

Rapid dissemination of H. pylori eradication for chronic gastritis among asymptomatic peopleChisato Hamashima*National Cancer Center, Tokyo, Japan*

Objectives: Gastric cancer has been a heavy burden in Eastern Asian countries. Helicobacter pylori infection has a central role in gastric cancer development, so eradication of this infection is expected to reduce gastric cancer development. In 2012, the Japanese government decided to introduce H. pylori eradication for chronic gastritis among asymptomatic people, including having this procedure covered by health insurance. However, since the approval was supported by congressional pressure, the standard evaluation of new techniques was skipped in this instance. The effects of dissemination of H. pylori eradication were investigated before and after the introduction H. pylori eradication in Japan.

Method: Since the total numbers of H. pylori cases eradicated is unclear in the national health insurance claims data, the prevalence of gastritis and total number of examinations for H. pylori infection per month were assessed as alternative indicators. H. pylori infection is usually examined by testing for breath urea, serum H. pylori antibody, and fecal H. pylori antigen. The prevalence of gastritis and duodenitis was compared among 2008, 2011, and 2014 based on national patient surveys. The trends of the numbers of above mentioned examinations per month were compared to national health insurance claims data.

Results: Prevalence of gastritis and duodenitis was similar between 2008 and 2011, that is, before the introduction of H. pylori eradication. However, a rapid increase in this prevalence was observed in individuals aged 45 to 64 years between 2011 and 2014. Notably, the frequency of examination for H. pylori infection approximately doubled after 2012. Rapid increase of all examinations was observed for all individuals aged 30 years and over, particularly among those aged 50-64 years.

Conclusions: These results suggested rapid dissemination of H. pylori eradication for chronic gastritis among asymptomatic people. H. pylori eradication has had a limited impact in reducing the incidence of gastric cancer. In addition, there are harms of H. pylori eradication including gastroesophageal reflux disease and antibiotics resistance. Although H. pylori eradication is not needed for all asymptomatic people, changes in health insurance coverage appear to have resulted overtreatment without consideration of possible harms.

The Increasing Incidence of Thyroid Cancer: A Pan-Canadian Analysis.Geoff Porter, Gina Lockwood, Rami Rahal, John Srigley, Corinne Daly, Heather Bryant*Canadian Partnership Against Cancer, Toronto, Ontario, Canada*

Objectives: An increased incidence of thyroid cancer has been reported in several countries within the developed world and has driven concerns regarding overdiagnosis and overtreatment. This study sought to describe the changing incidence of thyroid cancer in Canada, and examine the impact of specific demographic factors.

Method; All new cases of thyroid cancer (ICD-03 code=79.3) were identified from the Canadian Cancer Registry, from 1992-2013 inclusive. Age-standardized incidence rates (ASIR) were calculated using the direct method, with the 2011 Canadian population as the standard. Change in incidence was evaluated by (1) ASIR 2013:ASIR 1992 standard rate ratio (SRR); and (2) trends in ASIR over specific time periods identified using JoinPoint analyses, as expressed as annual percent change (APC). Specific demographic variables examined included patient residence (urban/rural), year of diagnosis, gender, geographic area in Canada (East/ Quebec/Ontario/Central/West), and specific city within the geographic area.

Results; ASIR rose from 4.9/100,000 in 1992 to 17.0/100,000 in 2013 (SRR=3.5; 95% CI:3.1-3.9); this increase was not associated with either gender or patient residence. The most marked increase in ASIR was seen in the middle (1998-2005) years (APC=9.4, 95% CI:7.6-11.3), compared to early (1992-1998) and later (2005-2013) years (APC=3.4, 95% CI:1.2-5.8; APC=5.3, 95% CI:4.4-6.1, respectively). Geographic differences in SSR were identified (East =4.1; Quebec=3.4; Ontario=4.3; Central=2.2; West =2.4). Specific cities and associated time points were identified as major drivers of the respective geographic areas' increase in incidence: St John's (2011)-East; Toronto (2001)-Ontario; Quebec City (2008)-Quebec; Calgary (2002)-West.

Conclusions; As in other countries, there has been a substantial increase in thyroid cancer incidence in Canada, likely contributing to significant overdiagnosis and overtreatment. Overall, this increase was most marked from 1998 to 2005, and least marked in central and western Canada. The increased incidence

associated with specific cities and time points suggests that local physician/institutional changes related to thyroid cancer diagnosis may be contributing to the overall increase in incidence, and warrants further investigation.

The excessive costs of routine medical tests when ordered by physicians who are higher (over) testers

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Objectives: To quantify the impact of the overuse of routine lab and imaging tests when ordered by higher use physicians.

Method: A retrospective population-based study using administrative health care data available at the Institute of Clinical Evaluative Sciences (Ontario, Canada) on the ordering of 23 routine laboratory and imaging tests between January 1, 2008 and December 31, 2012 by 6,849 Ontario family doctors on their 4.9 million rostered adult patients. Ontario has universal health care that covers the costs of all common lab and imaging tests. We measured age/sex standardized test utilization rates for tests (including for example Alkaline Phosphatase, Thyroid Stimulating Hormone, Glycolated Hemoglobin, chest x-ray, abdominal ultrasound, head CT) for the patients of each MD and calculated observed-to-expected (O/E) utilization ratios for each test for each MD. Physicians were divided into lower, typical and higher tester groups based on their combined O/E ratios for lab and for imaging tests. Typical testers were defined as having an O/E ratio of 0.75 -1.25 and higher testers >1.25. The overall costs of the 23 tests was calculated in \$ CAN and the excessive costs by the higher use physicians was determined.

Results: There was wide variation in the use of routine laboratory and imaging tests by Ontario physicians. 26% and 24% of physicians were deemed higher testers for lab and imaging tests respectively, while 41% and 38% were typical testers. The higher testers ordered on average 59% more lab and 80% more imaging tests than the typical testers and accounted for 44% of the total \$1.04 billion 5 year cost of the 23 selected tests alone. If the higher testers had been typical testers, the savings would have been in excess of \$183 million or on average \$45,000. - \$61,000. per physician.

Conclusions: The ordering of tests was adjusted for the age and sex of the patients in each physician's practice and although case mix (comorbidity) almost certainly explains some of the variations, the large differences reflect variation in physician behavior. A reduction in the overuse of routine lab and imaging tests would result in substantial savings for a health care system and reduce the potential for overdiagnosis

Overuse of contralateral prophylactic mastectomy: A growing concern in over-aggressive treatment of breast cancer patients.

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Objectives: Despite having no impact on survival and leading to medical and psychosocial harms, the incidence of contralateral prophylactic mastectomy (CPM) continues to rise internationally. The objectives of this study were to: 1) conduct a theory-informed assessment of the barriers and enablers to CPM use in women with breast cancer as perceived by healthcare professionals and patients; 2) develop and assess feasibility of a patient decision aid for CPM to be used in clinical care.

Method: Semi-structured interviews were conducted with 59 healthcare professionals (surgeons, medical and radiation oncologists, plastic surgeons, nurses) and 14 breast cancer survivors from across Canada to determine the barriers and enablers to CPM use. The interviews were informed and analyzed using the Theoretical Domains Framework. To address common barriers, a CPM decision aid was developed and assessed for feasibility with 40 healthcare professionals and 12 breast cancer survivors.

Results: Key barriers and enablers to CPM use identified by healthcare professionals included: lack of guidelines for CPM and need for updated literature on CPM use; limited patient education on CPM; offering CPM will reduce patient anxiety and fear; and difficulty convincing patients that CPM may not be appropriate for them. Key themes identified by breast cancer survivors were: anxiety and fear about cancer recurrence; CPM being a difficult decision; and need for decision guidance on CPM. Over half (54%) of feasibility study participants felt the decision aid had the right amount of information. Clarity of the

decision aid sections was high, ranging from 74% of participants perceiving the section on 'benefits and risks of each treatment option' as clear to 90% for the section on 'why discuss this treatment'. Almost half (40%) of the participants viewed the decision aid as fully balanced; the remaining felt it was slanted to no CPM (stated by 30%) or having CPM (stated by 30%). All participants stated that the decision aid would prepare them to make a decision on CPM; 72% felt it would prepare them "quite a bit or a great deal".

Conclusions: Multiple healthcare specialist and patient factors have been identified as determinants of CPM use. These formed the basis to develop a decision aid which was found to be acceptable and usable by a sample of healthcare professionals and breast cancer survivors from across Canada. Our next steps include revising the patient decision aid and evaluating its use in clinical practice.

Frequency of Pap testing in women aged 10-29 years in Alberta, Canada: A case of over screening?

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Background: Cervical cancer incidence has declined as a result of Papanicolaou (Pap) test use. The initial response in Canada was over-screening women who participated, starting in the teenage years. In Alberta, a shift towards later initiation of cervical cancer screening began in 2009 when the recommended age to start screening was changed to 21 years with a three-year interval. In Alberta, cervical cancer screening guidelines were updated in 2016, recommending to start cervical cancer screening at age 25 and three yearly thereafter. In Calgary and surrounding regions in Southern Alberta, Calgary Laboratory Services is a single laboratory that provides all cytopathology services, and cervical pathology specimen analysis, and has a consolidated database since 2010.

The objective of this study was to determine how cervical screening among 10-29-year-old women has changed since 2010 in Calgary, Canada.

Method: Data was extracted from the Laboratory Information System (LIS) for women 10 to 29 years living in Calgary, who underwent Pap testing, between 2010- 2015. We also obtained counts of endocervical curetting and LEEP/cone biopsies as a proxy measure for the number of colposcopies performed in women aged 10-29 years using the LIS data for 2010-2015. All PAP tests included in this study were performed as part of routine patient care. We analyzed percentage change in Pap test, endocervical curetting and cervical biopsy rates stratified by age for 10-29-year-old women of Calgary.

Results: Annual Pap test rates decreased from 0.06% in 2010 to 0.01% in 2015 for 10-14 year olds, 11.45% to 3.52% for those aged 15-19 years, 48.5% to 39.2% for those aged 20-24 years and 59.2% to 50% for those aged 25-29 years old. There was a 100% reduction among 16-20-year-old women in LEEP and cone biopsies followed by 83% reduction LEEP and cone biopsies in 21-year-old women and 63% reduction in 22-year-old women. For women aged 22-28 years' rates of LEEP and cone biopsies ranged from 6% to 43%. There was no change in LEEP and cone biopsies rates among 29-year-old women over the years.

Conclusions: The analysis of six years (2010-2015) shows that Pap testing practices in young women are decreasing and slowly moving towards screening guideline recommendations which consequently reduce harms. More effort is needed to promote acceptance of evidence-based recommendations to prevent avoidable harms and maximize benefits of cervical cancer screening.

Pro Pricare - Preventing Overdiagnosis in Primary Care. A German research network to identify and reduce medical overuse

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Objectives: Medical overuse is not only a waste of limited resources, but does direct harm to patients. In Germany, in light of the current shortage of young primary care physicians, waste and inefficiency become even more detrimental to the health care system. Research on medical overuse is still fragmented and in its beginnings. Operationalization of the term 'medical overuse' is difficult as its drivers and outcomes frequently are not purely medical but have strong cultural, ethical and also economic aspects. To address these challenges, we aimed to establish a research network consisting of interdisciplinary scientists, practicing physicians and health insurance companies.

Method: PRO PRICARE is the acronym for Preventing Overdiagnosis in Primary Care. It is a network consisting of seven academic institutions of the University Erlangen-Nürnberg, a practice research network "Forschungspraxen Franken" consisting of GPs and specialists in rural and urban areas of Northern Bavaria, a

group of health insurance companies, and the Bavarian Association of Statutory Health Insurance Physicians (KVB). Scientific coordination is located at the Institute of General Practice at the University of Erlangen. The network is funded by a grant of the German Ministry of Education and Research with 2.1 million Euros. It is planned to continue Pro Pricare beyond the period of government funding. In February 2017, work has begun. Within the first three years, the following projects will be conducted: (1) development of an ICF core set to measure participation and activation in the old and very old, as concentrating on functioning instead of disease might reduce unnecessary medicine, (2) evaluation of a patient-centered communication training intervention to reduce prescribing and referrals in a self-limited disease (here: acute low back pain) and (3) understanding of the drivers and current clinical pathways of patients with thyroid nodules in order to learn about frequently detrimental cascades of diagnostic and therapeutic processes.

Results: At the conference, we want to present the structure of our network and the study protocols of the three projects. With the topic of prevention of unnecessary medicine we could win a competition for a major research grant. We would like to share our experiences with the audience.

Influencing Health Policy through Public Deliberation: Lessons learned from two decades of Citizens'/Community Juries

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Objectives: Citizens'/community juries [CJs] engage members of the public in policy decision-making processes. CJs can be employed to develop policy responses to overdiagnosis because solutions to its occurrence are likely to require the consideration of both scientific evidence and community values. Based on the principles of deliberative democracy, recent reviews indicate that findings from CJs have successfully been used to influence health policy decision-making. Despite this evidence of success, there appears to be a gap between the goals of health researchers who organize CJs and the needs of policy actors and decision makers.

Method: Based on a synthesis of our recent research on CJ methods and uses and our experiences working with this approach to public engagement in different types of research and policy environments, in this presentation we aim to describe a concise overview for overdiagnosis researchers and health policymakers of the central issues that need to be addressed when convening a CJ. Drawing on insights from deliberative theory and critical policy studies, we provide a basic guide or heuristic for those considering utilizing a CJ to develop policy-relevant evidence.

Results: Policy processes are seldom linear and evidence is rarely perceived as being neutral. In order to maximize the likelihood of policy impact our review highlights that CJ sponsors and organizers need to carefully consider the following four questions:

- Who is the intended audience for the CJ and how will they interpret the outcome?
- Where in the policy process can a CJ contribute to solving a health policy problem?
- What sort of policy problems / questions can be addressed by a jury?
- Which type of public can speak authoritatively about the problem?

Conclusions: 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. We draw lessons for applying CJs to health policy-dilemmas and propose that deliberative methods can promote greater public accountability and transparency in screening policy decisions, encourage consumer engagement, and ensure programs reflect the values of the target population. Our intention is to stimulate further discussion on the methodological and political dimensions that need to be considered in deciding whether a CJ is an appropriate approach for informing advocacy about overdiagnosis or a policy decision-making process.

Motivating factors influencing women on performing mammograms for breast cancer screening

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Objectives: Systematic screening of breast cancer using mammography carries the risks of false positives and overdiagnosis. Some scientific societies recommend the use of an individual approach by providing information about screening and engaging patients in their decision through a shared decision making process. The objective of this study is to understand women's motivations and explore their preferences regarding mammography screening tests.

Method: We conducted a qualitative research study in Buenos Aires in 2016. We performed semi-structured individual interviews to 16 middle-class literate women (40 to 75 year-old) from a private healthcare system. Convenience sampling was used and data analysis was based on Grounded Theory methodology.

Results: We found the following semantic constructions: 1) the mammography procedure itself produces negative feelings in women, nevertheless many consider it necessary to detect anomalies on time; 2) even though the doctor is regarded as a knowledgeable authority, the patients seem interested in engaging a dialogue that takes into account their individuality; 3) mammography is positively valued as a prevention tool, however some women do not consider it harmless and question their limitations; 4) the participation in screening is conceived as a duty towards self care, sometimes motivated by fear or by the need of reassurance or tranquility.

Conclusions: In this population mammography is a highly regarded procedure with a great impact on their perception of health. Despite the discomfort experienced during the procedure it is perceived as a duty of self-care. Some women question this practice and point out the need to strengthen the individual relationship with the doctor. The incorporation of this views could aid in the decision making process.

Do methods of evidence review affect policy-makers decisions of whether to implement new screening programmes?

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Objectives: Policy-making organisations decide whether to implement new national screening programmes using expert panels and/or narrative, rapid or systematic reviews. We investigated whether the methods of conducting the review affected the final decision made.

Method: We systematically reviewed all national policy making decisions from any country about whether to add or remove a condition from the newborn blood spot test, with no date limits. Two reviewers independently extracted data. For each condition we calculated the odds ratio of recommending screening by whether or not a systematic review was conducted, then meta-analysed the odds ratios across all conditions. We also scored the evidence review from 0 to 5 for the methods of evaluating overdiagnosis, test accuracy, and the benefits of early detection over late, and evaluated the effect of this score on decisions made. A score of zero indicated the issue was not mentioned in any documentation, and 5 designated use of a full systematic review with formal quality appraisal of included studies.

Results; The meta-analysis included 22 conditions, each with between 2 and 8 reviews. The odds of recommending screening were reduced when a systematic review was included in the evaluation process. Increased evaluation of potential overdiagnosis was associated with a reduction in the probability of recommending screening. However there was no significant association between evaluating test accuracy or the benefits of early treatment and the probability of recommending screening.

Conclusions: We have found an association between the review methods used, and the final decision of whether to implement screening. Using systematic review methods and considering overdiagnosis may reduce the probability of recommending screening programmes. However, the association may simply be explained by more conservative decision-making bodies using more systematic reviews.

Demonstrating the value of direct access to musculoskeletal care in the UK private setting.

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Objectives: Direct access is based on the idea that patients access relevant care from experts without first having to get a referral from a general practitioner. For patients this means quicker access to treatment, less appointments and possibly less invasive treatment pathways. In late 2012, Bupa introduced direct access for members with musculoskeletal conditions to improve the member journey and offer treatment options as an alternative to seeing a GP. This talk demonstrates the value and learnings of implementing such service in the UK private setting.

The impact of direct access to musculoskeletal care was assessed by answering the following questions:

- 1. Are direct access pathways financially better value than "traditional" pathways?
- 2. Does direct access result in members accessing treatment they would not otherwise?
- 3. What is the net effect in terms of costs or outcomes (e.g. reduced surgeries)?
- 4. Would members recommend direct access pathway over the traditional GP referral pathway?

Method: Analysis was conducted to assess if direct access pathways are more cost effective than "traditional" GP referral pathways. Propensity score modelling and matching was used to find a comparable control group for just over 30,000 patients who used direct access. In the final step 12-month pathway costs from referral point onwards was compared for the matched groups.

The impact related to ease of access on the treatment incidence was also investigated. Two groups of corporate clients were defined based on their direct access uptake rates of either below or above 10%.

Then for each group, a treatment incidence trend was fitted on the historical data and projected out post implementation. Increase in incidence for the above 10% group was measured using the difference between the projected and actual incidence for the below 10% group as a baseline. The number of claimants due to ease of access was calculated as deviance from this baseline. Finally the net impact was estimated by accounting for the impact due to ease of access.

Results: Patients who directly accessed musculoskeletal treatment were shown to have 25% lower pathway cost than patients that followed a GP referral pathway. However, almost 1 in 5 patients who used direct access were deemed to have done so because of ease of access (i.e. they otherwise would not have accessed treatment).

Conclusions; Overall the direct access pathway still provides positive benefits due to lower pathway costs (16% reduction in musculoskeletal cost). Direct access patients that took part in Bupa's NPS survey following their treatment were very satisfied with an NPS score of +63.

Experience with reducing the volume of knee arthroscopies in patients with degenerative meniscal tears and osteoarthritis.

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Objectives: Arthroscopy of the knee is one of the most commonly performed orthopedic procedures worldwide. Data from several national health atlases have demonstrated significant variation in utilization rates per capita for knee arthroscopies (resection of degenerative meniscal tears and debridement of osteoarthritis) between and within different countries, which hardly can be attributed to variation in disease burden. The aim of the study is to share our experience with measures implemented to reduce the volume of unnecessary arthroscopic procedures in patients with osteoarthritis.

Method: The number of these procedures in the public health system in Norway performed between 2011 and 2013 revealed a variation between hospitals with defined catchment areas between 119 and 491 procedures per 100 000 inhabitants. Further analyses showed that 70% of the patients undergoing knee arthroscopies were above 50 years of age. According to the literature meniscal tears in this age group are most often caused by degenerative disease, not by acute injuries, and should be treated conservatively with weight reduction and physical therapy.

The South-Eastern Norway Regional Health Authority provides special health care for a population of 2,8 mill inhabitants through 7 hospital areas covering catchment areas between 300 000 - 500 000 inhabitants. Based on observed variation in the utilization rates for arthroscopic knee surgery following measures were implemented:

- 1. Based on recommendations from the orthopedic advisory board new guidelines for arthroscopic knee surgery were introduced: 80% of the patients undergoing arthroscopic knee surgery should be under the age of 50.
- 2. The "ActiveA program" was introduced based on the knowledge that only a minority of all patients who receive surgery because of osteoarthritis have seen a physiotherapist prior to surgery. The aim of ActiveA was to implement international guidelines for the treatment of patients with osteoarthritis of the hip and/or knee in outpatient physiotherapy practice. The guidelines emphasize information, exercise and weight reduction (if necessary) as the main treatment modalities.

Results: Four months after implementation of the above-mentioned measures a 34 % decrease in the number of knee arthroscopies performed in the regional trust was observed.

Conclusions: The recommendation that 80% of the patients undergoing arthroscopic knee surgery should be under the age of 50 cannot be considered as evidence based. However, our experience shows that this pragmatic approach combined with implementing a structured educational program directed towards physiotherapist in the primary health care service to secure that patients with osteoarthritis are offered evidence-based educational and exercise program was effective in reducing the number of unnecessary arthroscopic procedures. There are still too many patients undergoing surgical treatment for

degenerative meniscal tears and the next step will be to assure evidence based indication for performing MR examinations in order to avoid surgical overtreatment.

System change to mitigate overdiagnosis and overtreatment: How can we ensure 'just enough medicine'?

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Objectives: While undertreatment has received significant attention across policy, practice and quality improvement, overdiagnosis and overtreatment have received far less. Strategies to mitigate overdiagnosis and overtreatment are emerging but are often focused at the level of interventions to support individual patients and/or clinicians (such as decision aids) or take the form of awareness-raising initiatives (such as 'Too Much Medicine' and 'Choosing Wisely'). While important, significant traction on overdiagnosis and overtreatment is unlikely while the wider system is aligned to doing more rather than less, or at least makes doing less challenging.

Method: Drawing on research funded through a Health Foundation Improvement Science Fellowship, this presentation examines the potential for system change to mitigate overdiagnosis and overtreatment and facilitate delivery of 'just enough medicine'. It reports a critical interpretive synthesis examining system level influences on overdiagnosis and overtreatment. Conducted in line with the 'author-based' approach that draws on long training and scholarly sensibility and skill to determine the relevance and quality of material, this approach critically analyses and builds theory from the literature in order to advance a narrative argument.

