility of this massive screening effort. At the same time, P4 medicine is associated with a number of factors that are associated with overdiagnosis, waste and harm.

Conclusions: These results make P4 medicine’s visions and promises of a revolution in disease prevention suspicious. Unless further documentation is provided of what was done and achieved in the HPWP, this very high profile project cannot be regarded as a credible scientific endeavor. Studying biomedical visions and early developments may be an important part of quaternary prevention, focusing further efforts. There is an urgent need for further quaternary prevention in P4 medicine.

0195 - Member Risk Model: a method to reduce over utilisation by predicting high cost claimants.

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Abstract: There is growing concern that private medical insurance provisions may encourage over utilisation of medical services. With private care being known for efficiency and ease of access, Bupa are investigating its current population of claiming members to understand whether those with high claiming patterns are potentially being over diagnosed and as a result, in receipt of excessive or unnecessary medical treatment. Current interest in the member risk model is related to suitably identifying members most likely to drive cost and who may have specific coaching and care management needs. This is particularly relevant to members with a cancer diagnosis and those being treated for long-term conditions such as heart disease.

Objectives: A review of the existing model was conducted to test the tools' performance using historic claims data. The model was found to be a good predictor of member costs, particularly for the claiming population whose claims spend fell within the 75th percentile. However, predictive performance related to members who fell into the extremely “high risk” group (in the top 5% of claims spend) was less satisfactory, with claims spend consistently being under predicted. As a result we started to explore the risk profile of our entire claiming population, in a bid to improve the existing model.

Method: By combining demographic, clinical and time dependant variables, we are looking to create a model that reliably predicts across the whole population, both short and long term claims spend. This involves refining the current metrics used for prediction, modelling utilisation under various medical specialities and event types, as well as utilising pre-authorisation data. In this presentation, we will describe the challenges that we have faced and overcome in order to produce a model that enables us to stratify members and highlight those considered high-risk. We will also talk about practical applications and the role the model plays in facilitating the design and implementation of tailored, condition-based interventions that help to minimise over diagnosis and over treatment.

0198 - What are the indications for and the implications of ordering a diagnostic neck ultrasound examination?

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Background and Objective: The incidence of thyroid cancer is increasing at an epidemic rate primarily due to the increasing use of and sophistication of diagnostic ultrasound. The objective of the study was to determine how the patterns and rates of the use of diagnostic tests influence the Over Diagnosis of thyroid cancer.

Method: This is a population-based retrospective study based on all patients over 18 yrs with a diagnosis of thyroid cancer from the Province of Ontario, Canada, from Oct 1 1999 to June 30 2014 (n= 26311). Based on electronic administrative data held at the Institute from Clinical Evaluative Sciences (ICES), the 97 health care regions of Ontario were divided into 5 evenly spaced groups of increasing rates of thyroid cancer based on the standardized rates of in 2010-2012 in each. The diagnostic process for thyroid cancer including imaging tests and medical appointments was determined by year, overall and by region.

Results: The rates of thyroid cancer for the 5 subgroups varied from 19.2/100,000 to 101.6/ 100,000 and the corresponding rates of diagnostic neck ultrasound varied from 1059/100,000 to 2970/100,000. Ultrasound was the first test in the diagnostic cascade in 78.9% of cases and the GP ordered the ultrasound 97.2% of the time prior to referring to the surgeon.

Conclusion: and there is no medical explanation for a 3x difference in the ordering of a diagnostic test but the fallout of more tests was 5x the rate of cancer by region. There is no medical explanation for a 5x greater incidence of thyroid cancer across regions of Ontario. Following the principles of Choosing Wisely, the indications for diagnostic ultrasound of the neck need to determine and given the evidence of non-progression in this disease, the incidence would decline and the burden of cancer would be reduced.

0199 - Preventing overdiagnosis through the de-implementation of low-value diagnostic tests: A systematic review

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Objective: Over testing is a key driver of overdiagnosis. One way to prevent overdiagnosis is to restrict the use of diagnostic tests that are unnecessary, of low-value, or even harmful. Even when there is strong evidence against the use of a test, action is often required to restrict or eliminate its use. The de-implementation of diagnostic tests is likely to face different challenges than implementation. The aim of this systematic review was to investigate key characteristics of effective de-implementation strategies for diagnostic tests and to identify gaps in knowledge and areas for future research.

Method: Medline, Embase, Cochrane, and Rx for Change databases were searched from January 1st, 1990 until November 1st 2016. Additional studies were found through reference checking and searching in healthcare websites. Studies of interest were those focusing on the reduction or elimination of a low-value clinical practice for clinical reasons, as opposed to financial. Information on the characteristics of the de-implementation strategies, the effectiveness of these strategies, the study design and reporting, as well as perceived or measured barriers and facilitators to these strategies were extracted. In this project we focus on studies on diagnostic tests.

Results: Thirty-seven studies on the de-implementation of a diagnostic test were identified for this preliminary analysis. The most common aim was to quantitatively evaluate the effectiveness of de-implementation (n=26,70%) while the remaining focused on the qualitative assessment of (perceived) factors influencing the effectiveness. Only 3 effectiveness studies were randomized trials. De-implementation strategies were commonly multi-faced, the most common elements being physician education or reminders. Half were on laboratory tests (n=20,54%) and a handful were on potentially physically harmful tests, such as imaging or endoscopy (n=8,22%). Most studied concluded moderate effectiveness of the de-implementation.

Conclusions: This review has identified a set of studies on the de-implementation of diagnostic tests. Most studies showed moderate success, acknowledging room for improvement in the development of de-implementation strategies. We highlight areas for future studies on de-implementation of diagnostic test to focus on: the process of designing a tailored and multi-faced interventions, evaluating factors influencing effectiveness either quantitatively or through process evaluation, patient related outcomes, and potential for sustainability and spread. When tests are evidenced to be low-value, effective and efficient de-implementation is key to improving patient outcomes.

0201 - Primary care physicians' over-utilization of medical tests and its association with cancer incidence and mortality

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Background and Objective: There is concern that physicians are using medical tests that are neither necessary for their patients' care nor supported by evidence. The problem with these unnecessary tests is not only the associated medical costs, but that such overuse of tests can lead to overdiagnosis of indolent disease, including cancers such as breast, prostate and thyroid. The Objective of this study is to determine if primary care physician's over-use or under-use of key medical tests is associated with cancer incidence and mortality rates among their patients.

Methods: This is a population-based cross-sectional study in Ontario, Canada using administrative health data from the Institute for Clinical Evaluative Sciences (ICES). The study population was Ontario residents ages 40 to 75 in 2008 to 2012, and the primary care physicians who were their usual providers during the study period. We compared physicians' utilization of 36 laboratory, imaging tests, cardiac tests and specialist consultations and calculated case-mix adjusted observed to expect (O/E) utilization ratios to categorize physicians as relative over- or under-testers. Multivariable regression will be used to analyze the association between physicians' test utilization and cancer incidence and mortality among their patients.

Results: There were 8,056 primary care physicians in Ontario between 2008 and 2012, providing care to over 5,000,000 patients. We observed variation in physicians' case mix adjusted utilization of each of the 32 tests. The O/E utilization ratios ranged from less than 0.1 to greater than 10, providing evidence of relative over- and under-utilization of these tests. When we grouped tests into categories (laboratory tests, cardiac tests, imaging tests, or consultations), we found good agreement in physicians' O/E ratios, with Cronbach's alpha ranging from 0.7 to 0.9 for the groupings. Analyses exploring the association between physicians' test utilization and cancer incidence and mortality among their patients are pending.

Conclusion: We observed evidence of over- and under-utilization of common medical tests among primary care physicians. The pending analyses examining the impact of over-utilization of medical tests on cancer incidence and mortality will inform physicians, policy makers and patients on patterns of the use of tests and of the potential consequences associated with the overuse of medical tests potentially leading to more effective use of health care resources.

0202 - Prescription quality standards (PQS): reducing overtreatment in primary health care.

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Abstract: Variability of drug prescription among physicians is a well-known cause of overtreatment and has a significant impact both on patient's health and on health care systems budget. Evidence-based clinical guides must be

clearly communicated to health care professionals and rigorously applied to cut unnecessary treatments. Monitoring the implementation of these clinical guidelines is essential to reduce overtreatment.

Objectives: Asses the results of the Catalonian Prescription Quality Standards (PQS) for reducing overtreatment in primary health care centers of Catalonia.

Method: PQS were defined through literature review, selecting those with more robust scientific evidence, then implemented in primary health care as a professional online tool. PQS for selected pathologies are monitored weekly and professionals can access to their data through the electronic medical records software. They can also list the patients who may have an inadequate prescription. PQS results from 272 Catalonian primary health care centers were monitored monthly during the period 2014-2015. Eight PQS were studied: statins in patients with low cardiovascular risk, new statins, proton-pump inhibitors in gastropathy prevention, asymptomatic hyperuricemia treatment, osteoporosis treatment in patient with low risk of fracture, acute treatment of otitis media/bronchitis and PSA use. PQS criteria definitions are shown on Table 1. The evolution of the percentage of patients correctly/incorrectly treated over time was estimated using linear regression by SPSS v 18.

Results: PQS for PSA use, proton-pump prescription to prevent gastropathy, osteoporosis treatment in patients with a low risk of fracture, asymptomatic hyperuricemia and prescription of new statins had a significant linear decrease (CV -0.46; SE +/-0.067; CV -0.35; SE +/-0.13; CV -0.55; SE +/-0.014 CV -0.56; SE +/-0.12 and CV -0.52; SE +/-0.001 respectively) ($p < 0.01$). Significant gaps were noted in the temporal trends of three PQS as a result of modifications in their definition. Therefore the results of this PQS: statins in low cardiovascular risk patients and acute otitis/bronchitis treatment are not described in this report.

Conclusions: PQS seems to have a positive impact on reducing overtreatment for selectec pathologies in primary health care centers of Catalonia.

0203 - Who is prescribed statins and why? Cross sectional analysis of cardiovascular risk and socio-demographic factors influencing statin prescription from The Irish Longitudinal Study on Ageing.

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Objective: To describe the utilisation of statins by older people in Ireland by indication, age, gender and socio-economic factors.

Methods: This was a cross sectional analysis of cardiovascular risk and socio-demographic factors influencing statin prescription from The Irish Longitudinal Study on Ageing (TILDA). The sample (n=5,816) comprises nationally representative, community dwelling participants aged 50 and over. Data were collected on socio-demographic and health related information. A hierarchy of indications, consisting of eight mutually exclusive levels of cardiovascular disease (CVD) related diagnoses was created. Participants were assigned one level of indication. The prevalence of statin utilisation was calculated. The likelihood that an individual was utilising a statin was estimated using a multivariate logistic regression model, controlling for cardiovascular risk and socio-demographic factors. The SCORE (Systematic Coronary Risk Evaluation) tool was used to assess 10-year CVD risk in a nested study (n=3,372), with participants aged between 50 and 64 stratified as either above or below a 5% risk threshold, as recommended by European clinical guidelines.

Results: Statin use was highest in those with a history of myocardial infarction, with a slightly higher treatment prevalence for men in this group. At the lower end of the indication hierarchy (hypertension, high cholesterol or no CVD related diagnosis reported), women had a higher treatment prevalence. Overall, 46.2% of men taking statins did not have CVD or diabetes in comparison with 64.8% of women. Adjusting for indication and socio-demographic factors, the likelihood of being on a statin was higher with increasing age, with adjusted odds ratios (ADJ ORs) of 1.37 for those aged between 65-79, and 1.25 for those aged 75 and over relative to those aged less than 65 years. Polypharmacy was found to have a large effect, with an ADJ OR of 3.03. The ADJ OR was higher for married people at 1.42. In the subgroup analysis, individual SCORE risk was not associated with statin prescribing ADJ OR= 1.18 controlling for socio-economic factors such as social class, income, deprivation scale and education level, as well as health insurance status, medical card status or whether the person lived in a rural or urban area.

Conclusion: Treatment prevalence for statins was highest among those with a history of CVD and diabetes. However, over half of all statins were prescribed for those with no history of CVD or diabetes. Frequency of GP visits, polypharmacy and indication were predictors of statin prescription but risk SCORE was not.

0204 - Commitment to *Choosing Wisely*® is a low cost, scalable strategy that can decrease clinician ordering of services that can lead to overdiagnosis

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Objectives: Clinicians order services that can lead to overdiagnosis because of a range of cultural, structural, and behavioral factors. Little is known about how these factors could be modified to decrease ordering of such services. We tested whether a low-cost intervention grounded in behavioral economics could decrease ordering of services that can lead to overdiagnosis and examined how clinicians felt this strategy changed patient encounters and clinical decision making.

Method: We conducted a mixed methods, stepped wedge cluster randomized trial with 45 primary care clinicians in 6 clinics in the United States. At the start of the control period, clinicians were shown *Choosing Wisely*®

recommendations to avoid imaging for uncomplicated low back pain, imaging for uncomplicated headaches, and unnecessary antibiotics for acute sinusitis. At the start of the 6-month intervention period, clinicians were invited to commit to following these recommendations. Clinicians who committed received point-of-care reminders of their commitment and patient education handouts, along with weekly emails with resources to improve communication with patients about unnecessary services. The primary outcome was the difference between the intervention and control periods in the proportion of applicable visits with orders for the targeted services. A secondary outcome was the difference between the intervention and control periods in the proportion of visits with potential substitute orders for each condition. We estimated differences in proportions using linear mixed models with random effects for providers nested in practices, adjusted for patient characteristics, time, and diagnosis. After the intervention, we interviewed study clinicians about their experiences.