Results: While overdiagnosis might be constructed as a problem best addressed by improving the patient-professional relationship, shared decision-making is not a panacea. Professionals lack confidence and guidance on how to do it well; feel uncertain of the evidence about harms and benefits; and, importantly, lack external triggers to prompt, encourage, and validate such activity. It is perhaps not surprising that many proceed to more tests, diagnoses and treatments, many of which will be unnecessary and potentially harmful. This is further compounded by the way in which many attempts to improve care quality (e.g. disease registers, guidelines, audits) tend to encourage doing more rather than less. There is concern, for example, that guidelines intended to reduce variation and improve care have instead encouraged the neglect of respect for patients' preferences. Mechanisms for 'opting out' are not simple; removing patients from pay-for-performance schemes is complex, and how to account within audits for those declining tests or treatments (rather than not being offered them) is not clear.

Conclusions: Overdiagnosis must be understood as a consequence of the organisational, financial and cultural attributes of the system, not just individual interactions. While there is growing consensus that too much medicine is damaging, significant uncertainties remain about where and how the lines between appropriate and inappropriate care should be drawn and how the system can effectively be recalibrated to better deliver 'just enough medicine'.

Calcium, magnesium and phosphorus dosage: Impacts and relevance in the Emergency Department

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Objectives: With rising health care costs impairing access to care, the judicious use of diagnostic tests has become a critical issue for most jurisdictions. Among tests regularly performed in the emergency department (ED), calcium (Ca), magnesium (Mg) and phosphorus (P) laboratory testing represents an annual expenditure of more than \$ 4 million for the Québec health care system. We then sought to determine the best indications for ordering these serum levels by identifying patient risk factors predicting abnormal results.

Method: We are conducting a retrospective cohort study in two academic hospitals of Quebec City, one providing acute general care and the other providing specialized care to oncologic and nephrologic patients. We included 1000 patients who had serum Ca and/or Mg and/or P levels prescribed by an emergency physician between January 1st 2016 and May 1st 2016. We are collecting demographic (e.g. age) and clinical (e.g. comorbidities) characteristics identified from literature review as potential explanatory variables of an abnormal serum level. Predictive models of a positive test result will be derived from logistic regressions.

Results: We have evaluated 143 patients. ED prevalence rates of hypo- and hyper-calcemia (10.1% and 4.3%), hypo- and hyper-magnesemia (13.0% and 7.2%), hypo- and hyper-phosphatemia (9.5% and 13.9%) were similar to those reported in literature. Preliminary bivariate analysis ($p < 0.05$) have shown that, for patients who had serum Ca/Mg/P levels prescribed, one in four complained of weakness and one in five presented on physical examination an abnormal mental status. Acute and chronic renal failure appears to be a strong predictor of anomalies of any of those electrolytes. Neoplasia, metastasis, hallucinations, bone pain and confusion are more specifically associated with hypercalcemia.

Conclusions: Our bivariate analyses have identified potential risk factors of abnormal Ca/Mg/P results. Multivariate logistic regressions will be conducted on the complete planned cohort to further test these preliminary results.

A review of medications to be excluded from care. The experience of the magazine Prescrire in France.

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Objectives: One of the main objectives of the journal Prescrire is to provide healthcare professionals, and thus patients, with the information about new drugs they need for their practice, clear, synthetic, reliable and up-to-date, independent of commercial and corporatist conflicts of interest.

Method: Prescrire analyzes all the new medicines authorized in France (most often within the framework of a European marketing authorization) as well as new indications of existing medicines. We describe the approach of this rigorous evaluation: precise determination of the reference treatment in the indication, determination of the most relevant clinical evaluation criteria for patients, prioritization of efficacy data, taking into account adverse effects and modalities Treatment practices. At the end of this analysis, it is possible to determine whether or not the new drug provides therapeutic progress.

Results: For some drugs, the benefit / risk balance is clearly unfavorable in all permitted uses. Clearly, these drugs should not be used and should be withdrawn from the market. For the fifth consecutive year, in 2017, Prescrire published a review of the drugs to be discarded for better treatment. This balance includes 91 drugs that are more dangerous than useful. It is available in French and English on the website www.prescrire.org. These drugs belong practically to all areas of therapeutics.

Conclusions: The 2016 edition has been downloaded 180,000 times, which shows a real impact. In a complementary communication, we present an assessment of the decisions of the authorities and the companies putting patients in France in the shelter of these drugs

Prenatal ultrasound in normal pregnancy: the bridge between health technology assessment guidance and local medical perspective

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Objectives: Debate remains around the third-trimester ultrasonography in normal pregnancy whereas the number of routine exams has significantly increased in the last two decades. This health technology assessment project aimed to review best practices regarding optimal use of ultrasound during normal pregnancy.

Method: Literature search was conducted in several databases and grey literature between 2006 and 2016 to retrieve information on routine ultrasound examination in pregnancy including medical indications and optimal time to perform the exam. Hospital databases were also retrieved to estimate the number of ultrasounds by trimester in normal pregnancy. Surveys were carried on to collect data on the opinions and perceptions of pregnant women, obstetricians/gynecologists (O/G) and birthing family physicians in our institution about optimal use of ultrasound in pregnancy. Evidence-based review and local perspective was shared with an interdisciplinary group of local medical experts and hospital managers.

Results: According to the literature, ultrasonography at the first and second trimester should be systematically performed in normal pregnancy. However, few evidence suggest that routine third-trimester ultrasonography during normal pregnancy confer benefit on mother or baby. Among 20 clinical practice guidelines, two recommend systematic ultrasound in the third trimester in order to assess fetal growth and wellbeing, fetal malformations, fetal presentation, and placental position. The mean number of ultrasonography (n=1004) in normal pregnancy was 3.6 (1-9). 44 % (121/275) of women had at least 4 ultrasounds in the course of normal pregnancy and 62 % (138/221) of these exams were performed in the third trimester. Pregnant women participating to the survey reported that the number of ultrasonography undergone during pregnancy is adequate and should not be reduced. O/G (n=20) and family physician (n=37) agreed that ultrasound at the first and second trimesters have to be systematically performed. However, discrepancies were found in the proportion of the O/G (90%) and family physicians (22%) who asserted that third-trimester ultrasound should be performed systematically in normal pregnancy.

Conclusions: Routine third-trimester ultrasonography in the course of normal pregnancy is not well supported in the literature. Among woman who had 4 and more ultrasounds in normal pregnancy, we found a high proportion of them performed in the third-trimester. Strategies to implement recommendation to discontinue routine third-trimester use of ultrasonography in normal pregnancy is under discussion in our hospital in order to balance appropriateness and safety of care. Perceptions and beliefs about ultrasound in physicians and pregnant women should be addressed in knowledge transfer activities.

Facebook pharmaceutical advertising to mothers and the risk of acetaminophen overdose in small children

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Context: In the USA, analgesics account for the first category of medications involved with non-hospital medication errors implicating children below 6 years of age. The situation in Canada is also worrisome. In September 2016, Health Canada issued a new acetaminophen-labelling standard in order to reduce the risk of liver failure caused by unintentional overdose.

Objective: Aside from this information-based initiative, the objective of the research is to understand what, in the popular media discourses, encourages parents to be so quick to give fever-reducers and painkillers to small children.

Method: This presentation focuses on the results of a mixed-method study looking at the pharmaceutical corporate discourse shared by parents in social media as it relates to the routine use of analgesics for children. The corpus comprises the contents of 185 posts published on a Facebook page targeting mothers and dedicated to the promotion of a popular acetaminophen-based medication for children in Canada over a two-year period.

Results: The study not only demonstrates that very little information is given on safety, but also shows how women's labour of care is effaced by the celebration of the curative effects of medication.

Conclusion: I conclude by discussing the importance of thwarting marketing efforts to transform mothers into brand ambassadors, and to ensure that pharmaceutical interventions are based on the best medical evidence, weighing effectiveness against risk for adverse effects.

New doctors' perceptions of inappropriate investigations and treatment for dying patients - a qualitative medical education study of Scottish doctors

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Objectives: This study aimed to investigate experiences of medical trainees when learning to care for patients at the transition towards the dying phase. It sought to fulfil the following objectives:

- To explore how trainee doctors perceive learning:
 - to recognise when a patient will not be cured;
- to make decisions about ceilings of treatment and ceilings of investigation;
- to negotiate the balance between management with curative intent and palliative treatments.
- To investigate recently graduated doctors' perceptions of disparities between their undergraduate preparation for practice and their postgraduate clinical experiences of patients approaching the end of life.

Method: Newly graduated doctors in Scotland undertake rotations across acute hospital specialties during a two-year Foundation programme, before entering specialty training. Foundation grade doctors in South East Scotland were invited via e-mail to participate in one-on-one, confidential, semi-structured interviews about their experiences of learning to treat patients approaching the end of life. This method generates rich, candid data, and allows inquiry to be tailored to the individual's experiences. Interviews were recorded, transcribed verbatim and the data underwent thematic analysis. Participants have been anonymised through use of pseudonyms.

Results: All participants had cared for patients who died. Despite undergraduate teaching on conservative approaches in hospices, preparation for this care in acute settings was perceived as inadequate. Challenges included insufficient confidence in decisions to cease investigations and treatment; difficulties determining whether to act when investigations reveal new findings in dying patients. In some cases, trainee doctors considered management inappropriately invasive for deteriorating patients, but felt compelled to continue. Perceptions emerged that dying was diagnosed too late in hospital. Continuing futile investigations and treatment may be misleading to the patient and their relatives, and distressing for the doctors involved.

Conclusions: Newly qualified doctors play a significant role in care for patients approaching the end of life, but are not prepared for this. Negotiating risks and benefits for a patient's length and quality of life is difficult for trainee doctors, and perceived over-investigation and invasive treatment of dying patients are considered negatively. Further research will gather data from senior doctors responsible for training, on their perceptions of these issues. This will aim to gain a more rounded picture of the barriers and facilitators for training to care of patients approaching the end of life, and reach substantial recommendations for medical education.

The extent, regional variation and impact of gynecologist payment models in unwarranted pelvic examinations: A nationwide cross sectional study

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Objectives: To quantify the extent of unwarranted pelvic examinations within specialized health care in Norway. 2. To assess if the use of these services differ (a) across hospital referral regions, and (b) with gynecologists' payment models.

Design: Nationwide cross sectional study. Setting: The Norwegian Patient Registry contains data on every appointment within publicly funded specialized health care in Norway. Participants: All women aged 18 years and older in Norway in the years 2013-15 (2 016 614). Main outcome measures: 1. The national number of appointments per 1000 women with a primary diagnosis of "Encounter for gynecological examination without complaint, suspected or reported diagnosis," standardized for age. 2. The number of these appointments per 1000 women in the 21 different hospital referral regions of Norway, standardized for age. 3. The use of colposcopy and ultrasound in routine pelvic examinations, provided by gynecologists with fixed salaries and gynecologists paid by a fee-for-service model, respectively.

Results: Annually 22 out of every 1000 adult women in Norway had a routine pelvic examination, with variation across regions from 7 to 43 per 1000. Gynecologists with fixed salaries performed colposcopy in 1.4 % (654) and ultrasound in 75.9 % (35 819) of appointments. Corresponding numbers for gynecologists paid by a fee-for-service model were 50.4 % (44 492) and 95.8 % (84 506), respectively.

Conclusions: Annually 2.2 % of adult women received a pelvic examination that is recommended against. The variation across regions is extensive. Fee-for-service payments for gynecologists drive the use of colposcopy and ultrasound in pelvic examinations of asymptomatic women.

Measuring the frequency and variation of unnecessary care across Canada.

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Objectives: To better understand the prevalence of unnecessary health care in Canada, the Canadian Institute for Health Information (CIHI) partnered with Choosing Wisely Canada (CWC) to estimate the use of diagnostic imaging for lower back pain in the absence of red flags, preoperative cardiac testing for low-risk surgical procedures, and screening mammography among average-risk women aged 40-49 years.

Method: Claims-based retrospective cohort studies were conducted using administrative health care data collected between fiscal years 2011/12 and 2012/13 to identify rates of a) diagnostic imaging (computed tomography [CT], magnetic resonance imaging [MRI] or X-ray) among Albertan patients with a preceding visit for lower back pain and b) cardiac tests (electrocardiogram, transthoracic echocardiogram, stress test, or chest X-ray) prior to low-risk surgical procedures in Alberta, Saskatchewan, and Ontario. Cross-sectional analysis of the 2012 Canadian Community Health Survey examined the proportion of female respondents aged 40-49 that reported having a mammogram for the sole indication(s) of age and/or routine screening. Variation in unnecessary care was minimally explored by province or health region. Regression-based analyses were performed to identify potential factors associated with unnecessary care.

Results: Unnecessary care was found to be prevalent across Canada: 30.7% of Albertan patients had a diagnostic scan within six months of their initial visit for lower back pain; a cardiac test preceded 17.9% to 35.5% of low-risk surgical procedures across Alberta, Saskatchewan, and Ontario; and 22.2% of Canadian women aged 40-49 had a screening mammogram in the past two years, despite being average-risk. Several factors - including older age, increased income, and rurality - were significantly associated with increased odds of having an unnecessary test across two or more of the recommendations.

Conclusions: Regardless of jurisdiction, the use of potentially unnecessary care appears to be prevalent in Canada. The identification of system, provider, and patient-level factors associated with unnecessary care can inform interventions to improve resource stewardship. Furthermore, this study provides methods to facilitate future measurement efforts that may incorporate additional jurisdictions.

Measuring overuse of Head CTs for Pediatric mTBI patients in two Canadian Emergency Departments (phase I of the Wiki Head CT Patient Decision Aid Study)

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Background: Head CTs are currently overused in North America for pediatric minor traumatic brain injury (mTBI). This overuse is significant in pediatric patients where the lifetime risk of developing a cancer from a head CT is 1:1000. Considering this risk and the cost associated with it, decisions to perform a head CT must be taken with precaution, weighing the pros and cons. Considering that the vast majority of mTBI victims will not experience intracranial hemorrhage, physicians should not order head CTs for pediatric mTBI unless a validated decision rule (e.g. PECARN) indicates otherwise.

Objectives: This study intends to measure the observance rate of the PECARN rule for head CT for pediatric mTBI in two trauma centers in Quebec: a level I pediatric trauma hospital (CHU Ste-Justine) and a level II trauma center receiving pediatric and adult trauma patients (Hôtel-Dieu de Lévis). The finality of this project aims at determining if head CT is overused, and if there is a difference between a specialized level I pediatric trauma and a level II general trauma center.

This study is part of a larger research project aiming at testing the implementation of a decision aid to support shared decision making (SDM) among patients and clinicians about head CTs in mTBI patients. Several studies have demonstrated that SDM can decrease overuse of resources.

Method: First, two reviewers will identify all cases of pediatric mTBI (0-18 years) having consulted the Emergency Departments during the year 2016. Using each hospital's information system, they will review all the charts with a list of predetermined diagnoses compatible with mTBI. Among the selected charts to review, they will randomly select a number of records using a random number generator to insure a 95% interval of confidence. Each reviewer will then adjudicate if each case respected the rule or not.

Results: Based on current North American practice patterns, we expect (results are still being computed) to find overuse in head CT ordering with possibly an higher rate in the level II general trauma center compared to the level I pediatric trauma center.

Conclusions: The results of this project will be important to measure the local overuse of head CT for pediatric mTBI in two trauma centers in Quebec. They will serve as the baseline measure for a future quality improvement intervention to decrease overuse of head CTs for pediatric mTBI.

Consequences of prostate cancer screening in asymptomatic men enrolled in a private Health Insurance Plan In Buenos Aires, Argentina

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Objectives: The objective of this study is to describe the consequences of inadequate prostate cancer screening in men enrolled in a private Health Insurance Plan in Buenos Aires, Argentina, from 2013 up to December 2016; and to gather information to develop a tool that facilitates shared decision making process in this population.

Method: A retrospective cohort was defined: men affiliates of Hospital Italiano de Buenos Aires's Health Plan between 40 and 75 years with no prostatic symptoms (it was determined through exclusion of health problems recorded in medical charts). The information was obtained from Electronic Medical Record and different variables were analyzed: age, PSA determination date and result. Medical charts will be reviewed to determine: tests realized as a consequence of PSA test, complications after biopsy, hospitalization and unscheduled medical attention within thirty days after biopsy, new diagnosis of prostate cancer and treatment.

Results: From a total of 30372 men between 40 to 75 years old enrolled in a private Health Insurance Plan, there were identified 6636 asymptomatic men with a PSA determination during 2013; after the initial medical charts reviewed were be excluded 21 patients. The mean age was 60.7 SD 8.5. Of them, 6065 (91.7%) had PSA levels less than 4 mg/dl; 491 (7.4%) between 4 and 10 mg/dl; and 59 (0.9%) more than 10 mg/dl. It was carried out 2439 prostate ultrasound, and 225 prostate biopsy. 5 patients had complications after biopsy.

It was performed 26 new diagnosis of prostate cancer.

Conclusions: The results are in progress to determine all the consequences of inappropriate screening. At this moment, about 15% of the medical charts have been reviewed. We commit to review the rest of them by the date of the Conference.

Nurses' perceptions on the overuse of health services in health systems: A qualitative studyMoriah Ellen^{1,2}, Saritte Perlman¹¹Jerusalem College of Technology, Jerusalem, Israel, ²McMaster University, Ontario, Canada, ³University of Toronto, Ontario, Canada

Objectives: The overuse of health services is a health-system challenge that needs to be addressed. Overuse of health services can cause physical, psychological and financial harm. Health systems are beginning to explore possibilities and interventions for reducing overuse. The topic has not yet been researched broadly and comprehensively in Israel, or among a population of nurses, the largest group of healthcare providers. The objective of this study was to examine whether nurses in Israel think that there is overuse of health services, reasons behind the issue, and ways to reduce the overuse.

Method: The study is a qualitative study using semi-structured interviews. A convenience sample of community care nurses from across Israel was interviewed. Interviews focused on common areas of overuse, outcomes of overuse, causes and potential ways to address the issue. Interviews were recorded, transcribed, and analyzed thematically.

Results: Overuse of antibiotics, imaging, blood tests and prenatal surveillance were cited as main areas of health service overuse. Participants stated that negative outcomes of overuse can be seen at patient, health system and population levels. Factors causing overuse included patient satisfaction, physician fears and insecurities. Potential interventions included improving physicians' diagnostic confidence, increasing appointment times, providing patients with more treatment information and implementing a unified computerized system across medical institutions.

Conclusions: Nurses mentioned physicians and patients as main factors in overuse, hence those populations should be researched further. The health system was identified as the responsible party to address the issue. Health system leaders must consider potential barriers, and investigate interventions that match current culture and context within the health system.

Factors associated with the initiation of testosterone replacement therapy among men participating in the 45 and Up studyWendy Cheng¹, Deborah Bateson¹, Kristine Concepcion¹, Mary Stewart¹, Kevin McGeechan^{1,2}¹Family Planning NSW, Sydney, NSW, Australia, ²University of Sydney, NSW, Australia

Objectives: Testosterone replacement therapy (TRT) is clinically indicated for men with pathological androgen deficiency (PAD) but there is little evidence from randomized controlled trials to support the use of TRT among men with "low testosterone" who do not have PAD. Despite this there have been large increases in testosterone prescribing in the last decade. We sought to identify factors associated with the initiation of TRT among men and to determine whether the initiation met current guidelines for TRT prescribing.

Method: Data were obtained from the 45 and Up Study, an ongoing cohort study involving 10% of the New South Wales, Australia, population aged 45 and over. The baseline survey data were collected in 2006 to 2009. These data have been linked to administrative datasets (provided by the Department of Human Services) on prescriptions filled (Pharmaceutical Benefits Scheme (PBS)), and visits to clinicians and tests ordered (Medicare Benefits Schemes (MBS)). We identified men who at the time of the baseline survey did not have a prescription for TRT in the 2 years before the survey. We then examined the factors associated with initiation of TRT in the two years following the survey and whether initiation was consistent with contemporaneous guidelines.

Results: We included 105,429 men in the analysis. In the two years following the survey, 2.9 per 1000 men (95% CI 2.6 to 3.2) had a prescription filled for TRT. Men who rated their own health as poor (OR=8.50, 95% CI: 3.44-21.0), with a pre-existing mental health issue (OR=3.14, 95% CI: 2.22-4.45), with pre-existing cardiovascular issue (OR=1.58, 95% CI: 1.06-2.36), lived in major cities (OR=2.26, 95% CI: 1.14-4.49) or aged between 55 to 64 years old (OR=1.54, 95% CI: 1.02-2.33) had greater odds of having TRT initiated. Only 41% men who had TRT initiated had their testosterone level measured within 6 months before initiation and 38% had a record of a visit to a specialist.

Conclusions: The prescribing of testosterone continues to increase and these increases are unlikely to be explained by the greater identification of men with PAD. The identified factors associated with initiation of

TRT, and the low proportion of men initiated on TRT who had their testosterone level measured within 6 months, suggests that much of the initiation of TRT is not according to guidelines. These results will support the targeted education of older men, and their clinicians, who are considering TRT.

Use and misuse of PSA testing for prostate cancer screening in Catalonia.

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Objectives: To describe the use of prostate-specific antigen (PSA) testing for the screening of prostate cancer in men over 40 in the primary care (PC) setting in Catalonia.

Method: Ecological exploratory study. Included any man over 18 (an average of 1,164,532 patients annually), assigned to a primary care physician, in Catalonia, from 2009 to 2015. Incidence rate of PSA testing was calculated (including one single PSA test per year) for the whole period as well as per year, per age-group and per physician. Patients reporting prostatic symptoms and patients diagnosed with prostatic cancer were excluded. Physicians were divided according to their uptake of PSA tests, into terciles: low, middle and high use. Prevalence of cancer and average age at diagnostic for each category were calculated.

Results: PSA use incidence for prostate cancer screening varied among age groups: among 40-50 years was 1.62 per 100 men year, 50-70 years was 9.39 per 100 men year and in older than 70 was 8.10 per 100 men year. The prevalence of men with prostate cancer was 3.71% in high users, 3.27% middle users and 2.93% in low users, with few differences in mean age at diagnosis (high users: 71.32 years, middle users: 71.56 years, low users: 71.58 years).

Conclusions: Current guidelines recommend the use of PSA testing for cancer screening in patients aged 50 to 69 years, upon well informed patient's request. However, PSA levels are frequently inappropriately requested for patients younger or older than indicated, which results in an increase of diagnoses, with an overdiagnosis rate of 8/1000, leading to overtreatment and its consequences. It affects very negatively patients' quality of life and increases health care costs.

OVERDIAGNOSIS IN PSYCHIATRY: THE LOOMING CATASTROPHE

Niall McLaren

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Objectives: Throughout the world, consumption of psychotropic drugs is rising steadily, with no evidence to indicate that mental health parameters are improving. Since 1974, the incidence of bipolar disorder has risen from 0.1-0.2% of the population, to 11.2%. As drug consumption rises remorselessly in one country after another, so too do the numbers of people on disability pensions for mental disorder.