Results: All 45 clinicians committed to following the 3 *Choosing Wisely* recommendations. Across 18,013 clinic visits, the intervention was associated with a 1.4% decrease in the proportion of visits with orders for the targeted services (95% CI, -2.7% to -0.2%; $P = 0.02$), but also a 1.7% increase in the proportion of visits with potential substitute orders (95% CI, 0.2% to 3.2%; $P = 0.02$). In interviews with 24 study clinicians, 14 felt the intervention improved their conversations with patients about the targeted services and 10 felt the intervention changed their practice patterns.

Conclusions: A behavioral economic intervention that changed clinicians' choice environments by pairing commitment to following 3 *Choosing Wisely* recommendations with supports to promote adherence to this commitment produced fewer orders for services that can lead to overdiagnosis. To promote sustained improvements in care, this strategy could be embedded in routine practice but should account for potential substitute services.

0205 - Exposure to disease awareness campaigns in printed and online media in Latvia

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Background: European legislation prohibits advertising prescription-only medicines, but allows information to the public on health and diseases, as long as there is no direct or indirect reference to a pharmaceutical product. Various forms of promotion have become increasingly common in Europe, among which an increasing volume of 'disease-oriented' campaigns that discuss a condition a medicine treats without mentioning a specific brand name.

Objectives: To measure the frequency of disease awareness campaigns by pharmaceutical companies in Latvian media and assess their compliance with criteria for provision of disease information in international guidelines governing medicinal drug promotion.

Method: Materials on health, disease and treatments were collected over six months (April to September 2015) from 12 widely circulated newspapers and magazines, as well as from six high traffic online portals. Disease awareness advertisements were probed using a previously developed instrument based on relevant criteria from the WHO Ethical Criteria for Medicinal Drug promotion and self-regulation guidelines. Collected disease awareness advertisements to explore the consistency of information provided about medical conditions and their diagnosis and treatment. The inter-rater reliability between the three evaluators was of 88%.

Results: We collected 262 materials meeting our inclusion criteria from print ($n = 149$) and online media ($n = 113$). 86 were news items and 176 materials were advertisements for disease awareness campaigns. After removing duplicates, we assessed 169 unique campaigns. 129 (76%) of these referred the public to visit their doctor or pharmacist for additional information, diagnosis and/or possible treatment. Cancer ($n = 26$), cardiovascular problems ($n = 23$), allergies and respiratory diseases ($n = 20$) were common topics. 23 campaigns were sponsored by private clinics or hospitals. Other six mentioned directly a specific pharmaceutical product and 9 referred to a pharmaceutical company (either by its name or logo). Non-compliance with current guidelines was identified in 160 cases (95%) mainly due to misleading or incomplete information, lack of balance and the absence of named authors/sponsors.

Conclusions: We have demonstrated that disease awareness campaigns are present in both printed and online media in Latvia and that compliance with current WHO and self-regulation guidelines is low. This raises concerns about the nature and selection of the information being conveyed. While omitting information on the sponsor, these campaigns widen disease definitions, accentuate treatment benefits and downplay its risks. They can contribute to overdiagnosis by generating demand among those who might not necessarily need medical treatment, encouraging irrational medicines use and diverting useful resources.

0207 - Overtreatment of Overdiagnosed Ductal Carcinoma in Situ (DCIS): Less is More

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Objectives: In the 1970s, DCIS was a rare diagnosis present at 1% of abnormal breast biopsies. With the initiation of population mammographic breast cancer screening, its incidence has risen 20-fold amounting to about 60,000 new cases of DCIS annually in the US today. This rise in DCIS incidence after widespread mammographic screening has, however, not been reflected in a decrease in either early stage or metastatic breast cancer cases. There is circumstantial and conflicting evidence that DCIS may occasionally evolve into invasive breast cancer. Therefore,

necessarily, this "epidemic" reflects true overdiagnosis (a diagnosis without symptoms and irrelevant to survival). The nomenclature of DCIS (carcinoma in situ) is also confusing to patients who wrongly believe they have an invasive progressive malignancy, which they do not. This diagnosis is accompanied by emotional distress, disfiguring surgery, long term radiation side effects, and financial toxicity. This paper aims to evaluate the financial costs of DCIS overdiagnosis and overtreatment in the US healthcare system.

Method: We estimated costs based on annual DCIS incidence rates and average cost of its surgery, radiation, and anti-estrogen therapy.

Results: DCIS treatment costs approximately \$12,300 per case as it usually consists of lumpectomy plus radiation, or occasionally ipsilateral (or even bilateral) mastectomy, followed by anti-estrogen therapy for five years. The total annual cost in the US is \$734 million for treatment of a benign lesion that may be background in nature only and treatment of which does not decrease breast cancer incidence above and beyond the chemopreventive strategy of FDA-approved anti-estrogen therapy that is often applied after resection or irradiation.

Conclusions: Alternative strategies to these aggressive and expensive approaches might result in the same or better outcome for the patient, family, and healthcare system. We propose a randomized clinical trial of: 1) surgical ablation with tamoxifen, 2) tamoxifen alone with active surveillance (annual mammography) and wide local excision if DCIS progresses, and 3) tamoxifen with less aggressive active surveillance (every other year mammography). A pathology archive of cases under active surveillance would allow a retrospective resource to develop a molecular profile of those rare cases likely to progress to an invasive phenotype. Such strategy has a high probability of reducing overall unnecessary human suffering as well as cost of care--saving money and reducing pain, fear and inconvenience for women with screen detected DCIS. Less is clearly more in the screening for and treatment of DCIS.

0209 - Methodological challenges for overdiagnosis: What's out there?

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Objectives: Overdiagnosis is increasingly discussed in scientific literature over the last decades. Consequences related to overdiagnosis involve unnecessary expenditure of healthcare budget as well as increased risk of side-effects or complications related to testing or subsequent treatments. When performing research, each discipline faces specific methodological challenges and will need to deal with those accordingly. In this systematic review we study the range of methodologies that is used in literature for assessing overdiagnosis, providing an overview of the vast amount of articles available on the subject.

Method: Pubmed was searched using text words and MeSH terms related to overdiagnosis, overdiagnosis and insignificant disease. Titles and abstracts of these papers were screened by two independent reviewers assessing which clinical domain they entailed, type of index test, type of paper (e.g. primary study, review), suggested solutions to tackle overdiagnosis and whether overdiagnosis was a dominant theme. A total number of 3802 papers was identified. The following results are based on the 1117 most recently published papers. Before the conference we will have finalized screening and therefore we will be able to present the final results of all 3802 papers.

Results: After exclusion of non-English papers and papers without full-text available, the titles and abstracts of 977 papers were screened. Articles in which overdiagnosis was a dominant topic were selected, yielding 499 papers for further analysis. There were 31% methodological papers related to overdiagnosis. Overdiagnosis is subject of discussion in various contexts spread across different medical disciplines. The clinical domains in which it is mostly discussed are oncology, mental disorders and infectious diseases, with 59.5%, 6.8% and 6.4% respectively. The diagnostic test most commonly evaluated is imaging. A wide range of definitions is used to describe overdiagnosis. Consequently various methods are proposed to avoid its negative effects.

Conclusions: A growing number of papers discuss overdiagnosis, using many different definitions. It is addressed predominantly in breast, prostate and thyroid cancer screening, however papers on the subject can be found over virtually all clinical domains. This overview can serve as a starting point for further methodological advancements in the field of overdiagnosis.

0211 - Analysis of the appropriateness of ambulatory prostate-specific antigen (PSA) test requests in a tertiary hospital in Barcelona.

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Objective: To know the degree of appropriateness of PSA test requests in the outpatient service in a tertiary hospital in Barcelona.

Methods: Retrospective observational study that analysed outpatient PSA test requests in male individuals aged ≥ 18 from January 1st to December 31st 2015. Measurements of patients with history of prostate cancer were excluded. A needed sample of 332 test requests was calculated out of 4272 PSA measurements of 2015.

The study comprised two stages: a) first stage (pilot test), and b) second stage (analysis of the remaining measurements). From the prior review of the literature, request for PSA test was deemed appropriate in the following cases:

- Family history of prostate cancer.
- History of BRCA gene mutation.
- Signs and symptoms suggestive of prostate pathology.

Clinical history of each patient included in the study was reviewed to decide if the PSA test request was appropriate or potentially inappropriate.

Results: The results of the pilot test in a random sample of 30 PSA measurements are presented. Mean age was 64 years (40-88 years); median PSA level was 1.995µg/L (0.38-11.72). 56.7% of test requests occurred in the age group of 50-70 years, where median PSA level was 1.39µg/L. 87% of the cases had a prior request for PSA test; the most frequent time interval between requests was ≤12 months (54%). Most of these cases presented PSA levels of ≤4µg/L (78, 6%). Appropriateness analysis objectively showed 66% of potential inappropriateness. 33% of the test requests deemed appropriate were classified as follows: family history (3%), present BRCA gene mutation (3%), signs and symptoms suggestive of prostate pathology indicated in the clinical history (27%). In the second stage, appropriateness analysis of the remaining requests in the sample will be completed.

Conclusions: This study is evidence of considerable potential inappropriateness in outpatient PSA test requests, with the resulting risk of overdiagnosis. Underregistration in the clinical history of the reason for PSA test request is to be noted as potential limitation. A qualitative study would be necessary in the future involving clinical specialists to extend knowledge of the rationale for PSA test request and to be able to enhance appropriateness.

0213 - The concept of psychiatric disease: Public, health professional, and legislator perspectives

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Objectives: No uniform definition for mental disorder exists, and classification has varied substantially over time. There is little research addressing peoples' perceptions regarding the concept of disease among a variety of mental health-related states of being. We therefore assessed psychiatrists', non-psychiatric physicians', nurses', members of parliament, and laypeople's perception regarding which mental health-related states of being should be considered diseases.

Method: We conducted a cross-sectional mailed survey among a random sample of 3,000 laypeople, 1,500 doctors, 1,500 nurses (randomly identified from the databases of the Finnish Population Register, the Finnish Medical Association, and the Finnish Nurses Association), and all 200 members of the Parliament of Finland (MP).

Respondents used a five point Likert scale to provide their view regarding claims: "[This state of being] is a disease".

Results: Of the 6,200 people approached, 3,259 provided eligible responses (53%), of whom 70 were psychiatrists, 668 non-psychiatrist physicians, 965 nurses, 55 MPs, and 1,501 laypeople. Over 75% of respondents in *each* group considered two states of being (*autism and schizophrenia*) as diseases and two states (*grief and homosexuality*) *not as diseases*. Over 50% in each group considered 7 states (*anorexia, attention deficit hyperactivity disorder, bulimia, depression, generalized anxiety disorder, panic disorder and personality disorder*) as disease, and 3 (*absence of sexual desire, premature ejaculation, transsexualism*) not to be diseases. Respondents showed large disagreement for 6 conditions (*alcoholism, drug addiction, gambling addiction, insomnia, social anxiety disorder and work exhaustion*). Psychiatrists were more inclined to consider states of being as diseases relative to other groups, followed by non-psychiatric physicians, nurses, members of parliament and laypeople. In the multivariate models, younger age and female gender were also associated with more inclination to consider states as diseases.

Conclusions: Certain states of being are acknowledged as diseases more consistently than others. Psychiatrists are more inclined to consider mental health-related states of being as diseases compared to other physicians, who in turn are more inclined than other constituencies. For some states, including addictions, all constituencies have wide variability in perceptions.

0217 - Informally regulated innovation systems: Challenges for responsible innovation in diagnostics

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Objectives: Expectations for diagnostic innovation in genomics are high, with hope for expanded capacity for early detection and therapeutic targeting – i.e., “personalized” or “precision” medicine. Though typically seen as the unguided outcome of scientific and technological discoveries, these developments are shaped within socio-technical systems that are variously regulated. In genomics, such systems are marked by their translational nature, the limited purchase of statutory and soft law constraints, and norms guiding diagnostic practice that stress technical and short term endpoints rather than ultimate patient outcomes. Understanding how diagnostic innovation proceeds in these contexts can suggest strategies for more responsible diagnostic innovation.

Method: We observed a clinical feasibility study of genome-based diagnostics in cancer, which included an Expert Panel of clinicians and scientists to guide study conduct, and assess the relevance of identified variants for reporting to physicians. We observed near-weekly meetings (n=44) and conducted brief ethnographic interviews. Detailed field notes, meeting agendas and minutes were analyzed drawing on the low inference analytic strategy of interpretive description, searching for information-rich stories where issues were discussed in depth or across multiple meetings. We used techniques of constant comparison to identify themes related to the organization of the research or reasoning about research results.