Method: Literature survey

Results: Throughout the world, consumption of psychotropic drugs is rising steadily, with no evidence to indicate that mental health parameters are improving. Since 1974, the incidence of bipolar disorder has risen from 0.1-0.2% of the population, to 11.2%. As drug consumption rises remorselessly in one country after another, so too do the numbers of people on disability pensions for mental disorder.

Conclusion: This paper will argue that the so-called epidemic of mental disorder has nothing to do with the "stress of modern living" but is entirely due to poorly defined diagnostic criteria for mental disorder and the highly addictive nature of psychiatric drugs. In turn, these problems derive from the fact that modern psychiatry has no model of mental disorder, meaning it is not a scientific field at all.

As years go by, we realise that psychiatric drugs are non-specific, toxic, highly addictive and only marginally better than placebo at best.

How do German GPs think about overdiagnosis - a questionnaire study.

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Objectives: The German ambulatory health care system is characterized by unregulated access to primary care and specialist physicians. Especially specialist surgeries as for profit enterprises bear a risk of unnecessary medicine. Positioned at the starting point of avoidable diagnostic cascades, general practitioners can play a vital role in protecting patients from unnecessary medical interventions. We wanted to know how GPs perceive medical overuse, and what they see as its possible causes, consequences and drivers.

Method: A questionnaire study was planned and developed. Participants will be asked about factors that influence their medical decision making and reasons that may lead to overdiagnosis. Furthermore, we will ask questions about the perception and relevance of medical overuse in every day practice.

Results: The study will be conducted with GPs in Bavaria. Results will be available at the conference.

Examination of the Practice Shift from Plain Film Mammography to Digital Mammography

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Objectives: Most breast screening programmes worldwide have replaced the use of screen-film mammography (SFM) with full-field digital mammography (FFDM) in expectation of technical, clinical and economic advantages. For this scoping review, we aimed to identify published evaluations on the effects of this practice shift on patient health outcomes in screening programmes.

Method: Using published reports on trends before and after the introduction of FFDM, we examined the effects on detection rates of breast cancer (invasive and DCIS) and recall rates.

Results: In the UK, SFM and FFDM had similar detection rates (7.2 vs 6.8 /1000, $P=0.74$) and recall rates (3.4% vs 3.2% $p=0.44$). In both the US and Netherlands, detection rates were similar for all cancers (4.5 vs 4.6, $P=0.62$) (5.30 vs 4.91 /1000, $P=0.23$) and for DCIS (0.11 vs 0.07, $p=0.53$) (1.1 vs 1.1, $p=0.81$), however FFDM had a higher recall rate (9.3% vs 10%, $p<0.001$) (2.1% vs 3.0%, $P<0.001$). In Norway, detection rates were similar for all cancers (0.65% vs 0.77% $p=0.058$), but higher for DCIS (0.11% vs 0.21%, $p<0.001$); recall rates were the same (4.16% vs 4.09%, $p=0.65$).

Conclusions: The benefits and harms of the shift from SFM to FFDM remain unclear. To address this, we now plan to conduct a systematic review of breast screening studies reporting on SFM and FFDM. We will collate all published data of screening populations that report both benefits (e.g. lower interval cancer rate; breast cancer mortality reduction) and harms (e.g. false-positive rates; overdiagnosis). We will evaluate the extent to which any improved sensitivity with FFDM reflects the detection of clinically important cancers. These results are likely to have important implications for breast cancer screening practice and policy both in Australia and internationally.

Implementing tools/measures for reduction of overdiagnosis and overtreatment in clinical guidelines - a position paper

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Objectives: The Israel Medical Association (IMA) is the professional society representing Israeli physicians and is an independent, apolitical body. The association's objectives are to advance the professional, scientific, and economic interests of members while maintaining professional and ethical medical standards.

The Institute for Quality in Medicine is one of the arms of the IMA. The institute is a member of Guidelines International Network and publishes all the position papers and guidelines of the different professional societies of the IMA. 31 position papers and guidelines were published during 2016. These documents are part of the curriculum for specialization qualification and are considered to represent common practice by the courts.

The Israel Society for the Reduction of Overdiagnosis and Overtreatment (ISROD) was founded in 2016 under the auspices of the IMA.

A position paper was recently published detailing the rationale and need to address overdiagnosis and overtreatment which have become apparent as part of medicine- together with side-effects, medical errors and antibiotic resistance. All these are unwanted, apparently unavoidable- but must be kept to an absolute minimum.

In this paper the term overdiagnosis was introduced and explained as diagnosis of a medical condition which will not cause signs or suffering, thus conferring no benefit upon the patient from the diagnosis itself or from treatment of conditions which do not require treatment.

Guidelines are to originate from professional societies; the guideline panel will have to take into account the spectrum of patient values and preferences, quality of the evidence, the magnitude of benefits and harms and the impact of the recommendation (having wide impact or merely affecting a few patients per year). Each recommendation is intended to facilitate shared conversations and decision-making at an individual level.

The position paper was written by a multi-disciplinary team of the ISROD composed of specialists in Family Medicine, Infectious Diseases, Urology, Geriatrics and Gastroenterology. The paper detailed several mechanisms which lead to overdiagnosis and overtreatment and made recommendations aimed at facilitating the writing of clinical guidelines to address these issues within the scope of the different Professional societies. The paper also addressed the gap between physician perceived benefit of procedures versus actual benefit, and under-estimation of direct and indirect harms of procedures and testing.

The four largest Professional societies (Family physicians, Pediatricians, Surgeons and Internists) have announced their support for the position paper, which is going to be sent as a reference to every future guideline task force.

A Framework for determining when screening interventions should be de-intensified or de-implemented.

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Objectives: The premises for screening change over time and to maximize benefit and minimize harm, as well as optimize use of health-care resources, screening programs need to adapt to the best available evidence. This should sometimes lead to de-intensification or de-implementation. Our objective was to create a framework to guide selection of metrics or conditions that would trigger a formalised, evidence-based evaluation of whether change is necessary.

Method: We developed a framework for assessing the balance of benefits and harms based on the premise that a structured, transparent monitoring process should explicitly incorporate the possibility of screening de-intensification or de-implementation. Triggers were based on historical examples of situations in which screening were deemed to be harmful, wasteful or inequitable. We identified these examples through systematic searches by two authors (JH and MJ) for recommendations from the USPSTF, NHS, and the Canadian Task Force on Preventive Health Care against screening or for less intensive screening. The framework was then developed and refined through an iterative process among the authors.

Results: Based on our iterative process, a framework was developed that included three main components: 1) benefits and harms should be prospectively defined 2) a tipping point for "net-benefit" and threshold for de-implementation or de-intensification should also be prospectively defined 3) existing screening programs should be regularly monitored for triggers that identify the need to initiate an evaluation process for de-implementation and -intensification. We then applied this framework and looked for examples of screening programs that were de-implemented and assessed the triggers for this. Our systematic search identified 19 screening programs where de-implementation has happened or this has been recommended (ranging from tuberculosis and neuroblastoma to rubella screening in pregnancy) and 5 screening programs that have been de-intensified or this has been recommended (colorectal cancer; cervical cancer; breast cancer; gestational diabetes; retinal screening in low-risk diabetics). Exploring its causes led to the development of 16 triggers. The triggers can be classified as representing 5 overarching domains to be monitored: the disease; test; population; treatment; and cost-effectiveness.

Conclusions: A screening de-implementation framework can be used to identify triggers and standard processes for screening de-implementation or de-intensification. The proposed framework are intended to be a starting point for further development, testing, and evolution based on future application.

Clinical Commissioning Strategies to Reduce Diagnostic Over-requesting and Improve Interpretation of Musculoskeletal Imaging and Laboratory Pathology: Tools to de-bias clinicians and patients; what works and what doesn't in practice?

Imran Sajid

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Objectives: I would like to share some of the quality improvement projects we have been evaluating and implementing from a clinical commissioning perspective here in London, UK, as a result of learning from last year's conference in Barcelona. Our commissioning area covers approximately 175 primary care clinicians, across 55 practices and a population of around 230000 patients.

We have evaluated overuse of inappropriate musculoskeletal imaging and pathways of care; both across our sector and the wider collaborative region in London.

Various elements of analysis were carried out which highlighted problematic trends in MRI, ultrasound and X-ray requesting, reporting, pathway (esp. surgical) variation, and associated prescribing.

A root-cause identified was the inadequate offer for low back and chronic pain. We carried out a deep baseline clinical audit which identified numerous key issues to address. This included a lack of awareness of cost-implications, fragmented care between different primary care physicians within the same clinics, outdated radiology recommendations, educational insufficiency of pain science, pitfalls of imaging accessibility and a lack of insight into personal clinical abilities (overconfidence bias). A significant problem was the distinct disconnect between clinician understanding and the evidence-base for MRI. For example, in approx. 80% of cases, patients were misinformed of the result of false positives on lumbar MRI, often with the use of nocebic harmful language. Furthermore this often occurred in patients with under-recognised psychosocial 'yellow-flags' of fear and avoidance behaviours; ie poor prognostic features. Our evaluation included clinician's own biases and correlation with stress-response or emotional domains.

To address the situation we have worked on the following:

- A thorough review of different strategies and contract management deployed throughout the UK, including the limitations of benchmarking and financial incentive schemes.
- Tools to help de-bias patient irrationality in their imaging preferences.
- 'Nudge' strategies to steer clinicians away from inappropriate imaging or prescribing and make more appropriate (non-bio-medical) interventions more accessible.
- Improvements in the presentation, language and recommendations of reports.
- An education strategy around pain science & imaging; including tools for dialogue with patients. This includes cognitive tools (short 'medical CBT') for primary care to recognise and help those who are likely to be higher users of inappropriate and potentially harmful diagnostics (nocebic imaging) and prescribing (long term opioids or NSAIDs).

Method: We also identified problematic trends with a persistent annual rise in utilisation of laboratory pathology in our sector. We have carried out various elements of analysis in current contracts, including evaluation of the following:

- Numerous demand management strategies in the UK
- Variation amongst clinicians and common Type 1 decision-making heuristic pitfalls.
- Pathology over-requesting and correlation between consultation rates, referral rates, 2-week-wait cancer referrals and other health outcomes in population lists.
- Limitations of benchmarking tools for behaviour change.
- Financial incentive schemes to reduce over-ordering.
- We are implementing adjustment of choice architecture in the requesting electronic order-comms to evaluate the impact of this nudge strategy on ordering behaviour.

Guideline for "Protection against Over- and Underuse of Healthcare" of the German College of General Practitioners and Family Physicians (DEGAM)

Martin Scherer, Dagmar Lühmann, Dorit Abiry, Hans-Hermann Dubben, Hans-Otto Wagner, Cathleen Muche-Borowski

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Objectives: Appropriate medical care aims to provide „not too much and not to little" medical measures. Initiatives such as "Choosing wisely" (USA), "Smarter Medicine" (Switzerland) and "Choose Wisely Together" (Germany) address this issue.

Do-not-recommendations were published by medical societies, e.g. „Top-Lists" for protection against over- and underuse. The German College of General Practitioners and Family Physicians (DEGAM) decided to build their „not too much and not to little" on high quality evidence- and consensus based guidelines. The DEGAM-guideline „Protection against Over- and Underuse of Healthcare" aims to improve the quality of

supply on the basis of selective recommendations. The aim is to compile and prioritize the important recommendations for both avoiding unnecessary interventions and addressing unmet needs in primary care.

Method: The methodological steps can be summarized as follows:

- 1) systematical search for health services research studies
- 2) extraction of all positive and negative recommendations from the DEGAM and NVL guidelines
- 3) survey of experts on overuse related health care problems in primary care
- 4) prioritization- and voting process with the prioritization criteria
- 5) systematical search for studies to update and complement the extracted recommendations
- 6) interpretation of the results and recommendations in the categories screening, diagnosis, monitoring, therapy.
- 7) formal consensus process with target groups of the guideline and other scientific medical societies, e.g. public health

Results: The results from the methodical steps 1-4 were used to perform the further steps 5-7. Health services research studies on this topic are very rare with very different patient related outcomes. A total of 963 recommendations were extracted. A consensus was recognized due to eleven prioritization criteria (e.g. clearness of recommendation or relevance for over- and underuse). After the methodologic steps of prioritization- and voting process, finally, 18 recommendations from the DEGAM guidelines have so far been finally selected to be included in the guideline. Furthermore, background texts, description of action fields which are relevant for over- and undersupply have been written as additional chapters.

Conclusions: The DEGAMS's aim is the protection against overuse and the balance of overall benefits against harms and costs.

To date, however, there has been a lack of concise and clear compilation and prioritization of the most important guideline recommendations with a focus on under- and overuse in primary care. The proposed guideline can fill an important gap here.

Trial and Meta-analysis Characteristics Associated with Data Contribution in Individual Patient Data Meta-Analyses of Randomized Controlled Trials

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Objectives: Increasing expectations from members of the scientific community and stakeholders for data transparency in the conduct and reporting of randomized controlled trials (RCTs) have encouraged measures that aim to increase the availability of clinical trial data to move evidence to action more effectively. The degree to which researchers conducting individual patient data meta-analyses (IPDMAs) received requested data and factors associated with data sharing and acquisition remain unknown. The objectives of the current study were: 1) to determine the proportion of eligible primary studies contributing to IPDMAs of RCTs and the proportion of patients for which data was contributed and 2) to explore factors at the IPDMA and the primary study level associated with obtaining primary data for IPDMAs.

Method: We searched MEDLINE, Embase, CINAHL and Cochrane for IPDMAs of RCTs published between May 1st, 2015 and February 13, 2017. Articles were eligible for inclusion if they reported on an IPDMA of RCTs that assessed the effects of a healthcare intervention and included a documented systematic review of the literature. For each IPDMA and their corresponding primary studies, we are ascertaining the presence of a published protocol and registration in Prospero for the meta-analysis, journal impact factor, sources of funding, group authorships, country of the corresponding author, presence of a financial conflict of interest, patient population, type of intervention assessed, sample size and the presence of a meaningful difference for the study's primary outcome.

Results: Thirty-six IPDMAs were retrieved thus far, which included a total of approximately 800 eligible primary studies. The results are forthcoming, as we expect to achieve a final sample of 50 IPDMA of RCTs and conclude data extraction by May 30, 2017. A multi-level analysis will be conducted to determine the factors associated with data contribution.

Conclusions: IPDMAs of RCTs are considered the gold standard for implementing evidence into clinical practice. Data sharing is an important component of IPDMAs that can mitigate overdiagnosis by providing a transparent report of the current state of scientific evidence, promoting transparent verification and replication of trial results, ensuring that important trial findings are reported and reducing waste in research

by avoiding the unnecessary replication of a trial.

Overdiagnosis in Psychiatry: the looking catastrophe

Niall McLaren

Northern Psychiatric Services,, Brisbane, Qld, Australia

Objectives

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Throughout the world, consumption of psychotropic drugs is rising steadily, with no evidence to indicate that mental health parameters are improving. Since 1974, the incidence of bipolar disorder has risen from 0.1-0.2% of the population, to 11.2%. As drug consumption rises remorselessly in one country after another, so too do the numbers of people on disability pensions for mental disorder.

Method: Literature survey.

Results: Once started on drugs, it is extremely difficult, verging on impossible, for an ordinary person to stop them. Psychiatrists routinely mistake withdrawal symptoms caused by their drugs as a recurrence of the "original illness."

Conclusions: This paper will argue that the so-called epidemic of mental disorder has nothing to do with the "stress of modern living" but is entirely due to poorly defined diagnostic criteria for mental disorder and the highly addictive nature of psychiatric drugs. In turn, these problems derive from the fact that modern psychiatry has no model of mental disorder, meaning it is not a scientific field at all.

As years go by, we realise that psychiatric drugs are non-specific, toxic, highly addictive and only marginally better than placebo at best.

Should mammography screening programs continue to invite women aged 70-74 to participate? – A report on two community juries of Australian women in the target age group

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Objectives: In 2013, the target group for breast screening by mammography in Australia was extended from 50-69 years to 50-74 years. Since this time Australian women aged 70-74 have been invited to participate in the government-funded screening program (BreastScreen), which is a cause for controversy among Australian experts for reasons of overdiagnosis. In April 2017 we will convene two community juries to discover if well-informed women aged 70-74 think that BreastScreen should, or should not, continue to target their age-group.

Method: Thirty women aged 70-74 will be recruited from the Sydney area via random-digit-dialling to form two juries (each n=15); women with experience of breast cancer will be excluded. Each jury will be presented with the basic science of breast cancer and breast screening, and the best evidence-based cases for: (i) continuing; and (ii) discontinuing, screening invitations to women aged 70-74. Jurors will be given the opportunity to ask experts questions. The jury will recommend whether women should be invited to screen given the evidence (including the evidence on overdiagnosis).

Results: The verdict of each jury will be recorded as it is made, allowing the jury to correct and adjust it until there is majority consensus; any dissenting positions will also be documented. We will also perform a detailed qualitative and quantitative analysis of transcripts of the question and answer sessions and jurors' deliberations. Our focus will be:

- the quality of deliberation
- juror's perceptions of the validity of the verdict
- how jurors understood and gave importance to the technical content of the expert witness testimony, and
- how jurors construe expert and consumer roles in resolving the controversy

Conclusions: By bringing policymakers, practitioners and those directly affected by changes in breast cancer screening policy into a structured dialogue this study will provide policy guidance on the acceptability and perceived legitimacy of the extension of organised screening programs to older age groups. It will also generate empirical evidence to inform the development of communication and decision-making strategies for women aged 70-74 who have been invited to participate in screening.

Overdiagnosis and Public Health: Inventing an Epidemic in Moldy Montreal Schools

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Objectives: Despite extensive literature reviews by major world health and professional associations suggesting that the health effects of indoor air possibly contaminated by mold are largely negligible, public concern remains unabated. This paper will present an overview of a public health crisis caused by such concerns in Montreal schools where mold was found in several structurally compromised buildings.

Method: A descriptive overview of the crisis with reference to pertinent scientific literature and critical review of the Montreal Public Health Department's involvement, media reaction and the role of other health/political interest groups.

Results: Investigation by over-exuberant public health officials using broad non-specific diagnostic criteria obtained largely through questionnaires concluded that "mold-related illness" was rampant among teachers and other workers in these schools. This resulted in several school closures and a deluge of worker compensation claims. Moreover, these officials eschewed standard industrial hygiene investigation techniques and concluded that at least 60% of Montreal area schools were/are contaminated. Combined with intense media coverage and pressure from politicized health interest groups, parent and teacher associations, unions, and school administrators, a public health "crisis" was born.

Conclusions: Non-specific diagnostic criteria, poor investigative techniques, community angst and pressure from media and other interest groups combined to create an epidemic where, in fact, none existed. The

results of this episode of overdiagnosis will be discussed in the context of overdiagnosis and other New Age diseases where the power of politicized interest groups far outweighs the available, evidence-based scientific facts. Potential solutions will be proposed for discussion purposes if time permits.

Medication-related problems: A qualitative exploration of the older person's lived experience Nikesh Parekh¹, Lizzie Ward², Beatrice Gahagan^{3,2}, Khalid Ali¹

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Objectives: Medication problems are common in older adults. The objective of this study was to explore the lived experience of older adults with medication problems, and the factors contributing to their development.

Method: This qualitative study was designed by two clinical academics, two social scientists, and five older co-researchers. It was conducted between March 2016 to January 2017 in Brighton, UK. A purposive sample of 20 community-dwelling older people (≥65 years) who used regular medicines and experienced medication problems were recruited through Age-UK, Brighton and Hove (B&H). Three focus-group interviews with 12 functionally able older adults were conducted in Age-UK B&H offices, and semi-structured interviews with 8 frail older adults conducted in their homes. Participants were recruited until data saturation was achieved. Interviews were recorded and transcribed verbatim. Transcripts were thematically coded and analysed using a framework approach. Topic headings, under which emergent themes were analysed, were medication problems in relation to: healthcare utilisation, transition of care, medicines supply, handling and administration, side-effects and support mechanisms, and patients' treatment beliefs.

Results: Fourteen women and six men of Caucasian origin, with an average age of 78 (range 65 to 98) years, participated in this study. Ten participants had a hospital admission in the past year. The average number of regular medicines taken by participants was 6 (0-12).

Most participants reported sub-optimal communication with healthcare professionals, including passive listening and paternalistic consultations. There was an emerging pattern of participants having an undisclosed conflict between their implicit trust in the healthcare system and their negative lived experience.

Participants expressed their vulnerability in the transition period between hospital and home, in relation to a reduced capacity to absorb information, pressured discharge, and lack of integrated care with limited follow-up in the community.

Drug formulations, packaging and information sheets were felt to be poorly tailored to the needs of the older person, particularly for those with sensory and dexterity impairment. There was a pattern of older people attempting to manage the risk to benefit balance on their own in adhering to medicines in spite of experiencing side-effects. The reason for this was a perceived lack of time available from their General Practitioner to discuss the risk to benefit balance. Some participants blamed their lack of knowledge about medicines as an important contributor to medication problems.

Conclusions: Older people's experience of medication problems are multifactorial and complex. Their lived experience provides valuable insight in addressing this problem.

Low-value clinical practices from the perspective of patients. A qualitative study.

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Objectives: Essencial Project elaborates recommendations to avoid low value clinical practices (LVCP). These practices are very common in paediatrics at primary care (PC). In the Catalan healthcare system several qualitative studies explained the factors influencing healthcare professionals (HP) to carry out LVCP. Those are mainly due to characteristics of professionals, patients demand and organizational issues. To better understand the role of patients in LVCP and to design a communication strategy in paediatric population, a qualitative study was carried out. The main objective was to explore attitudes and perceptions of parents about LVCP and to identify key elements of an effective communication.

Method: Qualitative study using focus group was conducted in November of 2016. The sample included parents with different characteristics of their children by age, chronic diseases requiring specialized care

and number of siblings. Discussion guideline included following topics: knowledge of LVCP and strategies of effective communication. Data analysis was supported by the computer software Atlas.ti and according to framework analysis perspective.

Results: The study involved 6 women: 5 mothers and 1 grandmother. Participants had a total of 14 children (10 boys and 4 girls). 4 children aged less than 4, 7 children aged 4-10 and 3 aged over 10 years old. 3 had a disease that required specialized care (asthma, neurological disease and disability). Participants had medium-high cultural level and high level of trust with their HP.

Regarding LVCP, the participants don't know this term, but recognize that they have experienced situations of excessive prescription and diagnostic tests, especially in emergency services and private consultations. Participants identified the most relevant elements in the medical visit: care received by HP (anamnesis and physical examination), communicative skills (empathy) and information received. Other less important elements were attention to specific demands of patients and diagnosis. Communication should be simple and direct, arguing the reasons for decisions. Their preferences for information media in diptychs, which can be consulted at home, as well as the need to have information sessions or community groups.

Conclusions: In our context, this is the first exploratory study identifying attitudes related to LVCP and communication strategies in parents. This is the beginning of a series of studies in the Catalan population. Although the term LVCP is not known, they have lived situations related to unnecessary care especially in private consultations. The most valued elements in the visit are care received and the need for the communicative skills and tools to support effective communication.