Results: Panel members sought to design a socio-technical system that coordinated capacity for the clinical use of novel diagnostics. In doing so, panel members had to establish material and organization routines, which required efforts to stabilize scientific knowledge, technical capacity, and clinical practice. As well, panel members had to establish normative routines – that is, the judgments of what, in the sea of data produced by these material and

organizational routines, constituted clinical information *worth knowing*. To do so panel members identified clinical obligations aligned with physician ideas about clinical utility and appropriate care and prioritized not depriving patients of options.

Conclusions: Debates about medical screening often centre on whether or not early detection is warranted, rather than how and why such capacities have become possible and available in the first instance. This study highlights the significance of the informally regulated socio-technical systems that produce diagnostic innovation, and which are marked by limited external accountabilities. Thus, intentions to help patients and act ethically were not subject to test. Instead, presumptions of benefit and duty were stabilized to produce diagnostic innovations of questionable value. Robust, legitimate and accountable regulatory regimes will be required to ensure more responsible diagnostic innovation in future.

0222 - Racionalización de la demanda de electroforesis de proteínas séricas.

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Objetivos : El estudio de proteínas séricas por electroforesis (EPS) es una prueba ampliamente solicitada para la detección de perfiles indicativos de diversas patologías. Sin embargo, su única utilidad clínica demostrada es el diagnóstico y seguimiento de gammopatías monoclonales (GM). En el Hospital de la Santa Creu i Sant Pau (HSCSP) se evaluó la adecuación de su solicitud, tras lo cual se establecieron una serie de recomendaciones para racionalizar la demanda. Posteriormente se analizó nuevamente la frecuencia de solicitud, comparándola antes y después del establecimiento de las recomendaciones.

Método : Se realizó un estudio cuasi-experimental pre-post sin grupo control en el que se analizaron las frecuencias de solicitud de EPS antes de las acciones implementadas (año 2013) y posteriormente a las mismas (año 2015), comparando los resultados. Los datos de las solicitudes se obtuvieron del laboratorio del HSCSP.

Como recomendaciones para racionalizar el uso de EPS se establecieron los siguientes criterios estrictos de solicitud: a)pacientes con sospecha de GM y su seguimiento; b)pacientes sin sospecha clínica de GM solicitar la prueba con una frecuencia máxima de una al año; c)pacientes en situación aguda, realizar la solicitud sólo cuando se haya resuelto la misma. Se realizaron además cambios en la petición electrónica de la solicitud.

Resultados : Durante el año 2013 se realizaron 22.444 determinaciones de EPS:35% a pacientes sin sospecha clínica de GM, con un intervalo <1 año con respecto a solicitudes previas y por servicios distintos a Hematología; el 13% de las solicitudes se realizaron a pacientes en situación aguda (hospitalizados/urgencias); un 52% provenían de diversos servicios. Tras la implementación de las recomendaciones propuestas, entre enero y octubre de 2015 se demostró una disminución general de un 61,3% de solicitudes de EPS. Sólo 4% se realizaron antes de 1 año de la previa y no eran del servicio de Hematología, 8% correspondían a pacientes en situación aguda y 88% provenían de diversos servicios.

Conclusiones : El uso inadecuado de pruebas diagnósticas genera gastos sanitarios injustificados, uso ineficiente de recursos y tratamientos innecesarios para los pacientes. En el HSCSP se determinó un cierto grado de potencial inadecuación en la solicitud de EPS. Se propusieron una serie de recomendaciones para racionalizar su uso, así como cambios en la petición electrónica para facilitarlos. En 2015, un año después de la implantación de estas medidas, se objetivó una disminución del 61,3% de peticiones injustificadas de EPS.

0223 - A systematic review of the interventions aiming at reducing the overuse of diagnostic imaging in the emergency department and inpatient settings when a pulmonary embolism is suspected

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Objectives: To identify the interventions that could be set to reduce the overuse of diagnostic imaging in the ED and inpatient settings when a pulmonary embolism is suspected and document their main effects.

Method: A literature search was conducted, using four databases. The methodological quality of the selected publications was appraised with the Cochrane collaboration criteriae for assessing risk of bias and the Methodological Index for Non-Randomized Studies (MINORS). A narrative synthesis was performed according to the guidelines proposed by Popay et al (2006). Data was reported according to PRISMA.

Results: The literature search identified 2650 publications, published from 1998 to November 2015. Fourteen studies were included in the review, following appraisal. The design of only 3 of these studies involved a control group (2 RCT and one quasi-experimental). Nine were before and after retrospective studies. Twelve studies were conducted in the emergency department (ED), 2 in inpatient settings. Six of these assessed the effectiveness of Evidence-based clinical decision support, 5 assessed educational interventions, 2 dealt with interventions based on the implementation of clinical pretests and one used audit and feedback. The methodological quality of the evidence was variable. Heterogeneity of the study designs, types of interventions and outcomes appraised did not allow the pooling of study results. Many studies' endpoints appraised the impact of interventions on the use and yield of CTPA. In this respect, the type of intervention that appeared to be most effective was an electronic, evidence based, clinical decision support. Educational interventions tend to have a limited impact on practitioners' adherence to clinical practice guidelines and inter-physician variability in the yield of CTPA studies. The implementation of performance feedback reports did not have a significant impact on use and yield of CTPA, though it resulted in a modest but significant increase in adherence to evidence-based guidelines. The results associated with interventions based solely on the implementation of clinical pretests are inconclusive.

Conclusions: Electronic, evidence based, clinical decision support appear to be a promising way to foster adherence to clinical guidelines. Various types of interventions should be combined in an effort to increase adherence to

evidence-based guidelines and reduce the use and increase the yield of diagnostic imaging in the ED and inpatient settings, when pulmonary embolism is suspected.

0226 - Attitudes, perceptions and awareness concerning quaternary prevention among family doctors working in The Social Security System, Peru.

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Abstract: Quaternary Prevention is defined as the action taken to identify patients at risk of overtreatment, to protect them from a new medical invasion, and to suggest interventions that are ethically acceptable. Many countries and organizations have joined the efforts to practice quaternary prevention. These countries started a campaign called Choosing Wisely that implements recommendations in order to avoid harming patients.

Objectives: To determine the attitudes, perceptions and awareness towards quaternary prevention and the practice of "Choosing Wisely Canada Recommendations" among family doctors working in the Social Security System in Peru.

Method: A questionnaire was developed after reviewing the literature and contacting experts in the field and was sent by email link to all 64 family physicians in the Social Security System (Essalud) in Lima Peru. Responses were received from 40 participants

Results: The response rate was 64%. Approximately 95% reported that they understand the concept of quaternary prevention. Agreement for all the recommendations was 90% or superior. In most of the recommendations the applicability was more than 80%. The most important barriers perceived for the practice of Quaternary prevention was the patient expectations (33%)

Conclusions: There are positive perception towards quaternary preventions and choosing wisely recommendations in the family doctors of social security in Lima Peru.