Case Finding for Dementia in Primary Care: What a Community Jury thinks Australian General Practice Physicians Should Do

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Objectives: Dementia is a neurocognitive disorder with multiple and largely unknown causes and no effective treatment. Screening for dementia is not recommended in several countries, but current Australian guidelines for general practitioner encourage case finding and early intervention in those at risk. Other groups have warned of the harms of early detection. To determine the community's values and preferences in this area, we conducted a community jury (CJ).

Method: In March 2017 ten randomly selected citizens aged 50 to 70 were enrolled in a CJ to consider the benefits and harms of case finding for dementia in general practice. We excluded citizens with dementia, with close family members diagnosed with dementia, and carers of people with dementia. After listening to four experts discussing the scientific information about dementia, the ethics of case finding and diagnosis, and the benefits and harms of case finding, we asked the jurors to deliberate and make recommendations for the question: "Should the health system encourage GPs to practice "case-finding" of dementia in people older than 50?" Both before and after the CJ we also measured juror knowledge about dementia and their individual intention to test for dementia. After the CJ we qualitatively analysed juror deliberations and jury processes.

Results: Following deliberation, CJ participants unanimously decided that the Australian health system should not encourage GPs to practice case finding for dementia. However, the jurors also noted that this practice was currently underway and expressed concern that the practice could not be stopped. Therefore, they made specific recommendations to be considered by the Royal Australian College of GPs guideline committee. Pre and post quantitative questionnaires and qualitative analyses are currently being analysed and will be available for the conference.

Conclusions: CJ participants clearly articulated a preference for the health system not to encourage GPs to conduct case finding for dementia. However, they considered the practice unstoppable and so made specific suggestions for GPs to consider.

Overdiagnosis and the construction of “at-risk” girls: HPV vaccination campaigns as rescue missions

Geneviève Rail

Concordia University

Context: A form of overdiagnosis and overmedication is when people at very low risk of future illness are offered preventive products that may do more harm than good and/or shift public health spending in a way that lessens the opportunities to prevent illnesses or diseases currently affecting or having the potential to affect great numbers. For instance, while a single shot of effective “live” measles and rubella vaccine seems to provide lifelong protection to the masses from these diseases, other vaccines (e.g. influenza vaccine, shingles vaccine, HPV vaccine) have stirred heated debates on safety, effectiveness, cost and ethics.

Objective: The objective of the present study is to investigate the deployment of HPV vaccination discourses and their impact on Canadian girls, parents, nurses, and physicians.

Method: A qualitative method was favoured and includes conversations with participants (N=139) from 4 provinces and diverse sociocultural locations. Using a poststructuralist discourse analysis, I look at how girls, parents and health professionals make sense of HPV vaccination as well as how they appropriate and/or resist discourses coming from industry and public health sources.

Results: The results speak to the “cancer effect” and how mothers construct themselves as responsible biocitizens who act upon their daughter’s cancer risk. They also speak to how health professionals act as biopolitical agents who spread fear of HPV infection and manufacture consent for the HPV vaccine among girls and parents. In the discussion, I interrogate the rhetoric of “rescue missions” put in place to purportedly “save” girls from cervical cancer (given that the latter is responsible for only 1.1% of female deaths in Canada; StatsCan 2016), and how it constitutes an instance of disease-mongering. I conclude by asking whether the health of the public is advanced when HPV vaccination discourses transform healthy bodies into “at-risk” bodies and when the fear of cancer is instrumentalized in the pharmaceuticalization of public health.

Health impacts and characteristics of deprescribing interventions in older adults - a systematic review.

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Objectives: In 2012, 65% of Canadian seniors had at least 5 prescription medications. Changes in physiology, higher comorbidity and medication interactions increase the risk of adverse health outcomes from medication use, a risk further increased by prescribing numerous medications. Not all chronic medications may actually benefit seniors. We propose a systematic review to answer the following questions: What are the health outcomes of interventions to deprescribe, i.e. reduce the number or dosage of chronic medications in seniors? What are the characteristics of successful deprescribing interventions or elements thereof, achieving positive or at least neutral outcomes on health or quality of life in seniors?

Method: The review is based on the Cochrane method for systematic reviews of interventions and on the PRISMA statement. The search is conducted for all relevant scientific databases and websites and includes relevant grey literature. Study selection, data extraction, intervention content and quality assessment are conducted independently by 2 reviewers. Meta-analyses will be performed for groups of eligible studies. A Delphi panel will determine which successful intervention elements are applicable to the Canadian context.

Results: This review will identify which deprescribing interventions or components thereof are successful and have a positive, or at least neutral, impact on seniors' health or quality of life. Results will be instrumental for the development of better interventions and guidelines to improve policies regarding the challenges of deprescribing among seniors.

Conclusions: In recent years, deprescribing has been defined as a process developed to balance the expected benefits from medications against their risks, leading to reduced dosing or discontinuation of chronic medications which are no longer appropriate or beneficial. Results from the review and Delphi panel will provide guidance for deprescribing practices.

How many tonsillectomies are necessary? An eleven year retrospective cohort study of indications and eligibility for childhood tonsillectomy in UK primary care

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Objectives: Tonsillectomy is one of the most common childhood surgical procedures. It has long been the poster-boy for overtreatment, with wide national and international variations in the use of the procedure. Evidence based indications for tonsillectomy include: documented sore throats of sufficient severity and frequency (7 in one year, 5 yearly in two successive years or 3 yearly for three successive years - Paradise criteria), aphthous stomatitis, pharyngitis and cervical adenitis syndrome (PFAPA), or tonsillar tumour. As far as we are aware, our analysis for the first time describes the incidence of evidence based indications for tonsillectomy in UK children, proportion of children with evidence based indications who actually undergo tonsillectomy and the proportion of tonsillectomies that are evidence based.

Method: We analysed electronic medical records of 1.5 million UK children aged 0-15 years registered with one of 688 UK general practices contributing to a research database (The Health Improvement Network) between 2005-2015. We identified children with recorded evidence-based indications for tonsillectomy and we determined the proportion subsequently undergoing tonsillectomy. We also identified children who had undergone tonsillectomy and identified the indications for surgery. From this we calculated the proportion with evidence-based indications.

Results: Between 2005 and 2015, on average 4.3 children per 1,000 person years annually met evidence based criteria for tonsillectomy: 13.2% (1,915/14,528) underwent tonsillectomy. Of children undergoing tonsillectomy, 12.0% (1,915/16,015) had an evidence based indication: 99.3% (1,902/1,915) meeting the Paradise criteria. Most (79.0% 12,649/16,015) tonsillectomies were undertaken in children with insufficient documented sore throats although only a tiny proportion of such children underwent tonsillectomy.

Conclusions: The great majority of children with evidence based indications for tonsillectomy never have surgery. The great majority of children undergoing tonsillectomy do not have evidence based indications. We have convincingly demonstrated dramatic overuse alongside potential underuse of one of the most common surgical procedures of childhood. Parents of children meeting Paradise criteria should be informed that tonsillectomy potentially offers only modest benefits and that seven in eight children meeting these criteria do not have tonsillectomy. Parents of less severely affected children should be informed that tonsillectomy is ineffective and that the vast majority of similarly affected children do not undergo tonsillectomy.

"Dear neurologist, that's not my spine. That's a model on a table." How contextual factors contribute to decision making

Wieteke van Dijk¹, Marjan Faber², Marit Tanke¹, Gert Westert², Patrick Jeurissen¹

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Objectives: Sciatica is a common variation of lower back pain. In most patients it has a positive natural course. Treatment options are conservative treatment and surgery. The longer the conservative trajectory, the better the chance for natural recovery. In the Dutch healthcare system, the choice for surgical treatment is an aggregate one: patients typically consult their GP and a neurologist before a definitive decision for surgery can be made in consultation with the neurosurgeons. We reconstructed how involved actors reflect on this clinical situation and decision making, to determine what arguments they value in this decision. This can provide insight in the contribution of contextual factors to overtreatment and overdiagnosis.

Method: 32 In-depth, semi-structured interviews with patients (n=10), GPs (n=7), neurologists (n=6), neurosurgeons (n=6) and physiotherapists (n=3). Thematic analysis on the interview transcripts was performed.

Results: Patients and physicians describe and understand sciatica in a comparable language, explaining it in a mechanical manner. However, despite these similarities in problem understanding, their perspectives on how to proceed differ. Physicians are reluctant to use medical terms and treatments for the complaints. To them sciatica results from natural processes. For patients it is undisputed that their complaints are medical in nature and require medical involvement. For example, patients regard a MRI scan necessary, while physicians nuance their diagnostic value. For physicians, time is the essence of conservative treatment. For patients, time is an stressful factor, surrounded with uncertainty. Finally, most patients and physicians state that they prefer conservative treatment. However, pain resilience and labour demands push the decision towards surgery. Notably, preferences for type of treatment varied more strongly within interviewed groups than between groups. Amongst all groups there were some who preferred prolonged conservative treatment and those who favoured earlier surgery.

Conclusions: Our research provides a layered perspective on the treatment of sciatica in the Netherlands. The choice for the more intensive treatment option is an aggregate decision. Individual patients and physicians are influential. They find each other in the management of the personal situation, in arguments relating to pain and labour demands. This illustrates that overtreatment and overdiagnosis happen in a contextual setting that transcends clinical factors. While previous literature addresses uncertainty and stress in this regard, this analysis reveals that economic uncertainty can influence treatment decisions as well. Successful solutions to overdiagnosis should take the contextual factors into account.

Marketing as Medicine: Developing Disease to Produce Profit

Megan Evans

Highbrow Magazine, Los Angeles, CA, USA

Objectives: Proving and breaking down the explicit process by which pharmaceutical companies utilize disease-mongering as a marketing tool.

Method: Identifying the sectors, companies, and individuals involved, this essay details the process in six steps:

- 1] Defining or Expanding the Disease Definition
- 2] Identifying Friendly Medical Professionals
- 3] Research and Data Development
- 4] Creation of Foundations and Influence on Independent Advocacy
- 5] Marketing to Physicians: Continuing Medical Education
- 6] Marketing to Consumers: "Disease Awareness"

Extensively cited not only from pharmaceutical insiders themselves, physicians and other reputable journalists, this piece also references specific and verifiable case studies as examples throughout the entire process.

Results: Reliable evidence for this process is provided in an often conspiracy-like environment, emphasizing that the lack of legitimate awareness and relevant discourse contributes to this problem's continuance as emphatically as blatant disregard. Cannibalizing people's health for profit, such discussion is imperative not only due to the ethical, social and financial implications, but because the depth of this manipulation creates a closed-end system in which it is impossible for responsible consumers to complete due diligence in regards to their own health.

Conclusions: Based on the inclusion of content not previously brought to attention in other medical journals, particularly in regards to patient advocacy groups, this piece has also been reviewed and recommended by one of the directors of Infectious Diseases Service for the U.S. Veterans Health Administration.

Canadian program for monitoring overuse in injury care: protocol

Lynne Moore^{1,6} Khadidja M Boukar^{1,6} Henry T Stelfox² Howard Champion⁴ Peter Cameron³ Belinda Gabbe³ John Kortbeek² François Lauzier^{1,6} France Légaré¹ Micheal Chassé⁵ Patrick Archambault¹ Alexis Turgeon ^(1,6)
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Objectives: Low-value clinical practise (overuse) consumes up to 30% of healthcare resources and may expose patients to avoidable harm. A recent review suggests that interventions targeting the de-adoption of ineffective or harmful interventions have the potential to reduce low-value clinical practise and improve outcomes. The overarching goal of the Canadian Program for Monitoring Overuse in Injury Care is to develop indicators targeting low-value processes in injury care. The following specific objectives will consider injury type (traumatic brain injury, complex orthopaedic trauma, spinal cord injury):

1. Identify low-value processes in injury care (scoping review)
2. Review the evidence base for low-value processes (systematic review).
3. Develop indicators measuring low-value processes (RAND-UCLA consensus study).
4. Derive and internally validate indicators (multicenter cohort study).
5. Evaluate the external validity of indicators (validation cohort study).
6. Evaluate the effectiveness of indicators in an audit-feedback intervention (cluster randomized controlled trial).

Method: First, we will conduct a scoping review of peer-reviewed articles and grey literature to identify indicators, guidelines or recommendations on low-value processes in injury care. Second, we will systematically review the evidence-base for each low-value process targeting randomized, observational and diagnostic accuracy studies evaluating injury mortality, morbidity or resource use. Third, we will conduct a RAND/UCLA consensus study to develop indicators of low-value processes. The panel will include, clinicians, measurement specialists and patient/family representatives. The consensus process, informed by the best available evidence, will comprise at least three rounds including an in-person consensus meeting with an independent moderator. Fourth, indicators will be derived and validated in a multicenter cohort study using data from the Québec Trauma Registry linked to hospital discharge, hospital costing and physician billing databases. Fifth, we will use trauma registries in Canada and the US to assess the external validity of indicators. Lastly, to assess the effectiveness of integrating indicators in an audit-feedback intervention, we will conduct a parallel-arm, pre-post cluster randomized controlled trial. We will use the quality assurance platform in place in the Québec Trauma Care Continuum, designed using US Agency for Healthcare Research and Quality recommendations. We will randomize trauma centers (n=57) to standard quality reports (control) or standard quality reports augmented with indicators on low-value processes (intervention). The primary outcome will be de-adoption of low-value clinical practices.

Results: The indicators developed in this research program will be used to identify problems of medical overuse in trauma systems across Canada and worldwide. These results will be used by local trauma committees, hospital administrators and trauma system managers to optimize hospitalisations, transfers, consultations, therapeutic and diagnostic procedures, ultimately reducing the societal and economic burden of injury.

Conclusions: Potential benefits of this research program include an increase in the efficiency and a decrease in the costs of injury care, an increase in the availability of scarce resources and a reduction in adverse events. This research will be conducted in close collaboration with Choosing Wisely, the Institut national d'excellence en santé et en services sociaux, the Trauma Association of Canada, Accreditation Canada, the Rick Hansen Institute and the American College of Surgeons.

Room 307B

Moving from Evidence into Action – 10:30 Friday August 18th

Examining the utilization of CT or PET-CT for routine surveillance of asymptomatic lymphoma patients in remission in Israel; evidence-based groundwork for a “choosing wisely” recommendation.

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Background: Since 2013, under the framework of "choosing wisely" professional organizations called for limiting surveillance imaging among asymptomatic cancer patients in remission. FDG-PET-CT has been widely used in Israel in routine follow-up of lymphoma patients and is covered by the national health basket of drugs and technologies, despite questionable value and considerable cost, radiation exposure, and risks of false positive (FP) results.

In an attempt to understand the basis and consequences of limiting surveillance imaging, our aims were to assess

- the extent of PET-CT imaging
- rates and reasons for FP
- attitudes of professionals and patients to surveillance imaging after curative treatment for lymphoma in Israel.

Method: Mixed-methods (quantitative and qualitative) study. We analyzed findings of 215 lymphoma patients in routine follow-up and 203 additional patients with Hodgkin lymphoma who participated in a clinical trial where they were required to undergo surveillance scans in remission in order to determine FP rates, resultant interventions and costs. We surveyed attitudes among Hematologists and Nuclear Physicians and held focus-groups among patients and in-depth interviews among professionals.

Results: FP results were seen in >25% (per-test) and 42% (per-patient), resulting in frequent interventions at a cost of ~\$50,000/per-relapse-detected. Patients were convinced of the accuracy of tests, were relatively concerned about radiation, but not about FP results or their costs. Communication with the treating physician appeared crucial in reassuring patients that there was little value in routine imaging. Professionals generally believed (with important exceptions) that routine imaging provided little value, whether or not they were aware of the "choosing wisely" recommendation, and rejected regulatory limitations on testing.

Conclusions: Surveillance imaging with CT-PET for lymphoma patients in remission is costly and results in a high rate of FP findings. Physicians limit surveillance imaging when convinced that it has little added value. Patients seek reassurance via imaging, are aware of radiation risks but less aware of the implications of FP results; they can be reassured by clinical follow-up without imaging when trust and communication levels with their physician are high.

Israeli hematologists are receptive to limiting surveillance imaging as part of a "choosing wisely" campaign, which together with guidelines and patient education, may directly or indirectly influence the overuse of imaging.

The Failure of the PSA Test. Implications and Opportunities.

Fred Arthur

Western University, London, Ontario, Canada

Objectives: On completion of this workshop, the participant should be able to understand and apply a new set of intellectual tools to identify and critique possibly erroneous medical beliefs, apply these tools to an analysis of the implications of the possible failure of the PSA test to improve PCa outcomes, discuss the phenomenon of overdiagnosis as the confident application of clinical beliefs without appropriate critical evaluation, and consider joining a 'Scientific Medicine Interest Group'.

Method: The presenter will carefully define then illustrate the value of the following intellectual tools: the paradigm concept, Bayes' Theorem, the Duhem-Quine Hypothesis, the implications of complex physiologies and complex pathologies, Knightian risk versus uncertainty, the failure of a modest form of scientific rationalism, contextual empiricism, and the failure of inductive logic. Each of these will be developed for Medicine as a tool that allows the more effective identification and criticism of erroneous beliefs. A case study of the possible failure of the PSA test to improve PCa outcomes will next be completed: Participants will review the evidence base (PSA_{RCT}) and the somewhat disparate recommendations of authoritative advisory bodies. An extensive annotated bibliography will be provided in advance to assist attendee participation at each step in this process.

Results: It is possible that some of the desultory progress in many clinical fields, despite extraordinary research productivity, reflects the application of an inadequate intellectual toolkit. The PSA_{RCT} directly evaluate the efficacy of early cancer diagnosis with an effective screening test, the application of an established pathological grading system, the early and aggressive application of apparently validated therapy routines (supported by > 5900 therapy_{RCT}), and the longitudinal patient follow up protocols. Yet the PSA_{RCT} may suggest that the net value of all of these therapy_{RCT} and clinical interventions may not improve outcomes. How can this be possible, that thousands of positive therapy_{RCT} could provide no measurable benefit when applied at the earliest possible diagnosis point? Which of our PCa beliefs are erroneous? Should this result question the reliability of our present iteration of EBM? Can these tools as illustrated by this case study provide new insights into overdiagnosis and overtreatment?

Conclusions: The new intellectual tools will be applied in this analysis. Time will be provided to discuss participant viewpoints on each tool. It is hoped that the Workshop will motivate the creation of a 'Scientific Medicine Interest Group'.

De-implementation of Ineffective, Unproven, Harmful, or Low-Value Health Care Services and Practices: A Systematic Review of Grants Funded by the U.S. National Institutes of Health (NIH) and the Agency for Healthcare Research and Quality (AHRQ), 2000-2017

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Objectives: De-implementation—the scientific study of how best to reduce or stop use of ineffective, unproven, harmful, and low-value health services and practices—has received increased attention in recent years. De-implementation of inappropriate health practices has important implications for mitigating patient harm, improving healthcare processes, reducing costs, and creating opportunities for use of more effective and impactful practices. A better understanding of the state-of-the-science is needed to inform future scientific endeavors and funding opportunities. The present study identifies and describes characteristics of research grants on de-implementation funded across the 27 U.S.-based NIH Institutes and AHRQ from fiscal year 2000 through 2017.

Method: We conducted a systematic review of funded research grants using the internal NIH Query, View, Report (QVR) system. A total of 11 key terms (e.g., de-implementation, de-adoption, un-diffusion, medical reversal, etc.) were used to identify research grants. Two coders assessed the grant titles, abstracts, and specific aims for inclusion/exclusion criteria. A codebook was developed, pilot tested, and revised before coding full applications of the final sample of grants.

Results: A total of 614 grants were identified through the QVR system; 373 remained after removing duplicates. After the multi-step eligibility assessment and review process, full text applications of 16 grants were coded. Most grants were funded through the R-mechanism (n = 13) and awarded between fiscal years 2015-2016 (n = 10). Three grants focused on understanding, describing, or characterizing factors influencing de-implementation; 6 grants focused on developing, evaluating, or testing strategies to facilitate de-implementation; and 7 grants focused on both objectives. Studies proposed a range of methods (e.g., qualitative, quantitative, mixed methods, and systems modeling) and study designs (e.g., experimental, quasi-experimental, observational) to accomplish aims.

Conclusions: Despite implications for patient outcomes, health care processes, and costs, relatively few grants on de-implementation have been funded by NIH and AHRQ over the past 17 years. Targeted, systematic efforts may be needed to stimulate additional research on de-implementation of harmful, ineffective, unproven, and low-value care services and practices.

Polypharmacy Risk Reduction in BC- Practical Experience of Moving From Contemplation to Action

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Background: Polypharmacy in the elderly is one aspect of overdiagnosis. Health care providers are concerned about these issues but lack the practical supports in their real day to day working clinical environments. The Shared Care Polypharmacy Initiative in British Columbia, Canada, is addressing these issues.

Objective: To describe the evolving practical experience of deprescribing in British Columbia through the Shared Care Polypharmacy Risk Reduction Initiative, framed at the provincial level through the Ministry of Health and Doctors of BC joint Shared Care Committee but developed and tested through physicians and the local inter-disciplinary teams in residential care and in acute care.

Method: This Initiative takes a developmental approach. In residential care, physicians are engaged through case-based learning sessions, to support them to move from contemplation to action on deprescribing, in the inter-disciplinary context. This includes re- interpretation of evidence from drug studies. Local physician mentors are supported. Strategies and tools to support the practical day to day clinical work are applied.

Deprescribing has started recently in acute care through prototyping, mapping the patient's medication journey, and identifying and testing of areas for improvement, in relation to the work flow.

Results: In residential care, six hundred physicians, and potentially thousands of residents in care homes, have been affected. Practical approaches and tools are being tested in an ongoing way. Local and provincial developmental evaluations have generated valuable lessons learned upon which to carry out further development.

In acute care, the first wave of prototypes on both four medical and four surgical units, has identified key improvements, which include medication review and generating and communicating the discharge medication list. Tools and other resources have been developed and tested. Wave 2 of prototyping has recently started in a further 3 medical units.

Conclusions: While there is awareness of Polypharmacy and the need for deprescribing, there is a lack of published practical experience of moving to action, combining both a systems approach with the specific health care team-patient-resident provision of care. The Shared Care Polypharmacy Risk Reduction Initiative, while a provincial systems-level initiative, has taken a longitudinal local developmental, learning and testing approach to move health care providers, particularly physicians, from contemplation to action. Through this work, the Triple Aim of improving population health outcomes and provider and patient experience, while supporting a more sustainable healthcare system from a cost perspective, is being addressed.

Effectiveness of conservative treatment for musculoskeletal conditions

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Background: Bupa's purpose is longer, healthier, happier lives. We do this by providing a broad range of healthcare services, support and advice to people throughout their lives. Bupa is committed to becoming the most customer centered health & wellbeing organisation in the world. Meeting a patient's individual care needs is right at the heart of this commitment. The Musculoskeletal (MSK) Physicians initiative was introduced to Bupa members to address an observed lack of co-ordination in the care of members with musculoskeletal conditions, with members not getting to the right place first time and potentially receiving unnecessary treatments. MSK Physicians are non-surgical Specialists, skilled in the diagnosis and treatment of a range of muscle, joint and bone conditions ranging from acute sprains and muscle tears to long standing joint problems, including arthritis. The service is offered as an alternative option to Orthopaedic and Trauma initial consultation. Consultants/Specialists who mostly come from the medical specialty of Sport & Exercise Medicine (SEM) support members by reviewing and recommending alternative options to often invasive surgery so they can make informed decisions about all the treatment options available to them. This talk demonstrates the value and learnings of implementing such service in the UK private setting.

Objective: Evaluate whether pathways leading from MSK Physician consultations are financially better value than "traditional" pathways for members having a consultation with Orthopaedic and Trauma consultants whilst at least maintaining patient satisfaction levels.

Method: To evaluate the financial impact of the MSK physician initiative propensity score modelling and matching was used to find a comparable control group in terms of risk for the 20,000 intervention PMI patients. The claiming behaviour of both groups in the musculoskeletal condition area was tracked for 12 months following engagement in the initiative. Additionally, the utilisation of surgery and diagnostic tests was compared to estimate the volume of unnecessary treatment.

Results: Patients who begin their musculoskeletal pathway with an MSK Physician were shown to have 17% lower pathway cost than patients that begun with an Orthopaedic and Trauma Consultant. The reduction was mainly driven by a lower surgery incidence compared to risk-adjusted controls.

Conclusions: MSK Physicians proved to be instrumental in managing patients' needs before they actually enter surgeon consultation rooms. Respondents to our NPS survey who used MSK Physician service were very satisfied with an NPS of +75.

Use of National Quality Indicators to Reduce Under- and Overdiagnosis of Cervical Cancer in Israel

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Objectives: Since the introduction of PAP smears, cervical cancer (CC) incidence and mortality rates have dropped dramatically in countries adopting screening programs; yet significant disparities remain. CC screening intervals should strike a balance between reducing morbidity and mortality and possible harms (including the risks and costs of invasive diagnostic workups, over-treatment of lesions which may regress spontaneously, and patient anxiety and discomfort). Israel's Health Ministry recommends PAP screening for women aged 25-65 every three years. Screening is fully reimbursed for women aged 35-54 and is opportunistic.

We aimed to evaluate the use of national quality indicators to monitor CC screening practices in Israel and identify populations at risk for under- and over-screening.

Method: The Israel National Program for Quality Indicators in Community Healthcare (QICH) obtains data from electronic medical records from the four Israeli health plans which cover the entire civilian population. The study includes all Israeli women stratified by age and socio-economic status (SES), defined by exemption from co-payments for medical services.

We evaluated three newly-introduced (2016) indicators:

1. Appropriate screening: Proportion of women aged 35-54 who had a PAP smear in the past 3 years.
2. No uptake: Proportion of women aged 35-54 not screened at all over the past 5 years.
3. Over-screening: Proportion of screened women aged 25-64 who underwent >1 PAP smear in the past 3 years.

Results: Of 760,453 included women aged 35-54, 45.6% were appropriately screened for CC in 2015. Screening decreased with age (from 48.1% to 40.3% in the 35-39 and 50-54 age brackets respectively) and was lower among women of low compared to high SES (33.8% vs. 46.8%). Nearly half (47%) of all eligible women (and 3/5 those of low SES aged 50-54 (60.2%)) were not screened at all in the past 5 years. The over-screening rate was 37% overall, with highest rates observed among women aged 35-44 of higher SES (43.8%).

Conclusions: Observed screening rates were low compared with OECD rates, with nearly half of the women totally unscreened over the past 5 years. Concurrently, more than one-third of women who underwent CC screening were over-screened. Significant disparities were observed according to SES.

QICH provides cross-sectional data as well as opportunities to examine temporal trends. Follow-up analyses will enable us to examine whether monitoring national quality indicators pertaining to CC screening will demonstrate decreases in both over- and under-diagnosis over time, via improved access and uptake of appropriate screening.

Overdiagnosis of Psychiatric Disability : Best practice, Advocacy, "Complaisance", Fraud or Ignorance?

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Objectives: In Canada, as in other industrialized countries, we can observe an increasing prevalence of psychiatric disorders. We also observe that psychiatric disorder is identified as an increasing cause of work disability, with the associated costs. A contrasting observation is that, in general, people are in better health and live longer. How can we explain that « disability paradox »?

Method: A discussion among Canadian independent medical examiners and a literature review on the topic show that more and more examinees are put on sick leave by their treating physician while the medical notes, the psychiatric interview, and the mental status do not support the diagnosis of a psychiatric disorder or a psychiatric disability. What is happening?

Results: The author proposes probable explanations for such a trend in overdiagnosing (or mis-diagnosing) psychiatric disability. Do best practice guidelines, psychiatric classifications, or physician's advocacy role influence that phenomenon?

Conclusions: Should physicians with a « sympathy bias » for their patients be sued for "complaisance" or fraud? Should ignorance be invoked? To prevent overdiagnosis of psychiatric disability, the author underlines the importance of educating medical students and treating physicians on disability issues and their impact on their patients and on our society.

Development and pilot testing of a short film explaining overdiagnosis

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Objectives: Research has shown that many people have trouble understanding the concept of overdiagnosis. During the development of a breast cancer screening decision aid for women in Germany, it became apparent that particularly people with lower levels of education had comprehension problems. The medium of film may be an effective way to explain the concept of overdiagnosis and reach people who do not fully understand it based solely on the written material.

Method: A three-and-a-half minute short animated film explaining overdiagnosis was produced, using breast cancer and prostate cancer as examples. Easily understandable written information was also produced. The film and the written information were tested in four focus groups comprising a total of 20 men and women. The main aim was to test acceptance and understandability. Semi-structured interviews were conducted. The software program MAXQDA was then used to perform a content analysis of the interviews.

Results: The results will become available in April 2017, and will be presented.

Conclusions: The conclusions will be presented.

First do no harm? The importance of communicating overdiagnosis in guideline recommendations:

Approach of the Canadian Task Force on Preventive Health Care

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Objectives

1. To describe when and how the CTFPHC emphasizes overdiagnosis in its guidelines
2. To illustrate its use of evidence-based knowledge translation (KT) tools to help patients and clinicians understand this

3. To discuss strategies for supporting professionals in discussing overdiagnosis as part of shared decision making

Method: The CTFPHC ('Task Force') is an independent panel of clinicians and methodologists that makes recommendations about clinical interventions aimed at primary and secondary prevention in primary care. In doing so, the Task Force uses a standardized approach, which includes a rigorous systematic review and application of the GRADE methodology in reaching consensus about the direction and strength of each recommendation. To support guideline implementation in practice, the Task Force develops and disseminates KT tools for primary care practitioners and patients using evidence based methodologies. Although an evaluation of the reach and self-reported use of these KT tools in practice is conducted each year, no systematic data are available on their effectiveness in communicating about overdiagnosis. We illustrate these approaches and challenges using the Task Force's 2014 prostate cancer screening recommendations.

Results: The Task Force based its prostate cancer screening recommendations on an update of two previous systematic reviews. In the guideline (published in the CMAJ 2014), the Task Force presented the summary evidence on overdiagnosis and overtreatment, which underpinned its recommendations against screening for all three targeted age groups. Its weak recommendation (for the 55-74 age group) was an indication for a values-driven shared decision making approach between patient and physician, based on objective information on benefits and harms. The strong recommendations for younger and older men were an indication that physicians should clearly advise against screening. The Task Force disseminated four tools to support these processes: patient and physician FAQs, a summary infographic, and a '1,000 person' harms and benefits diagram.

By a number of different metrics, this guideline achieved some of the highest attention in the history of CMAJ and appeared to have substantial reach among key end users. The media coverage was considered to be neutral in tone overall, but clear opposition to the recommendations was articulated by patient advocacy and professional groups.

Conclusions: This experience demonstrates that overdiagnosis evidence can be incorporated into a guideline development process and KT tools. The Task Force recognizes how the concept of overdiagnosis remains challenging, and seeks effective ways to extend understanding to support shared decision-making

Older adults' preferences for how to explain cancer screening cessation - results from a national survey using best-worst scaling

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Objectives: Over-diagnosis of cancer often occurs when older adults with limited life expectancy continue to be screened for cancer, leading to detection of cancers that are unlikely to have clinical relevance during an individual's life time. Cancer screening rate remains high among older adults with limited life expectancy. One potential contributor to over-screening may be clinicians' discomfort with discussing screening cessation with patients. This study examines older adults' preferences for different phrasing that a clinician would use to explain screening cessation.

Method: We conducted a national Internet survey of older adults (age ≥ 65) in 2016 using best-worst scaling (BWS), which is a stated-preference research method to measure priorities. We assessed the relative preference for 13 different ways to explain screening cessation for breast, colorectal, or prostate cancers. The phrasing of the explanations were constructed based on literature and results from our prior qualitative interview study with older adults. Using BWS, participants were given 13 choice tasks; in each choice task, the participant was asked to choose among a subset of 4 explanations the one best and the one worst explanation. Pooling the choices each participant made for all choice tasks, we calculated standardized BWS scores, ranging from -1.0 (worst) to 1.0 (best), for each explanation.

Results: The sample included 881 participants (response rate 69.3%) with mean age 71.8. The most preferred explanation was "*your other health issues should take priority*" with a standardized BWS score of 0.41. The least preferred explanation was if "*the doctor does not give an explanation*" with a BWS score of -0.42. In general, explanations that mention guidelines, age, lack of benefit, potential harms were more preferred than explanations that mention life expectancy, discomfort or inconvenience of the screening test, or that the screening test may lead to additional testing.

Conclusions: Despite recommendations to stop cancer screening in older adults with limited life expectancy, how these recommendations can be communicated to patients in an acceptable way is not clear. This study provides the first empirical data from a national sample on patient preferences for how screening cessation can be messaged.

Could disease labelling have positive effects? An experimental study exploring the effect of the Chronic Fatigue Syndrome label on social support.

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Objectives: Research on disease labelling has mainly focused on negative effects. Chronic Fatigue Syndrome (CFS) is a controversial label, whose effects may be positive (e.g. reduced uncertainty about symptoms) or negative (e.g. stigma). Among young adults (those most likely to be diagnosed with CFS) friends are a key source of social support, but CFS patients report social support as an unmet need. The psychological/behavioural responses of friends may influence the severity of the patient's symptoms. Yet there is little research on friends' responses to the CFS label. We examined potential benefits of the CFS label in terms of eliciting social support.

Method: In this online experimental study, 207 university students were presented with a series of hypothetical scenarios. All scenarios related to a gender-matched close friend, who was experiencing typical CFS symptoms and consulted a doctor about them. Study participants were randomly allocated to one of two groups: their friend was either diagnosed with CFS (CFS-label group) or was told they were probably recovering from a virus (no-label group). Participants completed questionnaires in response to the scenarios, assessing sympathetic-empathetic response and rejecting-hostile response (adapted Family Response Questionnaire), as well as treatment support and intended behavioural support.

Results: There were significant interaction effects between label and gender on sympathetic-empathetic response ($F(1, 201) = 5.46, p = .020$), rejecting-hostile response ($F(1, 201) = 8.58, p = .004$), and treatment support ($F(1, 202) = 5.09, p = .025$). The CFS label elicited more social support in terms of more sympathy and empathy, less hostility and rejection, and greater perceived benefit of active treatments (e.g. cognitive-behaviour therapy or medication); and these effects were greater in men than women. The CFS label did not have a significant effect on intentions to provide behavioural support.

Conclusions: Although there is increasing concern about the possible detrimental effects of disease labelling, the findings of this study suggest there may also be beneficial effects in some situations. In a hypothetical scenario when a friend's symptoms were given the diagnostic label of CFS, young adults responded with greater expressions of social support towards their friend. Further research should explore how psychosocial labelling effects may vary depending on the specific labels used (e.g. myalgic encephalomyelitis/ME versus CFS) and on sociodemographic characteristics (e.g. gender).

2-Year Follow-Up in a Breast Screening Decision Aid RCT: Retention of Overdetection Knowledge and Other Decision Making Effects

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Objectives: Supporting women in making well-informed decisions about breast cancer screening requires effective communication about screening outcomes including overdetection or overdiagnosis (diagnosis and treatment of breast cancers that would never become clinically evident). We investigated the effects of providing information about overdetection in a decision aid for women aged around 50 years considering breast screening. Immediate post-intervention results (reported previously at the Preventing Overdiagnosis Conference in 2014) showed that the intervention increased knowledge and informed choice, made screening attitudes less positive, and reduced intentions to screen. We now present outcomes collected at 2-year 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 long-term follow-up outcomes by telephone at 2 years post-intervention (2016). Outcomes include knowledge, attitudes, mammography uptake, future screening intentions, and anticipated regret.

Results: 712 women (81% of those randomised) completed 2-year follow-up. Compared with controls, more women in the intervention group retained adequate conceptual knowledge (34% vs. 20%, $p < 0.01$). Both study groups were similar in the proportions of women who expressed positive attitudes towards screening (81% vs. 82%, $p = 0.66$), underwent mammography during the 2-year follow-up period (50% vs. 51%, $p = 0.75$), and reported intending to screen within the next 2-3 years (82% vs. 85%, $p = 0.25$). Anticipated regret differed between groups: Compared with controls, women in the intervention group agreed less strongly that they might later regret it if they did not undergo screening ($p = 0.02$).

Conclusions: A brief decision aid intervention had a long-lasting (2-year) effect on improving women's conceptual knowledge about potential consequences of breast cancer screening, including overdiagnosis. Few previous decision aid trials have demonstrated an impact persisting over such a long time frame. The intervention also changed women's expectations about how they might feel if they decided to screen or not to screen (anticipated regret). Although screening intentions were lower in the intervention group than among controls when measured immediately post-intervention, after 2 years we have not observed an effect of the intervention on self-reported mammography uptake, nor on future breast screening intentions.

Reducing polypharmacy in the frail elderly: an improvement project in a rural longterm care facility.

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Objectives: This project was designed to help decrease rates of inappropriately prescribed medications in a longterm care population.

Method: Using Plan-Do-Study-Act cycles and an open-access tool to prioritize medication deprescribing (medstopper.com), the author implemented a systematic strategy to reduce unnecessary medications in a frail, elderly population.

Results: As a result, a deprescribing event (discontinuation or decreased dosage of an inappropriate drug) increased from 0.38 times to 1.42 times per patient-quarter. At the end of a 6-month period, the average total number of prescribed medications decreased from 6.18 to 4.95 drugs per patient and 79% of highest risk medications were decreased in dose or stopped. Implementation of the tool initially required a short time commitment to input patient data, but subsequently was part of the routine quarterly medication review.

Conclusions: While it can seem daunting at first, using a systematic tool to make small changes regularly can make large differences in lowering levels of polypharmacy, and thus decreasing related adverse drug events.

Assessing how appropriately diagnostic tests are used in primary care: a systematic review and meta-analysis.

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Objectives: To assess how often diagnostic tests are used appropriately in primary care.

Data source and study selection: We searched MEDLINE and EMBASE from January 1999 to January 2017 for studies that measured the appropriateness of any diagnostic test ordered for adult patients in primary care. Studies were included if they specified and measured the appropriateness of diagnostic tests against a recognised national or international guideline.

Data extraction and synthesis: Two reviewers independently screened titles, abstracts, and full texts, extracted data, and assessed risk of bias. Data extracted included characteristics of the diagnostic test, guideline recommendations, and the number of tests ordered appropriately (in line with guideline recommendations) or inappropriately (not in line with guideline recommendations). When a study assessed multiple different diagnostic tests, multiple measures of appropriateness were extracted. Data were pooled, where appropriate, in a random-effects meta-analysis.

Main outcomes and measures: Appropriateness of diagnostic test ordering: the number of times a diagnostic test was ordered (or not ordered) appropriately (in line with the guideline recommendations) as a proportion of the total number of times when the diagnostic test could have been ordered (or not ordered) appropriately.

Results: 96 measures of appropriateness were extracted from 55 studies that met the inclusion criteria (206,601 participants). All included studies were of observational design; 36 (66%) were judged to be at low risk of bias, 15 (27%) moderate, and 4 (7%) high.

There was large variation in the appropriateness of diagnostic test ordering. Appropriateness ranged from 0% (95%CI: 0 to 18%) to 99.8% (95%CI: 99.5 to 99.9%).

11 different guideline recommendations had more than one measure of appropriateness and were pooled (11 different meta-analyses). Pooled results show marked variation in the appropriateness of diagnostic test ordering across studies. Most notably, there was considerable variation in appropriate use of colonoscopy,

endoscopy, and spirometry. Appropriate use of spirometry for the diagnosis of COPD varied by 47% (pooled estimate of appropriate ordering: 53% (38 to 68%), 44% for appropriate use of colonoscopy (pooled estimate: 77% (95%CI: 22 to 97%) and 40% for upper endoscopy (pooled estimate 80% (63 to 90%).

Some tests were consistently used appropriately and some consistently inappropriately. Echocardiography was consistently used inappropriately: guideline recommendations were consistently followed under 50% of the time, and in some cases as infrequently as 8%. Imaging for non-red-flag low back pain and imaging for non-red-flag headache were consistently not ordered appropriately. Imaging was appropriately not ordered for non-red-flag low back pain and non-red-flag headache 88% (95%CI: 87 to 88%) and 91% (95%CI: 88 to 93%) respectively.

Conclusions

Some diagnostic test guidelines are followed more than others, and there is even variation in the use of guideline recommendations for the same diagnostic test. This variation indicates inappropriate overuse and underuse of diagnostic tests.

impact of detecting potentially serious incidental findings during multi-modal imaging: experience from uk biobank

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Objectives: There are limited data on the impacts of feedback of incidental findings (IFs) from research imaging. The protocol developed for handling potentially serious IFs in UK Biobank's multi-modal imaging study of 100,000 participants involves radiographer flagging with radiologist confirmation of potentially serious IFs. We compared the impact of UK Biobank's protocol (A) versus systematic radiologist review of all images (B).

Method: Brain, cardiac and body magnetic resonance, and dual-energy x-ray absorptiometry scans from the first 1000 imaged UK Biobank participants were evaluated for potentially serious IFs (defined as as one indicating the possibility of a condition which, if confirmed, would carry a real prospect of seriously threatening life span, or of having a substantial impact on major body functions or quality of life) using Protocols A and B. We surveyed participants with potentially serious IFs and their doctors up to 6 months later to determine clinical assessments conducted, final diagnoses, impact on emotions, finances and activities, and opinions on receiving feedback.

Results: With protocol A, fewer participants had potentially serious IFs (A: 18/1000 [1.8%], B: 179/1000 [17.9%]), and a higher proportion had serious final diagnoses (A: 5/18 [27.8%], B: 21/179 [11.7%]). Protocol B generated a higher proportion and number of non-serious final diagnoses (B: 158/179 [88.3%], A: 13/18 [72.2%]). Protocol A missed 16 of 21 serious final diagnoses detected by protocol B (i.e. false negatives), while protocol B generated large numbers of potentially serious IFs with non-serious final diagnoses (158/179) (i.e. false positives). Almost all (90%) participants had further clinical assessment, including some invasive procedures, with additional impact on emotional wellbeing (16.9%), finances (8.9%), and activities (5.6%). Similar numbers with serious and non-serious final diagnoses (11 and 12 respectively) had invasive procedures

Conclusions: Compared with protocol B, protocol A missed some serious diagnoses, but avoided adverse impacts for many participants with non-serious diagnoses. Whilst acknowledging the possible benefit of radiologist review for some participants, we conclude that our feedback policy must aim to avoid both unnecessary harm to large numbers of participants and disruption to publicly-funded health services which may result from detection of false-positive findings, and that the UK Biobank IFs protocol is a justifiable approach in the UK Biobank imaging study.

Screening for malignant melanoma – results from a Cochrane review

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Objectives: To assess the effects of screening for malignant melanoma in the general population on mortality and morbidity, including the level of overdiagnosis.

Method: Systematic review according to Cochrane methods. We prespecified to include randomised trials, including cluster-randomised trials.

Results: We found no randomised trials of screening on morbidity or mortality from malignant melanoma. However, we became aware that some non-randomised studies have apparently shown an effect of screening on melanoma mortality, and on the incidence rate of thick melanomas, which have been used as justification for the implementation of national population based skin screening programmes. We did not search systematically for non-randomised studies. Instead, we evaluated those studies we found in the review process that were used in support of national screening policies. We quality assessed these using the ROBINS-I tool (Risk Of Bias In Non randomised Studies - of Interventions). We will present our evaluation of the non-randomised studies.

Conclusions: The best available data from non-randomised studies indicate that organised screening does not affect mortality from malignant melanoma in a 5-10 year time frame, but that it leads to substantial increases in incidence, i.e. to overdiagnosis and overtreatment. Additionally, screening for malignant melanoma has a high potential for opportunity costs, both regarding health personnel involved in the screening examinations and resources for histopathological investigation.

Using per-capita clinical laboratory expenses to compare appropriate use of laboratory tests

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Objectives: Clinical laboratory testing is estimated to use 3% to 6% of health care resources in Western countries. It is believed that a significant proportion of laboratory testing is useless or not followed-up by physicians. Identification of tests that are likely overused and targets for interventions to improve their appropriate use is usually made through expert recommendations, without a formal, unbiased, process. Benchmarking of test utilization between health organizations is a potential avenue to identify divergent test prescription habits. Various benchmarking indicators have been proposed. We explored the potential of per capita indicators of test usage for this purpose.

Method: We used detailed laboratory test production administrative data (Quebec Province, Canada, 2014-2015; population 8 millions). The total costs of laboratory tests (including pathology, biochemistry, microbiology, haematology and genetics) was CAD \$600 million, for 197 million tests. We removed specialty tests that are concentrated in seven university hospitals, which represented 3.9% of tests (7.45 million tests) and 16% of overall costs (CAD\$83 million). Overall regional and local test volumes and costs were computed for the 16 administrative regions of the province (population 45000 to 2 million). We compared the annual number of tests prescribed per capita and the costs of tests per capita between regions. We also searched for divergence between regions with respect to the number of specific tests prescribed per capita.

Results: The provincial annual number of test prescribed per capita was 21.8, with a cost of CAD\$57.5 per capita (excluding physician fees). The additional cost of laboratory physician fees estimated for the province of Québec was CAD\$25 per capita. The total costs represented 1.4% of all health expenses in 2015 (CAD\$5742). The median annual number of test prescribed per capita was 21.8 (14.1 to 31.6) while the median cost per capita was CAD\$59 (CAD\$39 to CAD\$88, excluding physician fees). Two regions including large university hospitals (with tertiary care services) had the largest per capita costs and annual test volumes. Further analyses showed that a specific laboratory tests were overused/underused between specific regions and may warrant further studies to understand these important differences.