0228 - Assessing Preferences to "Do Something" To Address Health Threats: Development of the Medical Maximizer Scale

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Abstract: There is growing recognition that medical interventions are not always helpful, and can sometimes be harmful. Hence, just because patients *can* do something about a real or perceived health problem does not always mean that they *should* do something. A critical question becomes how people decide to take action, versus not, when it comes to their health. In a recent book (Groopman & Hartzband, 2011), patients were characterized as medical maximizers who desire active medical interventions even for minor physical ailments, versus medical minimizers who prefer to avoid medicine unless it is absolutely necessary. However, there are currently no empirical data to support these characterizations. The purpose of the present research was to identify whether this preference dimension exists, and if so, develop and validate a scale that can measure it, and determine whether such preferences can predict patient treatment choice and healthcare utilization.

Methods: An Internet survey of American adults (N=606) identified 10 items consistent with the a priori maximizer-minimizer definition using exploratory factor analysis (EFA). A second Internet sample (N=609) confirmed the item factor structure and established convergent and discriminant validity. A third study established test-retest reliability (N=436) and a fourth study validated the scale in a non-Internet sample of American men (N=769).

Results: The ten items that assessed medical maximizing-minimizing preferences showed adequate model fit in CFA (e.g. RMSEA=.07, CI=.06-.08), and good test-retest reliability (intra-class correlation=.89, CI=.87-.91). Maximizing-minimizing preferences were distinct from hypochondriasis, distrust in medicine, health status, and healthcare access. Controlling for these factors, the maximizer-minimizer scale significantly predicted a variety of healthcare utilization reports, including number of medications taken daily (B=.12, p<.001), frequency of doctor visits (B=.38, p<.001), blood draws in the past year (B=.38, p<.001), flu vaccination (B=.31, p<.001), and hospital stays in the past 10 years (B=.13, p<.001). The scale also predicted hypothetical treatment preferences for surgery versus watchful waiting for cancer (B=.48, p<.001), surgery versus physical therapy for back pain (B=.30, p<.05), continued chemotherapy at the end of life (B=.46, p<.001), interest in PSA screening (B=.55, p<.001), and MRI screening to seek a cause for migraine headaches (B=.32, p=.001).

Conclusions: These data provide evidence that medical maximizing-minimizing is a preference dimension that is stable over time and predicts healthcare utilization as well as a variety of treatment preferences across multiple health domains. We hope that this new measure can be used to predict healthcare utilization behavior and improve healthcare communication.

0229 - Psychological Factors that Influence Patient Interest in Questionable Cancer Screening Tests

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Abstract: There is growing recognition that some screening tests have negligible benefits and can potentially cause harm. Yet, people may want screening even when the test would not save their lives (Schwartz et al., 2004). At this point it is critical that we understand *why* people desire screening when benefit is minimal or absent. Patient anxiety about cancer is presumed to be an important factor, but there are other factors that could also explain testing preferences, including a failure to recognize or accept potential harms and lack of benefits, a desire for health information, a desire to take action against a threat, personal experience with cancer, trust in science, etc. The purpose of this research was to identify the factors that contribute to interest in cancer screening of questionable

benefit. Two Internet surveys (total N=904) included American men and women age 40-70 (Study 1) and 18-76 (Study 2). All participants were asked whether they would want (yes/no) a screening test for breast (women) or prostate (men) cancer that “unquestionably does not reduce the chance of death from cancer.” Risks of false positives and overdiagnosis were also described. We measured cancer anxiety, perceived test risks and benefits, perception that the test provides important information, trust in science, numeracy, past screening use, and having friends/family with breast/prostate cancer. Participants who wanted the test were asked whether they would still want screening if they could go to the doctor yearly to be checked for cancer symptoms. In both studies a majority of participants wanted a screening test that had no survival benefits (men: 50-59%, women: 56-66%). Most participants (95%) accurately reported what they were told about the test. Logistic regression revealed that three factors uniquely predicted test uptake: Belief that the test provides important information ($B=1.32$, $p<.001$), perceived test risks ($B=-.57$, $p<.001$), and perceived test benefits ($B=.32$, $p<.05$). Anxiety was correlated with test uptake ($r=.29$, $p<.001$) but was not predictive when controlling for belief that test provides important information. Test uptake was reduced to 17% when participants considered a yearly doctor visit as an alternative action. A majority of participants wanted a screening test that unambiguously lacked survival benefits. These surprising preferences were explained by perception that the test provides important information, perseverating beliefs that the test provides benefits, and failure to acknowledge test risks. Cancer anxiety did not directly predict test uptake, but instead was mediated by beliefs about the importance of information.

0232 - Overtreatment of Polyps in Low Risk Groups

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Abstract: Current guidance fuels the widely held view that all colonic polyps should be excised for histological diagnosis. The majority of polyps at the point of excision, however, are not cancerous. There are several factors that determine the malignant potential of a polyp. These can be categorised into 1) patient factors- personal or family history of colorectal cancer (CRC), inflammatory bowel disease (IBD), hereditary disorders such as FAP and HNPCC and 2) polyps features- site, size and morphology. As with any procedure there are associated costs and morbidities. Therefore, limiting excision and histological diagnosis of polyps to patients who fit the high-risk profile for colorectal cancer could result in significant savings and reduced harm caused by overdiagnosis.

Objectives: To evaluate the incidence of CRC in low-risk polypectomy patients.

Method: In a retrospective study, we collected data from a random sample of patients who underwent a polypectomy between 1st January 2008 to 31st December 2009 at St Peter's Hospital. We extracted data on patient demographics, the type, size, number and histology of polyps using the internal endoscopy database. We used a 5 year follow up period which included the second surveillance colonoscopy to evaluate for any further polyps or the development of carcinoma. Our exclusion criteria were 1) Previous CRC 2) FHx of CRC 3) IBD 4) adenocarcinoma in first colonoscopy

Results: There were 300 patients included in this study of which 64.7% were male. The mean age was 64.4 ± 17.5 years. A total of 1076 polypectomies performed with no neoplastic features identified within the polyps in the first endoscopy. The mean size of polyp excised was 11.7 ± 10.6 mm. Of the total, 6 polyps had developed adenocarcinoma at the second endoscopy giving a cumulative incidence of 0.6%. Every patient was followed up until their second endoscopy with a mean follow up period of 3.2years ± 2.9 .

Conclusions: This study has identified a low incidence of CRC in this subset of patients. Whilst acknowledging the inherent limitations of a retrospective analysis, these results challenge the recommendation to remove all polyps for histological analysis. Instead highly skilled endoscopists could interrogate polyps with narrow band imaging and high definition white light endoscopy with images saved, and patients put in active surveillance rather than performing a polypectomy with all its associated morbidity.

0233 - The US PROSPR Research Network: a Platform for Studying Overdiagnosis in the Community Setting

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Objectives: The Population Based Research Optimizing Screening through Personalized Regimens (PROSPR) network, funded by the US National Cancer Institute (2011), examines the screening process (recruitment, screening, diagnosis, referral for treatment) for breast, cervical, and colorectal cancers. PROSPR is nearing the end of its initial 5-year funding period. An open competition funding announcement, under development, will continue funding for another 5 years and includes plans to add lung cancer screening-focused centers. For the next funding period, harms from overdiagnosis will be a focus of network activities. Ultimately, with 10 years of longitudinal data, PROSPR will provide a unique opportunity to examine overdiagnosis.

Method: The current network consists of 7 research centers based in 9 healthcare delivery systems, and a statistical coordinating center. Three research centers focus on breast cancer, 1 on cervical cancer only, and 3 on both cervical and colorectal cancer. All centers collect detailed data regarding the screening process and submit these data to a central data repository at the coordinating center. Data include factors that impact screening at the patient, provider, and health system levels, some potentially driving overdiagnosis. Multi-site research projects use PROSPR data to compare the screening process across the different healthcare settings.

Results: Central to PROSPR's mission is the notion that cancer screening in US community settings is suboptimal due to imperfect adherence, failure to perform appropriate follow-up diagnostic testing, and overtesting. Risk stratification to tailor screening based on underlying disease risk is also a focus, to minimize harms while maintaining benefits. Overdiagnosis depends upon screening modality, target disease, and patient comorbidity, and can be

minimized by careful choice of follow-up regimens. For example, lung nodules detected at CT screening may be followed with further imaging over short intervals and only biopsied if they grow, minimizing diagnosis of tumors with limited malignant potential.

Conclusions: The PROSPR network allows for the characterization of screening regimens that minimize the risk of overdiagnosis and overtreatment while maintaining the benefits, by monitoring screening practices as they occur in varied settings. Ultimately, PROSPR's goal is to identify interventions to improve the screening process. PROSPR currently includes data on more than 6 million individuals. Additional longitudinal follow-up of the PROSPR cohort will allow for an evaluation of longer-term effects of screening and surveillance over multiple rounds. Opportunities for researchers to engage and collaborate with the PROSPR network will be discussed.

0234 - Transparency of Outcome Reporting and Trial Registration of Randomized Controlled Trials of Non-Regulated Health Interventions

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Abstract: Prospectively registering randomized controlled trials (RCTs) is an integral part of proper trial conduct and is enforced for trials of regulated interventions including drugs, biologics and devices. However, the registration of trials of non-regulated interventions including diets, exercise, surgery and therapies has received less attention. Trial registration decreases misreporting of trial outcomes, which typically causes exaggerate treatment effects and ultimately leads to overdiagnosis and overtreatment. In the current preliminary study, we performed a search of RCTs of non-regulated interventions and reviewed (1) the proportion of registered RCTs (2) the rate of trial registration for journals with a registration policy compared to journals with no registration policy and (3) the adequacy of outcome registration. The search strategy included all journals listed in the 2014 Thomson Reuters Journal Science Citation Index - Expanded categories of Behavioral Sciences, Nursing, Nutrition & Dietetics, Psychology, Rehabilitation, and Surgery that published at least one article listed in PubMed from January 2014 through December 2015. We searched daily for RCTs of non-regulated interventions that appeared in PubMed from March 18 to April 14, 2016. Information on registration, outcome definition and journal registration requirement was extracted. These results are preliminary, as we expect to achieve a final sample of 500 eligible studies by June 18 2016. Between March 18 and April 14, 2016, we reviewed 806 abstracts and 210 full text articles that identified 131 eligible studies in 70 journals. Fifty-seven percent (75/131) of trials were registered, and 35% (26/75) of registered trials were registered prior to patient enrolment. In terms of journal registration policy, 43% (30/70) of journals require registration, and 21% (15/70) of journals require registration prior to patient enrolment. Seventy-seven percent (43/56) of RCTs published in a journal requiring trial registration were registered, compared to 43% (32/75) of RCTs published in a journal with no such requirement. Thirty percent (6/20) of RCTs published in a journal requiring trial registration prior to enrolment were registered prior to enrolment, compared to 14% (16/111) of RCTs published in a journal with no such requirement. Only 7% (5/75) of registered trials provided enough information in the registration for comparison with the published report. The rate of registration of RCTs of non-regulated interventions, the adequacy of outcome definition and the rate of registration among journals with a registration policy is less than ideal. Addressing these issues will guide health professionals in providing the appropriate diagnosis and treatment for their patients.

0235 - Chronic fatigue or myalgic encephalomyelitis - how disease labels affect perceived need for treatment.

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Objectives: Chronic fatigue syndrome is a medical condition characterized by persistent and extreme fatigue not relieved by rest. The medical community has discussed changing the name of the condition to myalgic encephalitis because of concerns about the stigmatizing effect of "chronic fatigue syndrome." In this study, our objective was to examine the effects of these disease labels and gender on perceptions about the condition.

Method: We conducted a randomized trial using a written survey of a hypothetical clinical vignette (2x2 factorial design) that described an individual with symptoms consistent with chronic fatigue syndrome. Participants were 307 adults recruited in outdoor public spaces in downtown Ann Arbor, MI, and Columbia, MO, USA. In a 2x2 factorial design, participants were randomized to one of four vignettes. The vignettes described either man or woman (factor 1) and the symptoms were ultimately diagnosed as either "chronic fatigue syndrome" or "myalgic encephalomyelitis" (factor 2). Between participant ANOVAs examined the effect of gender and disease label on the following outcomes measured on 0-5 scales: Perceived severity of the condition, perceived need for medications, perceived treatability of symptoms, and disease stigmas (e.g., symptoms caused by patient's emotional weakness, symptoms "all in individual's head", patient's control over symptoms).

Results: When the symptoms were diagnosed as "myalgic encephalomyelitis" (ME) participants perceived slightly greater need for medication (M=3.48, SD=1.18) than when the symptoms were diagnosed as "chronic fatigue" (CF) (M=3.18, SD=1.27; $F(1,305)=4.78, p=.03$). There was also a significant interaction between the type of label and gender of patient on the perception of the treatability of the disease ($F(1,300)=5.19, p=.02$). Specifically, for men, ME was believed to be more treatable than CF (Ms=3.91 vs. 3.75), while for women CF was believed to be more treatable

than ME ($M_s=3.68$ vs. 4.00). Participants believed that the patient was less sick when diagnosed with CF relative to ME, but this effect was marginal ($p=.06$). Participants generally did not endorse stigmatizing beliefs (e.g. few believed that the symptoms were "all in their head") and no effects emerged for any of the stigma outcomes (all $p_s>.09$).