Conclusions: As compared to reported figures in Western countries, the Québec province has one of the smallest per capita costs for clinical laboratory services. Per capita indicators of laboratory test use may provide an interesting benchmarking tool both to estimate tests overuse across administrative regions. However further studies are needed to improve this comparison system.

Perceptions of Overdiagnosis of Breast Cancer among a Tri-ethnic Sample of Women 70 Years of Age and Older

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Objectives: Many organizations suggest upper age limits for screening mammography because of concerns about overdiagnosis - the diagnosis and treatment of cancers that would not have been symptomatic during the women's lifetime. It is unclear whether older women share this concern. This mixed-methods study explored the conceptualization of overdiagnosis and its influence on screening decisions among a tri-ethnic sample of older women aged 70 years and older with varying education levels.

Method: A qualitative thematic analysis of transcripts was conducted from semi-structured interviews with 59 English-speaking, community-dwelling older women with no prior breast cancer history in Houston/Galveston, Texas, U.S.A. Older women were sampled by ethnicity (i.e., Non-Hispanic Black, Non-Hispanic White, Hispanic.), age (i.e., 70-74, ≥75), and educational level (i.e., ≤high school, college or greater). Interviews explored older women perspectives of overdiagnosis and its influence on their screening intentions. Clustering in theme usage were assessed across sample based on ethnicity, age, education, future screening intentions, and understanding of overdiagnosis.

Results: No theme usage differences by age, education, ethnicity, or intention to continue screening were identified. There were differences between women who understood overdiagnosis and women who did not. Four main themes emerged related to how they conceptualized overdiagnosis: (1) resistance to or disagreement with the concept; (2) desire to discuss overdiagnosis with their physician and follow his/her recommendation; (3) confusion with other screening harms; and (4) comparison with other conditions where overdiagnosis frequently occurs. Screening preferences were influenced by: (1) women's right to decide about mammograms; (2) desire to know about the presence of cancer, or (3) the necessity of screening older women. Using scenarios to explain overdiagnosis did not influence older women's intent to screen in the future for those who understood overdiagnosis or not.

Conclusions: Older women are suspicious or resistant to the risk of overdiagnosis of breast cancer, and confuse it with other harms of screening. Even understanding of overdiagnosis does not influence their screening intentions. Patient decision aids have been successful in communicating overdiagnosis in other countries and with younger women; however, simply providing older women with descriptions of overdiagnosis will not be sufficient to influence screening preferences. Our results reveal that greater efforts are needed on determining how to best convey the benefits and risks of breast cancer screening to older women, particularly those who wish to continue screening. Improving communication between physicians and older women regarding the risk of overdiagnosis may facilitate better shared screening decisions at older age.

How Information About Overdetection Changes Breast Screening Decisions: Mediation Analysis Within a Randomised Controlled Trial

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Objectives: Breast cancer screening is a persistently controversial issue. New understanding of the harms of screening, especially the complex problem of overdetection, has prompted the need for a shared decision making approach aiming to help women appreciate the potential for harm as well as benefit. As reported previously (at Preventing Overdiagnosis Conferences in 2014-2016), we investigated the effects of including information about overdetection in a decision aid for women considering breast screening. We now present a mediation analysis aimed at exploring the pathways through which women who received the intervention processed information about overdetection and integrated it into their decision making.

Method: In a randomised controlled trial in Australia, we compared the effects of two versions of a decision aid giving women information about breast cancer deaths averted and false positives from screening, either with (intervention) or without (control) information on overdetection. The participants were women aged 48-50 years with no personal history of breast cancer. We then conducted a serial multiple mediation analysis (n=811) examining a series of potential mediators of the relationship between exposure to information about overdetection and subsequent breast screening intentions. The potential mediators included overdetection knowledge, breast cancer worry, breast screening attitudes, and anticipated regret.

Results: Comparing the study groups shortly post-intervention showed that informing women about overdetection reduced their intentions to undergo breast cancer screening. The mediation analysis revealed that the effect of the intervention (providing information about overdetection) on screening intentions was mediated through multiple cognitive and affective pathways. In particular, the intervention led to substantial improvements in women's understanding of overdetection, and influenced - both directly and indirectly via its effect on knowledge - their attitudes towards having screening. The mechanisms involving knowledge and attitudes were particularly important in determining women's intentions about screening participation.

Conclusions: Even in the emotive context of breast cancer screening, this study demonstrates that new information influenced women's decision making by changing their understanding of the possible consequences of screening and their attitudes towards undergoing it. Our novel findings from this mediation analysis underline the importance of providing good-quality information about the benefits and harms of mammography to help women make an informed choice when they are invited to screening. Using effective communication tools and resources, with the capacity to successfully impart new and relevant knowledge, will best support women to make well-informed decisions about whether to participate in breast screening.

Cancer overdiagnosis explained: A simple graphical model

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Objectives: In spite of some progress, the problem of overdiagnosis in cancer screening remains poorly understood by patients, policy-makers, and even many health care providers. The mantra of "early detection saves lives" has been so often and widely repeated, that most people do not question it. Cancer screening is promoted through public campaigns, and primary care providers can receive incentive payments for doing more of it (!?).

The fact that cancer screening is less helpful than thought and at times even harmful is an unpopular, counter-intuitive idea for most people. While false positive results contribute to the harm-to-benefit ratio, it is overdiagnosis that may most distort the value of many cancer screening programs.

The two most important challenges in communicating about overdiagnosis are (1) that it is invisible: though we know that it occurs in a population, we cannot with certainty identify individual cases of overdiagnosis, and (2) overdiagnosis is not easily explained. To understand it, one must first appreciate the heterogeneity of cancer progression and more specifically the idea that some cancers are indolent, destined to never cause any harm.

In this session, a simple graphical model for explaining overdiagnosis will be shared, and this will be placed

in the context of screening a population to demonstrate the magnitude of the effect of overdiagnosis of specific cancers on the value proposition related to cancer screening. These statistics will be presented as decision aids that feature pictograms, which can be understood even by patients with limited literacy or numeracy skills.

Perspectives on Discontinuing Breast Cancer Screening Among Older Women

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Objectives: Breast cancer screening is associated with reduced breast cancer-specific mortality; however, among older women the potential harms of screening may outweigh the benefits. Contributing to this complexity is that different racial/ethnic groups experience an unequal disease burden. The current study used a qualitative approach to examine older women's thoughts about discontinuing breast cancer screening in a racially/ethnically diverse sample of older women.

Method: Women aged >70 years with no breast cancer history were recruited for in-depth interviews. Non-proportional quota sampling was used to ensure roughly equal numbers on age (70-74 years, >75 years), race/ethnicity (non-Hispanic/Latina White, non-Hispanic/Latina Black, Hispanic/Latina), and education (< high school diploma, >high school diploma). Participants who planned to continue screening were presented with eight hypothetical scenarios and asked whether they would continue screening if they found themselves in any of these situations. They were also asked how they would react if their physician recommended discontinuing mammograms, and to speculate about why their physician might recommend stopping. Finally, participants were asked to describe their personal reasons for continuing screening, their time horizon for continuing to have mammograms, and if they would consider stopping in the future. Transcripts were analyzed using the constant comparative method.

Results: A subsample of 29 (29/59) participants who intended to continue having screening mammograms were included in this analysis. Participants represented approximately equal numbers on age, race/ethnicity, and education. Regardless of the hypothetical scenario (e.g., diagnosed with medical condition, life expectancy <5 years, memory problems, living in nursing home), participants expressed a strong intention to continue screening. Most women stated that they planned to continue getting screened indefinitely. When asked how they might react if their physician recommended discontinuing screening, participants most frequently described that they would seek clarification or further explanation from their physicians. When asked about personal reasons for continuing screening, participants most often expressed the belief that the benefits of screening would continue to outweigh the harms, regardless of their age. There were no differences observed according to age, race/ethnicity, or education.

Conclusions: In this sample of older women, scenarios involving diminished health status did not impact intentions to be screened. These findings suggest a resilient belief system favoring early detection of breast cancer that will be difficult to address solely through decision support interventions. A physician's recommendation is a key focus of intervention, along with communication strategies to support deliberation during the decision making process.

Decisional conflict screening for a diversity of primary care decisions. Are we SURE yet?

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Objectives: SURE is a screening tool (Sure of myself; Understand information; Risk-benefit ratio; Encouragement) for clinically significant decisional conflict (CSDC). We sought to assess the predictive validity of SURE to verify if the tool is appropriate for ruling-out CSDC across diverse decision types in primary care consultations.

Method: We administered SURE to 151 patients, post-consultation, in six Quebec primary care clinics. We assessed reliability using Cronbach alpha and criterion validity by measuring association between Decisional Conflict Scale scores (DCS, reference standard) and SURE outcomes (CSDC positive/negative) using logistic regression adjusted for potential confounders. We estimated predictive validity by calculating sensitivity and specificity with associated 95% CI. SURE is negative for CSDC if the patient says "Yes" to all of the four questions and the DCS is a 16-item questionnaire considered the reference standard for measuring CSDC. A cut-off value equal to or greater than 25/100 indicates CSDC.

Results: Of 146 included patients, the DCS identified 26 (18%) with CSDC while SURE identified 8 (5%). Decision types were treatments (46%), tests (20%), specialty referrals (6%), lifestyle changes (6%) and wait/follow-up (17%). Internal consistency was good (Cronbach's alpha=0.78). SURE outcomes were significantly associated with DCS scores ($p=0.008$). Predictive validity of SURE yielded high specificity (97.0%; 95% CI:92.0-99.0), but low sensitivity (15.0%, 95% CI:4.0-35.0%).

Conclusions: SURE is a reliable and valid tool for screening CSDC but may not rule out patients without CSDC across diverse decision types in primary care consultations. It seems that in the context of our cohort, SURE was not able to identify true positive cases of CSDC as measured by the DCS reference standard. Caution is needed before widespread clinical use. Further research should identify decisions with highest likelihood of CSDC and verify SURE's predictive validity for these.

Colonoscopy overuse in colorectal cancer screening and associated factors in Argentina: A retrospective cohort study.

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Background: In recent years, there has been growing concern about the overuse of colonoscopy (CC), as different authors documented that screening intervals recommended in clinical practice guidelines are frequently not followed. Overscreening exposes patients to the unnecessary risks and dilapidates economic and human resources.

Objective: To assess: 1) The incidence rate and cumulative probability of having a potentially inadequate CC (PI-CC, e.g. a CC that was performed earlier than recommended). 2) The association between the report of a hyperplastic polyp in the baseline CC report and the probability of having a PI-CC.

Design: A retrospective cohort based on secondary data, extracted from the electronic medical record of the Hospital Italiano of Buenos Aires (HIBA).

Participants: Adults, 50 years old or older, members of the HIBA's Health Plan, who had a complete CC performed during 2005 at the HIBA and without lesions or with hyperplastic polyps. Patients with significant family or personal history of colonic illnesses were excluded.

Key Results: The cumulative probability of receiving a PI-CC over 10 years was 0.29 (95% CI 0.241, 0.342). The incidence rate resulted in 30.91 PI-CC per 1000 person-years (95% CI 25.14, 38). The crude unadjusted analysis showed a statistically significant difference between both groups (hyperplastic polyps vs no lesions; log rank: $p = 0.036$). The multivariate analysis yielded a hazard ratio of 1.67 (95% CI 1.02-2.73).

Conclusions: We documented in this investigation that one every three patients treated in our health system receive a PI-CC during the first ten consecutive years after a normal complete CC. Furthermore, this could be in part attributed to the presence of a hyperplastic polyp in the baseline CC.

Overdiagnosis of coronary artery disease by stress echocardiography. Identification of variables associated with a false positive stress test.

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Objectives: The overdiagnosis of coronary artery disease (CAD) by current stress imaging modalities typically leads to an unneeded coronary angiography. This may have huge implications regarding patient's safety as well as expense of health care. Identification of variables associated with false positive stress test is important to minimize referral for invasive testing and lower the risk of potential complications in these patients.

The aim of this work is to provide a literature review of variables associated with a positive stress echocardiogram (SE) in patient who have no significant CAD.

Method: We performed a PubMed literature search of original studies which reported the diagnostic accuracy of either exercise or dobutamine stress echocardiography considering invasive coronary angiography as golden standard. A false positive SE was considered when the test was positive in patients without CAD or with less than 50% stenosis of a major coronary artery. Only studies reporting clinical, hemodynamic, imaging and or angiographic characteristics of patients with false positive results were included.

Results: Clinical variables associated with false positive SE were absence of cardiac symptoms with low pretest probability of CAD, left bundle branch block and cardiomyopathy. Age and gender were not particularly related to a false positive test. Hemodynamic variables included hypertensive response which was a fairly common cause in multiple studies. Imaging variables included poor imaging quality, the presence of resting wall motion abnormalities, septal dyssynchrony and localization of wall motion abnormalities in the basal inferior wall. Angiographic characteristics included coronary spasm, small branch disease and microvascular disease.

Conclusions: Various characteristics have been identified in association with false positive SE, most notably performing the test in asymptomatic population with low probability, hypertensive response and left ventricular wall motion abnormalities due to other etiologies. Identification of these variables can be useful to guide the selection of the appropriate patients for stress testing and considering alternative methods of assessment other than coronary angiography when these factors are suspected to present the underlying reason for the positive stress test.

FACING A DILEMMA IN ELDERLY COMPLEX AND VULNERABLE PATIENTS: TO STOP OR NOT TO STOP PREVENTION?

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Objectives: 1-To know the preventive prescription (statin, antiaggregation, calcium and vitamin D) of elderly patients CCD (with complex chronic disease) and ACD (with advanced chronic disease and lifetime expectancy of less than 12 months) who died during 2015. 2-To assess the correct indication of Proton Pump Inhibitors (PPI) to determine potentially avoidable medication.

Methods: Retrospective observational study. Patients previously identified as a CCD and ACD in 4 Health Centres, which take care of 33.606 people, who died during 2015.

Primary outcome variable: Number of drugs from the 4 selected group.

Secondary outcome variables: age, deprescription (6 months prior to death due to advanced chronic disease), inappropriate prescription of PPI (according to the protocol of the therapeutic commission of Health Catalonia Institute), primary or secondary prevention for use of statins and antiaggregants, and finally the place of death.

Results: Final sample of 128 patients, 58 CCD and 70 ACD, with an average age of 85 years. 40% took an antiaggregant, avoidable in 60% of the ACD, since they did not present any previous cardiovascular episode. 20% of the patients took statins, in which 48% of the cases were primary prevention and were not necessary. The PPI prescription was 69% in ACD, with inadequate indication for use in 48% of these cases and 51% in CCD respectively. 20% took calcium / Vitamin D. There was a 16% deprescription and 16% of patients died at home.

Conclusions: A high percentage of our patients with advanced chronic disease and short life expectancy still continue to take preventive and avoidable treatments, potentially dangerous due to their side effects. The prescription of these selected preventive drugs was elevated, especially PPI and antiplatelet agents. There is a need to reflect on what we do with these vulnerable patients. Few patients died at home, indicating a low primary care intervention when it comes to the end of life.

Research objective: The purpose of this study was to spread the culture of the deprescription in patients with advanced disease and short life expectancy. To know what we are currently doing might help us to reflect on it.

Conclusions: The prescription of these selected preventive drugs was elevated, especially PPI and antiplatelet agents. A high percentage of patients with advanced chronic disease and short life expectancy still continue to take preventive and avoidable treatments, potentially dangerous due to their side effects. There is a need to reflect on what we do with these vulnerable patients. Few patients died at home, indicating a low primary care intervention when it comes to the end of life.

Analytical Approaches in Phase III Clinical Trials of Direct Oral Anticoagulants: A Systematic Review

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Objectives: Current guidelines recommend the use of direct oral anticoagulants (DOACs) for the prevention of stroke in atrial fibrillation and the treatment and prevention of venous thromboembolism (VTE). Randomized clinical trials evaluating the performance of DOACs should use an intention-to-treat (ITT) approach which requires that all patients randomized in a trial be included in statistical analyses. Deviations

from ITT, often labelled modified intention-to-treat (mITT), are increasingly used and increase the risk of bias. The objective of this study was to systematically review and compare reported analytical strategies, the proportion of randomized patients included in analyses, and the reasons for participant exclusions.

Method: A systematic search of PubMed, EMBASE and the Cochrane library for Phase III trials of DOACs was conducted. Titles and abstracts were screened for relevance by two independent reviewers. Characteristics of the trial, patient population, intervention studied, primary outcome, type of data analysis approach, number of patients included in randomization and analysis, reasons for exclusions from analysis, and trial conclusions were extracted from each article.

Results: Of the 29 studies, trials related to stroke prevention in atrial fibrillation and VTE treatment reported clinical primary outcomes, while surgical and medical thromboprophylaxis trials included radiological events. ITT was used in 41% of trials, mITT in 45% (unspecified = 14%). Medical and surgical prophylaxis trials retained less patients in the analyses (min = 61%, max = 83%), compared to trials for stroke prevention and acute VTE treatment (min = 97%, max = 100%). Patients were excluded due to missing or inadequate evaluations of outcomes. Studies with low patient retention (below 85%) were more likely to show superiority of DOACs.

Conclusions: This study reviewed the analytical strategies reported and used in 29 phase III trials evaluating DOACs for the prevention of stroke in atrial fibrillation and the treatment and prevention of VTE. We found that authors misused the term mITT, using it to represent analysis strategies more akin to per protocol, where patients were excluded from the analysis based on outcome measurements. We found high proportions of post-randomization exclusions from the primary analysis in trials evaluating DOAC use for surgical and medical thromboprophylaxis. The conclusions drawn from these studies may be subject to attrition bias, and should be viewed with caution.

A time-driven activity-based costing study to estimate the cost of diagnostic tests ordered in the emergency department

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Objectives: Poor physicians' knowledge of health care costs is an important barrier to reducing overuse of diagnostic tests. Moreover, costs of tests estimated with traditional costing methods have been shown to be unreliable, since these methods do not account for all direct and indirect costs related to care delivery. Activity-based costing models have emerged as a solution for more precise cost assessment in health care. We tested the feasibility of a time-driven activity-based costing (TDABC) method to estimate the cost of diagnostic procedures frequently ordered in the emergency department (ED).

Method: We conducted a TDABC study in the ED of a tertiary care centre in Québec city, Canada (77000 visits/year). We estimated the cost of all potential care activities (e.g. triage) provided to adult patients with selected urgent (e.g. pulmonary sepsis) and non urgent (e.g. urinary tract infection) conditions frequently encountered in the ED. Process maps were developed by a group of ED care providers to identify human resources, supplies and equipment involved in each care activity, and to estimate the time required to complete each process. Resource unit cost (e.g. cost per minute of a nurse) and overhead rate were calculated using financial information from fiscal year 2015-16. Estimated cost of each care activity (e.g. chest X-ray) including physicians' charges was calculated by summing overhead allocation and the cost of each process (e.g. disinfection of the X-ray machine) as obtained by multiplying the resource unit cost by the time for process completion.

Results: Process maps were developed for 14 conditions and 68 ED care activities. We estimated the cost (US\$) of 23 diagnostic procedures, among which blood tests (e.g. two blood culture sets, 24.50); urine tests (e.g. urinalysis and culture, 11.20), diagnostic imaging (e.g. Head CT scan, 69.40); electrodiagnostic studies (ECG, 10.30); point-of-care testing (ED bedside ultrasound, 16.00); triage ordering (urine pregnancy test, 6.20); medical procedures (lumbar puncture and cerebrospinal fluid culture, 56.60); and respiratory testing (e.g. pre- and post-salbutamol spirometry, 24.00). Overall, physicians' charges and non-physician provider salaries accounted for 53% and 25% of all expenses associated with diagnostic tests ordered in the ED.

Conclusions: TDABC appears to be a feasible and reliable costing method to estimate the cost of diagnostic procedures ordered in the ED. Our results represent an important step toward increasing emergency physicians' awareness on the real cost of their interventions and empowering them to adopt more cost-effective practice patterns.

Association between Prostate Cancer Specific-Antigen (PSA) Screening and Prostate Cancer Incidence and Mortality in the Population: A Nationwide Population-Based Study in Korea

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Background: Although the use PSA screening has increased worldwide since 1990s, it is unclear whether there is an association between screening and benefits related to mortality reduction at the population level. In this study, we examined the association between the use of prostate-specific antigen (PSA) screening and mortality reduction of prostate cancer in Korea.

Method: We conducted a natural experiment with a 10-year follow-up period based on a cohort of 3,650,000 men aged 50-70 years in 256 administrative regions in Korea, with different intensities of PSA screening. Each individual included in the cohort was assigned to a region every year, based on their residence, and was followed-up from 2001-2015. The incidence of prostate cancer was investigated during the same period, and prostate cancer specific-mortality and excess mortality were determined.

Results: Prostate cancer incidence increased three-folds from 8 per 10⁵ to 30 per 10⁵ during the period of 2001-2015. We found that increased PSA screening was associated with a significant increase in prostate cancer incidence. However, while PSA screening was associated with higher prostate cancer incidence, it was not associated with decreased prostate cancer mortality. The rate ratios between high vs low incidence regions were not statistically significant ($p > 0.01$).

Conclusions: Increased PSA screening was not associated with a reduction in mortality at the population level, however it caused an abrupt increase in prostate cancer incidence.

Reducing overtreatment of ductal carcinoma in situ through active surveillance: harm-benefit tradeoffs from the patient perspective

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Objectives: Every year, over 60,000 women in the US are diagnosed with ductal carcinoma in situ (DCIS), a precursor lesion of invasive breast cancer. Despite a low risk of progression to invasive disease, guideline concordant care (GCC) for DCIS patients consists of invasive surgery and radiation. To mitigate the resulting overtreatment and associated harms, ongoing trials are evaluating active surveillance (AS) as an alternative management strategy for patients diagnosed with low-risk DCIS. In practice, clinical implementation of AS will require careful assessment of the harm-benefit tradeoffs compared to GCC. Therefore, our objective was to quantify these tradeoffs in a patient-centered framework.

Method: The harm-benefit tradeoffs were quantified using multiple outcome measures: invasive disease-free survival, risk of future mastectomy, risk of surgery-associated harms, disease-specific mortality, and other cause mortality. Data from SEER-Medicare, the National Cancer Database, and relevant observational studies and clinical trials were integrated in a Bayesian evidence synthesis framework. Mathematical models were developed to predict patient-specific risks for competing management strategies. Probabilistic willingness-to-pay analyses were used to identify optimal management strategies based on patient-specific risk tolerance levels and multivariate harm-benefit measures.

Results: Differential risk profiling revealed substantial differences between AS and GCC with respect to invasive disease-free survival, risk of future mastectomy and surgery-associated harms, but less so with respect to disease-specific mortality. Other cause mortality varied considerably with patient age and comorbidity status at diagnosis. Personal risk tolerance played a critical role in identifying acceptable patient-specific tradeoffs of competing management strategies.

Conclusions: The harm-benefit tradeoffs between GCC and AS strategies for patients diagnosed with DCIS are complex. Because the tradeoffs critically depend on patient characteristics and risk tolerance levels, informed decision making requires effective communication of personalized risk projections. These findings

emphasize the need for patient-tailored decision support tools as a critical first step in mitigating overtreatment of DCIS through active surveillance.

Common pathways to incidental diagnosis of cancer beyond screening: insights from a national audit of cancer patients in England

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Objectives: Some patients are diagnosed with cancer incidentally, in the absence of symptoms related to their cancer outside of formal screening programmes. The ever increasing use of investigations to monitor chronic illness or assess patients pre-operatively (e.g. before elective surgery) may be contributing to a rise in incidental diagnoses. However, the routes to incidental diagnosis remain poorly described. We aimed to describe the frequency of incidental diagnosis of cancer in a large and representative cohort of cancer patients, and to illustrate common clinical scenarios that may lead to such a diagnosis.

Method: We analysed primary care data on 15,631 patients subsequently diagnosed with one of 27 cancer sites. Data were collected by primary care physicians who voluntarily took part in a national audit initiative in England. Patients were identified as having been diagnosed incidentally based on information provided by the clinician in free-text responses to the question about 'presenting symptoms'. We described the frequency of incidental diagnosis by cancer site, and compared the characteristics of incidentally to non-incidentally diagnosed patients. Subsequently, we further categorised patients by common routes to incidental diagnosis and provide a narrative synthesis of this information.

Results: In total, 921 of 15,604 cancer patients (6%) were incidentally diagnosed with cancer. Older men were more likely to be diagnosed incidentally, and incidentally diagnosed cancer patients were more likely to be at an earlier disease stage. For five cancer sites, at least 1 in 10 cancer patients were diagnosed incidentally: leukaemia (31%), renal cancer (17%), myeloma (15%), liver cancer (23%), and thyroid cancer (12%).

We identified three typical pathways to incidental diagnosis:

- a) healthcare encounter for an acute or new complaint that was not plausibly related to the subsequent cancer diagnosis;
- b) healthcare encounter for unrelated pre-existing chronic conditions/prior morbidity; and
- c) pre-existing assessment of high risk status (often patient initiated).

Conclusions: One in twenty patients with cancer were diagnosed incidentally, principally in the context of healthcare encounters for unrelated reasons. The increasing prevalence of chronic disease and the greater use of elective surgery are likely major contributors to increasing incidental diagnosis of cancer. The epidemiological, clinical, psychological, and economic implications of incidentally diagnosed cancer merits further investigation.

Increased diagnosis of lipid disorders and treatment with statins among United States children, 2002-2014

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Objectives: Reviews by the United States Preventive Services Taskforce have consistently found that there is insufficient evidence to assess the balance of benefits and harms of screening children for lipid disorders. Nevertheless, the National Heart Lung and Blood Institute, with support from the American Academy of Pediatrics, released a guideline in 2011 recommending universal screening of 9 to 11 year-old children and targeted screening of 2 to 8 year-old and 12 to 16 year-old children. We sought to compare the prevalence of United States (US) children diagnosed with lipid disorders and prescribed statin medications before and after this screening recommendation was released.

Method: We analyzed the Medical Expenditure Panel Surveys (MEPS), which are nationally representative surveys of US households, to measure the prevalence of lipid disorders (International Classification of Diseases, Ninth Revision code 272.XX) and statin prescriptions among US children age ≤ 18 years-old. Between 2002 and 2014, MEPS sampled 142,181 US children. We defined the survey years 2002-2010 as the pre-guideline period and the survey years 2011-2014 as the post-guideline period. All estimates were extrapolated to the US population level using the MEPS stratified, multi-stage weighting design.

Results: The prevalence of US children diagnosed with a lipid disorder increased from 0.55% in the pre-guideline period to 0.75% in the post-guideline period (odds ratio, 1.36; 95% confidence interval, 1.08-1.71).

The prevalence of US children prescribed a statin increased from 0.11% in the pre-guideline period to 0.45% in the post-guideline period (odds ratio, 4.00; 95% confidence interval, 2.75-5.83). Compared to the pre-guideline period, there are 161,557 and 274,199 additional US children diagnosed with a lipid disorder and prescribed statins, respectively, in the post-guideline period.

Conclusions: Guidelines recommending pediatric lipid screening have been associated with a substantial rise in the prevalence of US children with lipid disorder diagnoses and statin prescriptions. Further exploration of the harm to benefit ratio of diagnosis and treatment among these children is needed.

Understanding the information needs of people considering arthroscopy for knee pain due to osteoarthritis: informing the development of an evidence-based decision tool

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Objectives: Clinical practice guidelines advise that arthroscopic treatment has no role in managing uncomplicated knee osteoarthritis. Yet in Australia there continues to be large variation in use of arthroscopy and easily obtainable consumer information is currently inadequate to guide informed decision-making. The objectives of this study were to explore consumer and clinician beliefs and information needs about knee arthroscopy for people with osteoarthritis to inform the development of a knee arthroscopy decision support tool.

Method: We recruited consumers with knee osteoarthritis with or without a history of arthroscopy, and general practitioners, rheumatologists, orthopaedic surgeons and physiotherapists from our network contacts or public registers. Focus groups with general practitioners and one-to-one interviews with all other participants were audiotaped and conducted by an experienced facilitator who used an interview guide with pre-determined questions. All participants gave informed consent and were encouraged to give opinions freely. Digital recordings were transcribed verbatim, read independently by two researchers and data analysis employed thematic and content methods and identified participant-linked supporting quotations.

Results: There were 37 participants: 7 consumers, 13 general practitioners; 6 rheumatologists; 3 orthopaedic surgeons and 8 physiotherapists. Focus groups were two hours and mean individual interview time was 55 minutes. Four preliminary consumer-oriented themes were identified: 1) consumers have poor understanding of the nature and course of knee osteoarthritis; 2) consumers want to know the benefits and harms of arthroscopy and other options; 3) pain is the primary driver for people seeking intervention with arthroscopy; and 4) arthroscopy is perceived as a quick and easy solution.

Analysis of the transcript content indicated that a decision tool should include the following: individualised information; early and unambiguous descriptions of normal knee structure and the fluctuating nature of osteoarthritis; colour diagrams and images; options such as strengthening exercise and weight loss; positive language; avoidance of certain phrases (e.g. 'bone on bone'); a concise summary of the benefits and harms from the evidence; dot points; be a maximum of one page; and include an action plan proforma.

Conclusions: Both consumers and health professionals highlight that people with knee osteoarthritis need to be provided with early, accurate and uncomplicated information. They need to have the condition and treatment options, including the benefits and harms of arthroscopy, clearly explained. These data will provide valuable information to inform the development of a knee arthroscopy decision support tool suitable for people from diverse backgrounds.

Efforts to reduce low-value healthcare practices: exploring the impact of psychological, behavioural and socio-contextual forces

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Background: There is recognition that the overuse of procedures, testing and medications strains the healthcare system financially and can cause unnecessary stress and harm for patients. It is estimated that approximately 30% of current US healthcare dollars are spent on these low-value practices. In recent years, a number of initiatives, such as Choosing Wisely, have targeted the de-implementation of low-value

practices in healthcare. De-implementation science is an emerging field. Work done by physicians, medical societies, implementation and behavioural scientists is adding to our knowledge base, but there is still much to understand about this complex process.

Objectives: The aim of this presentation is to explore key aspects of the emerging field of de-implementation, contribute to the understanding of how it is conceptualized and operationalized and explore the impact of psychological, behavioural and socio-contextual forces on efforts to reduce low-value practices.

Method: We have examined current efforts, such as the Choosing Wisely campaigns, and explored the impact of this international initiative on efforts to reduce medical overuse and waste. We have also attempted to synthesize salient perspectives in this field to provide insight on divergent approaches of behaviour change theories and contextual analysis to understand the nuances and peculiarities of reducing or eliminating low-value practices.

Results: We argue that a deeper understanding of the factors that affect behaviour change and the unique factors that impact de-implementation are needed to advance this field and support the healthcare system through this fundamental practice change. We take up the perennial psychology versus sociology debate and unpack the myriad forces which shape the promotion and sustainment of medical overuse.

Conclusions: By making explicit the tensions that exist between the powerful socio-contextual forces and dominant psychological perspectives we aim to support an approach which incorporates both perspectives to facilitate a deeper understanding of this important topic. We also explore the promise of behavioural economic concepts for additional insights on healthcare provider behaviour. The goal of this presentation is to contribute to the knowledge base of this emerging field and provide researchers and healthcare providers with insights into de-implementation and the broader conceptual forces within which it occurs.

Overdiagnosis of major depression based on lay-administered fully structured diagnostic interviews

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Objectives: The use of overly sensitive assessment tools can drive overdiagnosis. In mental health, both clinician-administered semi-structured diagnostic interviews and lay-administered fully structured interviews are treated as gold standards for assessing major depressive disorder (MDD). Because clinician-administered interviews are expensive to administer, fully structured interviews, which do not require administration by trained medical professionals, are increasingly used. Fully structured interviews do not involve clinical judgement and are considered potentially more reliable but possibly less valid than semi-structured interviews. No studies have assessed whether fully structured interviews increase the likelihood of MDD diagnosis. The objective of this study was to evaluate the association of interview method with odds of MDD diagnosis, controlling for depressive symptom scores and patient characteristics.

Method: We analysed data collected for an individual patient data meta-analysis of the diagnostic accuracy of the Patient Health Questionnaire-9 (PHQ-9). Binomial Generalized Linear Mixed Models with a logit link were fit. Outcome was MDD; main predictor was interview method; covariates were PHQ-9 score, patient characteristics, and setting (e.g., primary care, specialty care). An interaction between interview method and PHQ-9 scores was assessed.

Results: 17,158 patients (2,287 MDD cases) from 57 studies were analyzed. Compared to other fully structured interviews, the odds of a MDD diagnosis were significantly higher for the Mini International Neuropsychiatric Interview (MINI) [OR (95% CI) = 2.10 (1.15, 3.87)]. Compared to semi-structured interviews, fully structured interviews (excluding the MINI) were more likely to diagnose MDD among patients with low levels of depressive symptoms (PHQ-9 ≤ 6) [OR (95% CI) = 3.13 (0.98, 10.00)], and less likely to diagnose MDD among patients with very high levels of depressive symptoms (PHQ-9 ≥ 16) [OR (95% CI) = 0.50 (0.26, 0.97)].

Conclusions: The MINI is the shortest and most easily administered diagnostic interview, but leads to substantial overdiagnosis of MDD. Compared to semi-structured interviews, fully structured interviews appear to over-diagnose MDD among patients with low symptom levels and under-diagnose patients with high symptom levels. Use of fully structured interviews in population samples, where low-level symptoms are common, could exaggerate prevalence substantially and create misleading perceptions of the commonality of MDD.

Diagnostic validity of combining history elements and physical examination tests for symptomatic knee meniscal tears.

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Background: Evidence demonstrates that clinicians rely too often on magnetic resonance imaging (MRI) to make a diagnosis of meniscal tear. The unnecessary use of imaging resources may also lead to the overdiagnosis of asymptomatic meniscal tears. Relying on a combination of history elements and physical

examination tests is advocated for a more efficient diagnosis and management of patients with clinically relevant symptomatic meniscal tears (SMT).

Objectives: The objective of this study is to assess the validity of diagnostic clusters combining history elements and physical examination tests to diagnose or exclude SMT.

Method: This is a prospective diagnostic study where 279 consecutive patients were evaluated for various knee diagnoses including osteoarthritis, patellofemoral pain, anterior cruciate ligament tears or SMT. Each patient was independently assessed by a physiotherapist and an expert physician (orthopaedic surgeon or sports medicine physician). History elements and physical examination tests performed by the physiotherapist were compared to a physician's composite diagnosis including both physical tests and MRI confirmation for all SMT cases. SMT were classified as of traumatic or degenerative onset. Recursive partitioning was used to develop diagnostic clusters. Positive and negative likelihood ratios (LR+/-) with 95%CI were calculated.

Results: Eighty patients had a diagnosis of SMT (28.7%), including 35 traumatic tears and 45 degenerative tears. Combining a history of trauma during a pivot, isolated medial knee pain and positive medial Joint Line Tenderness was able to diagnose (LR+=8.92(95%CI:6.07-13.11)) or exclude (LR-=0.10(95%CI:0.03-0.28)) traumatic SMT. Combining a history of progressive onset of pain, isolated medial knee pain location, pain while pivoting, absence of abnormal valgus or varus alignment and full passive knee flexion can diagnose degenerative SMT (LR+=6.44(95%CI:3.99-10.39)). History of progressive onset without isolated medial pain, with pain in stairs and with restricted passive knee flexion could exclude degenerative SMT (LR-=0.10(95%CI:0.03-0.31)).

Conclusion: Combining history elements and physical examination tests can accurately diagnose or exclude SMT compared to various knee disorders without systematically relying on imaging.

Polycystic ovary syndrome controversy: are expanding disease definitions unnecessarily labelling women with PCOS?

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Objectives: Polycystic ovary syndrome (PCOS) is the most commonly diagnosed endocrine disorder affecting reproductive-aged women, and is associated with adverse reproductive, metabolic, cardiovascular and psychosocial outcomes. Widening diagnostic criteria has introduced various PCOS phenotypes and increased PCOS prevalence from 4-6.6% to up to 21%, raising concerns about overdiagnosis through unnecessary disease labelling. This presentation will examine the evidence and uncertainty surrounding PCOS diagnosis, overdiagnosis and treatment benefit, and the psychosocial impact of a diagnosis.

Method: We conducted a narrative review of the relevant literature to identify the uncertainties in the diagnosis and management of PCOS. The review consisted of a comprehensive examination of research using various methodologies, such as population-based prevalence studies, qualitative investigations, longitudinal and cross-sectional analyses, systematic reviews of treatment trials and current PCOS guidelines, to investigate the risks and harms of expanded disease definitions and unnecessary disease labelling.

Results: Four areas of potential overdiagnosis are identified: Diagnoses have rapidly increased without evidence of benefit, the criteria are problematic in adolescents and young women due to overlapping symptoms of normal development, the non-hyperandrogenic phenotypes of PCOS (e.g. polycystic ovaries and anovulation) do not have the same associated adverse long-term implications as the hyperandrogenic phenotypes (e.g. hyperandrogenism and anovulation), and PCOS may be a transitory rather than a lifelong condition for a high proportion of women diagnosed using current criteria. We consider the evidence, examine the possible benefits and harms of receiving a diagnosis, and discuss additional reasons for caution.

Conclusions: The benefits of a diagnosis may include explanation and validation of symptoms, and motivation to make lifestyle and other changes to reduce the sequelae of the disease. However, labelling healthy women with PCOS unnecessarily may negatively impact their psychological wellbeing, inducing fear and anxiety about future fertility and long-term health. Considering the limitations around the evidence, it may be best to provide symptomatic treatment and avoid making a diagnosis for groups at high risk of overdiagnosis. A slower, stepped care or delayed approach to diagnosis could be a way forward to optimise benefits and reduce harm from disease labelling.

Avoidable diagnostic breast imaging and biopsy investigations: Impact of rising abnormal screening mammography rates

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Objectives: The rates of abnormal screening mammograms have been increasing in recent years in several Canadian jurisdictions without a commensurate increase in cancer detection rates. These rising abnormal "call" rates have led to an increase in the number of potentially avoidable follow-up diagnostic tests with potential implications on patients and system resources.

Method: Data on abnormal screening mammograms and subsequent diagnostic investigations were obtained from the Canadian Breast Cancer Screening Database (CBCSD) which contains data submitted by eleven breast cancer screening programs. Data were analysed for all abnormal screening mammograms performed between 2003 and 2012 on women aged 50-69 and any associated diagnostic investigations, including diagnostic mammograms, ultrasounds, fine-needle aspiration biopsies, core biopsies, and open biopsies. An individual's very first screening mammogram was excluded because of the higher likelihood of abnormal findings. The abnormal call rate was defined as the percentage of screening mammograms identified as abnormal and the invasive cancer detection rate was defined as the number of invasive cancers detected per 1,000 screens. The proportion of potentially avoidable diagnostic investigations was calculated by dividing the difference in the number of diagnostic investigations at the actual (2012) and expected (baseline 2003-2008) abnormal call rate by the number of diagnostic investigations at the expected abnormal call rate.

Results: Abnormal call rates were stable at around 6.1% between 2003 and 2008 but started increasing thereafter reaching 7.4% in 2012. Invasive cancer detection rates, however, remained mostly unchanged during the same period at 3.7 per 1,000 screens. A total of 78,700 screening mammograms were found to be abnormal in 2012 resulting in the following diagnostic investigations: 64,700 diagnostic mammograms, 51,400 diagnostic ultrasounds, 1,000 fine-needle aspiration biopsies, 11,700 core biopsies, and 1,300 open biopsies. If the abnormal call rate is reduced to 6.1%, approximately 21% of those diagnostic investigations could potentially be avoided. This translates to 11,400 diagnostic mammograms, 9,000 diagnostic ultrasounds, 200 fine-needle aspiration biopsies, 2,100 core biopsies, and 200 open biopsies.

Conclusions: Abnormal call rates were stable at around 6.1% between 2003 and 2008 but started increasing thereafter reaching 7.4% in 2012. Invasive cancer detection rates, however, remained mostly unchanged during the same period at 3.7 per 1,000 screens. A total of 78,700 screening mammograms were found to be abnormal in 2012 resulting in the following diagnostic investigations: 64,700 diagnostic mammograms, 51,400 diagnostic ultrasounds, 1,000 fine-needle aspiration biopsies, 11,700 core biopsies, and 1,300 open biopsies. If the abnormal call rate is reduced to 6.1%, approximately 21% of those diagnostic investigations could potentially be avoided. This translates to 11,400 diagnostic mammograms, 9,000 diagnostic ultrasounds, 200 fine-needle aspiration biopsies, 2,100 core biopsies, and 200 open biopsies.

The comparative impacts of cervical cancer screening guidelines on the overdiagnosis of pre-cancerous lesions in Canada

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Objectives: Cervical cancer screening can reduce cervical cancer incidence and mortality where implemented widely, but physical and psychological deleterious effects from overtreatment of self-limiting and reversible pre-cancerous cervical lesions can also result. Recent guidelines promote high participation, commencing later in life and less frequently; some guidelines also recommend primary HPV DNA testing. This study will compare overdiagnosis associated with the identification and treatment of pre-cancerous lesions in three sets of recommendations: American Society of Clinical Oncology, for maximal resource settings (ASCO-Max) vs. Canadian Task Force on Preventive Health Care (CTFPHC) vs. status quo practice in most Canadian programs (SQ).

Method: OncoSim-HPV/Cervix (version 2.3) is a web-based microsimulation tool used to inform cervical cancer control decisions in Canada. Scenarios were constructed to represent maximal resource healthcare setting ASCO-Max (HPV DNA testing x 5 years, 25-65 year olds), CTFPHC (cytology x 3 years, 25-69 year olds) and SQ (cytology x 3 years, 21-69) scenarios. Participation rates of 72% were assumed for all scenarios. An annual HPV vaccination rate of 60% was assumed for 12-year-old girls starting in 2007. Outcome measures examined for 2017-2037 included incidence, mortality, and follow-up procedures and costs (in undiscounted 2016 Canadian dollars) for pre-cancerous lesions.

Results: Average annual incidence and mortality were similar for all three screening scenarios, 1700/year and 520/year, rounded. The average number of colposcopies was highest in SQ, 120,000/year, while CTFPHC guidelines produced 99,000/year and ASCO-Max produced 74,000/year. More invasive procedures, i.e. pre-cancer treatments such as LEEPS, Knife Cone biopsies, and hysterectomies, were 22,000/year, 17,000/year and 15,000/year for SQ, CTFPHC, and ASCO-Max, respectively. Average annual costs of pre-cancerous procedures were \$47 million, \$37 million, and \$32 million for SQ, CTFPHC, and ASCO-Max respectively.

Conclusions: ASCO-Max guidelines applied to the Canadian setting demonstrated similar benefits for cervical cancer incidence and mortality reduction, but the fewest harms associated with the treatment of pre-cancerous lesions compared to the CTFPHC and SQ scenarios. Thus, practice changes in Canada must be weighed and implemented judiciously. With the impact on cervical cancer mortality being similar among all three scenarios, policy-makers may also consider system-wide implications, as reallocation of health care resources could mean up to \$15 million could be spent annually elsewhere in areas of greater need.

Endometrial biopsy in an outpatient gynaecological setting: overinvestigation

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Introduction: Endometrial biopsy allows the sampling of intrauterine material to assess the presence of benign pathologies (polyps), or precancerous/cancerous cells of the endometrial lining. This procedure is often painful and presents risks for the patient, for example infection. There are four main indications for endometrial biopsy in a general gynaecology setting. We wanted to review the indications for endometrial biopsy in the gynaecology outpatient clinic of the Université de Montréal Hospital Center (CHUM) and measure if they comply with the recommendations of the Society of Obstetricians and Gynaecologists of Canada (SOGC).

Methodology: Files of patients consulting at the gynaecology outpatient clinic of the CHUM who had an endometrial biopsy between January and October 2015 were reviewed. 371 files contained enough information for analysis. Indication for endometrial biopsy and pathology results were noted. Files were separated into four categories.

Results: Postmenopausal bleeding : 141 files, all in compliance. 13% hyperplasia or neoplasia, 21% polyps.

Asymptomatic Endometrial Thickening : 11 files, 9% non compliance, 0% hyperplasia ou neoplasia; 18% polyps.

Abnormal uterine bleeding (AUB)– under 40 : 33 files, 30% non compliance, 15% hyperplasia or neoplasia, 27% polyps.

AUB – 40 and over : 172 files, 3% non compliance, 3% hyperplasia or neoplasia, 16% polyps. In this category, 57 patients (33%) were between 40 and 45 years old. Six (11%) had an endometrial polyp and one of these polyps showed hyperplasia.

CONCLUSION : At the gynaecology outpatient clinic of the CHUM, close to a third of patients with AUB under 40 years old and undergoing an endometrial biopsy do not present sufficient indications to justify this procedure according to the SOGC. This represents significant overinvestigation. In addition, 27% of endometrial biopsies in patients over 40 years old are not in compliance with the American College of Obstetrics and Gynecology recommendations, which suggest a biopsy in patients with an AUD in patients older than 45 years old. In our hospital setting, we recommend to reevaluate the pertinence of endometrial biopsies in patients between 40 and 45 years old with an AUD before a medical course of treatment is initiated. Also, indications should be reviewed carefully before performing a biopsy in a patient under 40 years old.