Conclusions: When an individual's symptoms are labeled as myalgic encephalitis instead of chronic fatigue, participants were more likely to believe that it needs treatment. In addition, gender stereotypes appear to influence the perception of treatability, leading people to believe that "chronic fatigue syndrome" is more treatable for women but less treatable for men. Notably, participants showed few stigmatizing beliefs (e.g. they generally did not believe that the patient was responsible for their symptoms) and the label did not affect these outcomes.

0239 - IMPLEMENTACI3N DEL PROYECTO ESSENCIAL EN ATENCI3N PRIMARIA: UN PROYECTO MULTIDISCIPLINAR

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Abstract : Se presenta los resultados de un proyecto multidisciplinar a partir de un modelo de influencia para la gesti3n del cambio con l3deres cl3nicos para fomentar la implementaci3n del proyecto Essencial (iniciativa del Departament de Salut para identificar pr3ctica cl3nicas que no aportan valor cl3nico al paciente y establecer recomendaciones para evitarlas).

Objectives : El proyecto Essencial es una iniciativa del Departament de Salut de Catalunya que identifica pr3cticas cl3nicas que aportan poco valor cl3nico al paciente y promueve recomendaciones para evitarlas. En el territorio de la Direcci3 de Atenci3 Prim3ria de la Metropolitana Nord (DAP MN) se priorizaron 7 de estas recomendaciones para fomentar su implementaci3n desde la visi3n de un trabajo multidisciplinar. El objetivo del presente trabajo es evaluar el impacto de esta intervenci3n y proponer acciones de mejora para el a3o 2016.

Method : Estudio prospectivo evaluativo multic3ntrico antes - despu3s de enero a diciembre de 2015 en la DAP MN, 1.287.397 habitantes. Intervenci3n: a) aplicaci3n de un modelo de influencia para la gesti3n del cambio con la participaci3n de los l3deres cl3nicos. b) estrategias de comunicaci3n y cronograma de implementaci3n. c) monitorizaci3n de indicadores de seguimiento a trav3s de una base de datos ad hoc. Recomendaciones priorizadas: pruebas de imagen en lumbalgias; bisfosfonatos en mujeres postmenop3usicas con riesgo bajo de fractura; inhibidores de la bomba de protones (IBP) en pacientes polimedicados o mayores de 65 a3os sin factores de riesgo gastrointestinal; mamograf3a en mujeres menores de 50 a3os y sin riesgo adicional; ant3geno espec3fico de pr3stata (PSA) en el cribaje del c3ncer de pr3stata; antibi3ticos en otitis mediana aguda (OMA) en ni3os; estatinas en poblaci3n con riesgo coronario bajo o moderado. Variables: indicadores del Est3ndar de Calidad Asistencial (EQA) del Institut Catal3 de la Salut relacionados con estas recomendaciones.

Results : Resultados en % de pacientes en enero de 2015 vs diciembre de 2015:

Indicadores relacionados con el uso de medicamentos:

o % IBP inadecuados: 57,76% vs 56,3%.

o % bisfosfonatos inadecuados: 1,85% vs 1,63%

o % hipolipemiantes inadecuados: 7,75% vs 9,17%

o % antibi3ticos en OMA: 62,67% vs 65,47%.

Indicadores relacionados con pruebas diagn3sticas:

o % PSA incorrectos: 17,51% vs 14,88%

o % pruebas lumbalgia incorrectas: 77,9% vs 77,46% (resultado de setiembre 2015)

o % mamograf3as inadecuadas: 83,25% vs 90,38%

Conclusions : El impacto de la intervenci3n ha sido modesto ya que solamente se ha conseguido reducir la inadecuaci3n de los IBP y de los bisfosfonatos en mujeres postmenop3usicas. Referente a las pruebas diagn3sticas se ha mejorado la utilizaci3n del PSA y en menor grado las pruebas diagn3sticas en lumbalgia. No ha servido para mejorar la adecuaci3n de las estatinas, los antibi3ticos en OMA en pediatria y las mamograf3as. Para 2016 son necesarias intervenciones espec3ficas para mejorar los resultados de estos indicadores.

0241 - Quantifying overdiagnosis in serologic screening for genital herpes: barriers and future research needs

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Objectives: To estimate the minimal level of overdiagnosis involved with HSV-2 serologic screening, illustrate limitations of current research to accurately quantify overdiagnosis, and outline future study designs that can better measure overdiagnosis and "true sensitivity" (the ability of serologic tests to detect infection before it becomes clinically apparent). Although overdiagnosis is a recognized harm of cancer screening, few studies have addressed overdiagnosis in sexually transmitted infection (STI) screening. We consider genital herpes as an example since it is prevalent and can be asymptomatic, and some experts have advocated for screening using serologic tests to detect herpes simplex virus-2 (HSV-2) antibody.

Method: We searched PubMed/MEDLINE[®], the Cochrane Library, and EMBASE through April 30, 2015 for trials or observational studies that assessed the accuracy of HerpeSelect[®] HSV-2 compared with the gold standard Western blot (WB); we then calculated pooled sensitivities and specificities using a hierarchical summary receiver-operator curve analysis. We also identified prospective studies enrolling asymptomatic persons seropositive for HSV-2 that followed participants over time and reported the incidence of genital herpes symptoms. Using these data sources, we

estimate the potential overdiagnosis associated with serologic screening for HSV-2 and describe study designs that can improve the quantification of overdiagnosis in STI screening.

Results: Our pooled estimate (11 studies; N=7,510) of sensitivity for HerpeSelect® HSV-2 (manufacturer's cutpoint) was 99% (95% CI, 97- 100). Screening a population of 100,000 with a 16% prevalence of HSV-2 would result in 15,840 true positive and 12,600 false positive tests (positive predictive value = 56%). Since WB confirmatory test is not available in clinical practice, at least 44% of positives have been overdiagnosed. This does not account for the proportion of true positives that will never become clinically apparent. In prospective studies, 13- 84% of adults with asymptomatic HSV-2 infection detected via WB remain asymptomatic over 5 months follow-up.

Conclusions: Serologic screening for genital HSV-2 in populations with a prevalence of HSV-2 similar to that in the U.S. adult population has the potential to lead to substantial overdiagnosis. Current evidence cannot estimate the upper bound of overdiagnosis since no studies follow people over time to determine the proportion with true infection that never develop symptoms or transmit HSV-2 to a partner. Key features of study designs that would allow accurate estimates of overdiagnosis include post-screening follow-up for all participants (regardless of test results), accurate ascertainment of past and future symptoms, and serial testing to identify potential new (incident) infection over time.