Adaptation and Validation of the Multi-dimensional Measure of Informed Choice for Cardiopulmonary Resuscitation and Mechanical Ventilation for Elderly Patients in a French Canadian Population

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Background: Studies show that elderly patients are receiving EOL care inconsistent with their preferences. Two overused interventions at EOL for elderly Canadians are cardiopulmonary resuscitation (CPR) and invasive mechanical ventilation (IMV). Shared decision making (SDM) supported by the use of patient decision aids (PDAs) is used to help patients make value-based decisions. The MMIC has never been used to measure the impact of SDM with PDAs about interventions like CPR and IMV.

Objective: To adapt and validate the Multidimensional Measure of Informed Choice (MMIC) to Cardiopulmonary Resuscitation (CPR) and Mechanical Ventilation (MV) for elderly patients in a French Canadian population.

Method: We adapted each questionnaire to CPR and IMV through expert consensus (content validity) and patient face validity testing. Each questionnaire had 8 knowledge items and 4 attitude items. Nine experts contributed to the final content of each questionnaire. Face validity was tested with ICU patients in Lévis, CA. The questionnaires were administered, at test and retest, to residents of a long-term retirement facility in Lévis with a one-week interval between administrations. Knowledge items were analysed with McNemar's test for paired dependent samples. Attitude items were measured using Cronbach's alpha. Both questionnaires were adapted for use in a French-speaking population of elderly patients.

Results: Thirty-two residents participated in the test and 30 residents participated in the retest. For the CPR MMIC questionnaire, McNemar's test on the 8 knowledge items had p-values of .32, 1.0, 1.0, .02, .18, .09, .01, and .71, respectively. For the IMV MMIC questionnaire, McNemar's test on the 8 knowledge items had p-values of 1.0, .32, .26, .41, .32, .32, .71, and .16, respectively. Values for Wilcoxon signed-rank for overall questionnaire stability were .1466 for CPR and .8375 for IMV. Cronbach's alpha at test for CPR and MV was .94 and .95 and at retest .96 and .97.

Conclusions: Both questionnaires demonstrated good internal consistency and temporal stability. Items 4 and 7 for the MMIC on CPR should be modified to improve their temporal stability. The attitude items within both questionnaires had very high Cronbach alpha's suggesting redundancy within the scales. To the best of our knowledge, this study is the first to adapt and validate the MMIC to the context of CPR and IMV for elderly ICU patients and long-term residents of a retirement facility. Future work is now needed to test the use of these questionnaires within a population of frail hospitalized elderly patients.

Overdiagnosis in NSW due to screening mammography for breast cancer

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Objectives: To examine long-term trends in the incidence of early and late-stage incidence of breast cancer in NSW, Australia, from 1972-2012, and estimate the percentage risk of overdiagnosis attributable to the population-based screening mammography program, BreastScreen.

Method: We obtained individual, deidentified data on the degree of spread of breast cancer for NSW women from 1972-2012 and examined temporal trends in the incidence of early and late-stage breast cancer. For our analyses, we defined early-stage cancer as ductal carcinoma in situ (DCIS) or localised disease, and late-stage cancer as regional or metastatic disease. Two approaches were used to estimate expected incidence in the absence of screening using an unscreened population of women older than 50 years prior to the introduction of government-subsidised mammography and BreastScreen (1974-1983): 1. Poisson regression to extrapolate annual numbers of breast cancer from 1988-2012; and 2. allowing the baseline incidence to increase according to trends in a contemporary cohort of women who did not attend screening regularly (40-44 years). We then adjusted the observed estimates for hormone replacement therapy (HRT) use, which coincided with the introduction of screening mammography. We compared the observed incidence of early and late-stage breast cancer among a population of women older than 50 years invited to screening to the expected incidence in an unscreened population. To allow for lead time bias, we included women who were older than the upper age limit of the screening program. Overdiagnosis was calculated as the difference in the observed and expected incidence of early and late-stage breast cancer, expressed as a percentage of all breast cancers detected in women invited to screening.

Results: The introduction of screening mammography in NSW, Australia, has increased the incidence of early-stage breast cancer without reducing the incidence of late-stage breast cancer. The first approach found that in 2012, breast cancer was overdiagnosed in 938 women; accounting for 22% of all newly diagnosed cases (95% CI: 21.9%-22.5%). The second approach found 1,383 women were overdiagnosed; accounting for 33% of all newly diagnosed cases (95% CI: 31.2%-34.0%).

Conclusions: Screening mammography was not associated with a reduction in the incidence of late-stage breast cancer in NSW, Australia. We estimate that around one quarter of all newly diagnosed DCIS and invasive breast cancer cases are overdiagnosed.

Identifying and reducing low-value care: development of a typology

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Objectives: Overuse of unnecessary care is widespread around the world. This so-called low-value care has little or no benefit for the patient and may even be harmful. However, the concept of low-value care is broad and there is variation in causes and in strategies to reduce it. The aim of our study is to develop a typology of low-value care that creates awareness of the contexts and causes for low-value care to provide insight in how to reduce them.

Method: We have performed a critical review in scientific literature for existing typologies of low-value care. Based on these findings and on existing definitions of low-value care we developed a new typology.

Results: The three typologies that we found in the literature offer insight in low-value care, but have several limitations; they do not comprise the full spectrum of low-value care, they have categories that overlap and they don't give direction to reducing low-value care. We developed a new typology, in which we included low-value care from the patients' perspective and created three types and six subtypes based on their cause for being low-value. **Ineffective care** is proven ineffective care for the majority of the population or a well-defined subgroup, such as shaving before an operation or inhaled corticosteroids for patients with mild COPD. **Inefficient care** is in essence effective, but becomes low-value through inefficient provision or too high intensity, such as duplication of laboratory tests or chronic benzodiazepine use. **Unwanted care** is in essence effective, but is low-value since it doesn't solve the patients' problem or doesn't fit the patients' preferences, such as curative care for an elderly patient that prefers palliative. These three types are likely to be different in their most promising de-implementation strategy. Ineffective care can be clearly defined for which condition it is inappropriate. This enables macro strategies such as market withdrawal or exclusion from the benefit package. These strategies are unsuitable for inefficient care, since this still needs to be delivered. In this case, reorganizing care pathways of facilitating cooperation between clinics is more promising. Unwanted care can only be measured and reduced by identifying the individual patients' preferences.

Conclusions: We have developed a typology that provides insight in the different causes of the full spectrum of low-value care. This typology could be helpful in identifying low-value care and selecting strategies to reduce them.

Using colposcopy to calculate screening performance measures of VIA in Indian cervical cancer screening programs: potential for overtreatment?

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Objectives: Performance measures of cancer screening tests are calculated with the use of a "gold standard" reference test. For most cancer screening modalities, histology is used to determine whether cancer is truly present. However, use of histology may not be possible in certain settings due to its expense, difficulties in tissue ascertainment, or health care system limitations. For community-based cervical cancer screening studies of visual inspection (VIA) in India, colposcopy without histology has been commonly used as the gold standard, even though only histology can provide definite evidence of the true disease status. Using colposcopy (an imperfect gold standard) to determine disease status can impact the accuracy of VIA screening performance test measures, including sensitivity and specificity of VIA. First, both colposcopy and VIA are visual methods and therefore interpretation (both correct and incorrect) tends to be highly correlated. Second, the interpretation of the colposcopy varies by the experience and specialty of the

colposcopists, whereas histology is more uniformly assessable. Third, if colposcopy-guided biopsies are performed only on lesions that are picked up by VIA then is it possible to miss other similar small lesions.

Method: All peer reviewed journal articles till December 2015 were searched according to PRISMA guidelines. Articles reporting results from cervical cancer screening programs in community-based settings, conducted in India, and using VIA were included in this review.

Results: The search resulted in 20 articles with a total of 313,553 women at 12 unique urban and rural sites across India. Of these, ten studies reported test accuracy for CIN Grade 2+, the VIA sensitivity values ranged from 16.6 - 82.6% and specificity ranged from 82.1 - 96.8%. Of the ten articles, six studies based their reference diagnosis on colposcopy findings and/or histology findings, one study provided the experience levels of the colposcopists, and eight studies performed colposcopy-guided biopsies .

Conclusions: Using colposcopy as a reference method versus a triaging method can have different implications for information synthesis, which could lead to implementation of ineffectual or harmful public health practices. It is important to study and address these difference when conducting population level studies screening test performance. Future research is required to determine directionality of the effect on test performance when using colposcopy as a reference diagnosis versus histology. If not addressed, the use of colposcopy may lead to a high incidence of precancerous lesions being over treated with hysterectomies.

Interventions to reduce unnecessary laboratory test utilization in hospital practice - A narrative review

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Objectives: Laboratory testing represents the highest volume of diagnostic activity. Overutilization of laboratory testing in the range of 20 percent has been found in studies addressing the appropriateness. We conducted a narrative review of trials aimed at reducing unnecessary diagnostic laboratory tests in hospital practice.

We aimed to (1) describe different types of interventions implemented with the aim of reducing unnecessary laboratory testing in the hospital setting, (2) provide crude estimates of the efficacy of these interventions on test order volume and on patient related clinical outcomes.

Method: PubMed, EMBASE, Scopus, Web of Science and the CADTH HTA database were searched for studies describing the effects of interventions, aiming to reduce unnecessary laboratory test utilization in secondary/tertiary care facilities, on test order volume and clinical outcomes. Data extraction was performed by one reviewer and uncertainties were discussed with two other reviewers until consensus was reached. Due to heterogeneity of interventions and outcomes no meta-analysis was performed.

Results: 84 studies met the inclusion criteria. Of these, 56 were before-after studies, 20 were (randomized) controlled trials and 8 were retrospective audits. Interventions were categorized into four categories: educational, (computerized) provider order entry, audit and feedback, or other interventions. Nearly all studies reported initial reductions in test volume. However, follow-up data beyond 2 years was provided only in 14 studies. 45 studies reported patient related clinical outcomes and no negative effects were found, however the relevance of clinical outcomes studied was often questionable.

Conclusions: Interventions from all categories have the potential to reduce unnecessary laboratory testing although long-term sustainability is questionable. Due to heterogeneity of studied interventions and outcome measures it is difficult to draw conclusions regarding which approach was most successful. Most studies had methodological limitations, such as the absence of a control arm. Therefore, well designed controlled trials using clearly described interventions and relevant clinical outcomes are needed in the future.

The positive side of overdiagnosis: does an immediate comprehensive panel of laboratory tests in outpatient care improve patient outcomes?

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Objectives: Many studies on over-medicalization surrounding diagnostic tests focus upon reducing over-testing. However, in some settings more testing may lead to better patient outcomes and reduced healthcare costs. In the POORT (Patient Outcomes of Rapid Testing) trial we test the hypothesis that performing a comprehensive laboratory panel prior to the visit to the outpatient clinic will lead to a shorter time to diagnosis, lower patient burden, and negligible harms related to overtesting.

Method: Three different laboratory testing strategies are being compared:

- A) a fixed comprehensive laboratory panel of 21 tests prior to the patient's visit to the outpatient clinic;
- B) a hypothetical targeted laboratory panel based on the referral reason prior to the patient's visit;
- C) targeted laboratory tests performed after the patient's visit, based on the information gathered during the consultation.

All new patients referred to the internal medicine outpatient clinic of a large university medical centre are being included in a block-randomized trial with two arms. Half have a fixed comprehensive laboratory panel performed prior to their visit and half have targeted laboratory tests performed afterwards. In all patients a hypothetical targeted laboratory panel is determined based on the referral reason. We aim to include 400 patients.

Outcomes measured include time to diagnosis, the number of visits to the outpatient clinic, the number of additional tests and imaging being performed, patient satisfaction, costs, appropriateness of the laboratory tests being performed (as assessed by an expert panel) and the negative consequences of overtesting.

Results: We have evaluated the feasibility of our trial in a pilot of 100 patients, in all of whom a fixed laboratory panel was performed and a hypothetical targeted laboratory panel was determined prior to their outpatient clinic visit.

For these two testing strategies, the median number of unnecessary tests was 14 and 10 and the number of patients who experienced harms related to overtesting was 23 and 18 respectively.

Conclusions: Overdiagnosis and overtesting present real problems, but in a laboratory testing strategy these problems may be outweighed by the benefits of a shorter time to diagnosis. Research into appropriate diagnostic strategies and diagnostic error should focus on patient outcomes and efficient strategies rather than absolute number of tests.

Lost in terminology: towards a typology for dissecting overdiagnosis

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Objectives: Overdiagnosis is a popular term increasingly used to refer to any situation where a diagnosis does not lead to a net benefit in individuals. There is considerable disagreement on overdiagnosis definition between papers and as a result there is widespread variation in how this term is used in literature. Faced with a problem labelled as overdiagnosis, our typology will be helpful in dissecting what contributing mechanisms are, how these can manifest themselves in the diagnostic pathway and what potential impact these can have.

Method: A group panel (n=5) was assembled and discussed overdiagnosis in a series of meetings. Several typologies were designed, and their strengths and weaknesses discussed. Through an iterative process these were evaluated and improved, and a concept typology was developed. This typology was validated using a selection of articles from a database acquired from a systematic review on overdiagnosis. A final typology was constructed and evaluated in a group discussion (n>25).

Results: Three main mechanisms leading to overdiagnosis were distinguished (and examples are given)

I. Uncertainty in where normal variation ends and where abnormality starts

- Ex 1. Uncertainty about what level of PSA corresponds with clinically relevant prostate cancer
- Ex 2. Uncertainty about whether a child's hyperactivity is related to ADHD

II. Errors when assigning the diagnostic label

- Ex 1. Errors made when using fine needle aspiration for diagnosis of thyroid adenocarcinoma (reference standard only available after surgery)
 - Ex 2. Errors made when using DSM for initial diagnosis of bipolar disorder (reference standard not applied)
- III. Uncertainty about the management decision despite having assigned a correct diagnostic label
- Ex 1. Uncertainty whether or how to treat individuals with ductal carcinoma in situ (DCIS)
 - Ex 2. Uncertainty where the threshold is for significant prostate cancer, indicating that treatment is warranted

A graphical representation of the diagnostic pathway (i.e. screening, diagnostic testing, diagnostic label, management) was used to illustrate how these different mechanisms can lead to problems that can be referred to as overdiagnosed. In a given situation multiple mechanisms can be jointly present. To tackle these effectively, a sequential approach is required. We describe the consequences of these different mechanisms in terms of cases overdiagnosed, costs and health effects.

Conclusions: This typology provides researchers with a model describing different mechanisms leading to overdiagnosis, and demonstrates how these can have an impact along the diagnostic pathway. When overdiagnosis exerts itself through multiple mechanisms, actions should be taken sequentially.

UNDERSTANDING MOTIVATIONS OF OLDER WOMEN TO CONTINUE OR DISCONTINUE BREAST CANCER SCREENING

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Objectives: Screening of older women with limited life expectancy carries the risk of detecting cancers that would not otherwise cause problems or cause death, and can expose women to unnecessary treatment (overdiagnosis & overtreatment). This study explores screening experiences and perceptions of older women across age, ethnic, and educational subgroups and links those experiences to their desire to continue or discontinue screening.

Method: A qualitative study using stratified purposive sampling was conducted in southeast Texas, USA. White, Black, and Hispanic women in younger-old (70-74) and older-old (≥ 75) age groups with lower (<12 yrs) and higher (>12 yrs) educational backgrounds were asked about mammograms, the benefits and risks of screening, and their personal screening experiences using in-depth qualitative interviews (approximately five per subgroup, total n=59). Interviews were coded and quality checked by two or more independent coders. A qualitative comparative analysis (QCA) compared thematic code usage between women expressing a desire to continue screening and those who did not.

Results: Themes coded from narrative discussions covered General Descriptions of mammograms, their Purpose, Benefits, Risks, and women's Personal Decision Process for being screened with 21 codes. An examination of women by demographic characteristics and code usage revealed five factors that differed between continuers and discontinuers: age, having had a mammogram in the past four years, initiating screening appointments, spontaneously relating a personal cancer story concerning a friend or relative, and having a doctor's recommendation. When these five factors were considered together, QCA identified two groups of women with separate motivations for continuing screening. One group of women related a personal cancer story, initiated screening appointments, had screened recently, and intended to continue screening. The second group was older-old women who had not screened recently, did not initiate screening appointments, had not reported a personal cancer story, but who had a doctor's recommendation to screen and thus, intended to continue screening.

Conclusions: Ethnicity, educational level, and characteristics of mammograms (risks/benefits) did not affect women's preferences as much as having had a friend or relative with cancer or having a doctor's recommendation. Women who have had a friend or relative with cancer may overestimate their personal cancer risk, but appear to be highly motivated to continue screening. In contrast, older-old women may be willing to discontinue screening if their doctor recommends it.

Serendipitous detection of pancreas cancer during lung cancer screening with low-dose computed tomography

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Objectives: Screening for lung cancer with low-dose computed tomography (LDCT) leads to serendipitous detection of other abnormalities, including cancers in other organs within the field of view. Anecdotal reports suggest that asymptomatic and perhaps incidental pancreas cancers may be detected during lung cancer screening with LDCT. We analyzed data from the National Lung Screening Trial (NLST) to characterize the experience of LDCT arm participants who were diagnosed with pancreas cancer during the course of the trial.

Method: The publically-available NLST SAS data set (<https://biometry.nci.nih.gov/cdas/nlst/>) was used. LDCT arm participants with a confirmed pancreas cancer diagnosis were identified. For those participants, the following measures were examined: first screening exam result (prevalence screen), time from screening exam to diagnosis, and cause of death among those deceased by the end of the trial. Stage at diagnosis was unavailable.

Results: Seventy-eight participants in the LDCT arm (n=26722) had a confirmed diagnosis of pancreas cancer (0.3%). Fifteen were diagnosed within a year of the first screen. Eight diagnoses occurred after a negative first screen, 2 after a screen that was suspicious for a clinically significant abnormality other than lung cancer, and 5 after a screen that was suspicious for lung cancer. All were deceased by the end of the trial. Death certificate underlying cause of death was pancreas cancer for 12. Among the 12, 8 died within a year of diagnosis, 3 within 2 years, and 1 within 3 years. The annual rate for new pancreas cancer diagnoses is 12.4 per 100,000 persons (<https://seer.cancer.gov/statfacts/html/pancreas.html>), suggesting that around 3 cases of pancreas cancer would have been diagnosed in the LDCT arm in the absence of LDCT screening.

Conclusions: The number of pancreas cancer cases following the first LDCT screen in the NLST was about five times greater than expected. Whether the excess diagnoses represent overdiagnosis (in conjunction with misclassification of cause of death due to sticking diagnosis bias) or are due to lead time is unclear. Future analyses will examine experience of pancreas cancers diagnosed after the second and third (incidence) screens.

Awareness of overdiagnosis in cancer screening among post-doctoral students enrolled in a cancer screening course

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Objectives: Historically, the existence of overdiagnosis in cancer screening has been very controversial, given the perception that all cancers have the potential to kill. Even individuals in clinical and public health fields often lack or have incorrect knowledge of how overdiagnosis can occur in cancer screening. Continuing education courses devoted to the theory that underlies assessment of cancer screening data may be a solution to this problem. We are exploring whether a short course on cancer screening can impact knowledge and understanding of overdiagnosis.

Method: We used Moynihan's study of medical overdiagnosis as a model for our self-administered questionnaire. We used SurveyMonkey to administer the questionnaire to US National Cancer Institute post-docs and fellows who are registered for a 1-credit introductory cancer screening class prior to the first class (pre-survey). We will administer the same questionnaire after the last class (post-survey, which has not yet occurred as of the abstract submission deadline. Here we report on the pre-test; our presentation will include post-survey data and compare students' pre- and post-survey answers in a paired fashion.

Results: Seven of ten registered students completed the pre-survey. All held PhDs and one respondent also held an MD. All respondents had heard of overdiagnosis. All responses to the request for a text definition of overdiagnosis reflect the concept of an unnecessary diagnosis. Some responses mentioned harms and unnecessary treatment. When asked if routine cancer screening tests for healthy people are almost always a good idea, two answered yes, and five answered no. When asked whether they agree or disagree that routine cancer screening tests for healthy people are important for their health, two answered "slightly disagree" and five answered "mostly agree".

Conclusions: The pre-survey responses reflected an appreciation of the concept of overdiagnosis, although responses indicated variation in opinions of the importance and value of cancer screening.

Adaptation of two American Decision Aids to decrease head computed tomography (CT) scan overuse for minor head injuries in Canada: a pan-Canadian consensus meeting using the Nominal Group Technique

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Objectives: The goal of our project is to involve Canadian experts in the adaptation to the Canadian context of two American decision aids (DAs) about CT scan use for patients with mild traumatic brain injury (mTBI) in adults and in children. We will create a Canadian consensus on the two American DAs. In this presentation, we aim to provide an overview of the consensus meeting aims, planning process and results. We will also present an essential summary of the main adaptation made to the original DAs tools.

Method: During a one-day consensus meeting, up to 25 key Canadian stakeholders including patient representatives, emergency room physicians, expert researchers and policy-makers will be involved in the adaptation process. The American DAs tools will be presented by the two original developers. Using the Nominal Group Technique (4), participants will come to a consensus on the relevance, appropriateness, acceptability and feasibility of information to be included in the Canadian adaptation of the two DAs. Likewise, participants will define which patients should receive these DAs. During the meeting, participants will be invited to create a scientific committee that will offer ongoing expertise and advice to support the process of the adapted DAs rapid prototyping after the consensus meeting.

Results: The consensus meeting will be held in Quebec City on May 25th. We have no results for the moment; however the main results will be available for presentation at the conference on August 2017.

Conclusions: The consensus meeting and subsequent scientific committee will contribute to creating adapted Canadian DAs for adults and children with mTBI. These DAs will help mTBI patients make shared and informed decisions on CT scan use, based on health evidence and patients' values, which may in turn help reduce the unnecessary use of head CTs.

Mammography screening, overdiagnosis and conflicts of interest. The textbook case of the first screening programs in Switzerland

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Objectives: We conducted a survey to determine the state of scientific knowledge and the interests involved at the launch of the first mammography breast screening programs in Switzerland in the early 1990s. We also examined the information given to women over 50 years of age targeted by these programs to see if it constituted a sufficient basis for a free and informed decision.

Method: Search for documents as well as for scientific and mainstream publications, confronting witnesses.

Results: Our research shows that in 1990 the initiators of the first breast screening programs in Switzerland had access to high-quality scientific information that precisely quantified the risk of overdiagnosis to which mammography screening exposed the participants and the negative benefit/risk ratio of this measure. Nevertheless, the same people decided to implement programs and massively encouraged women to undergo screening without informing them of the risks. Our investigation highlights many conflicts of interest and powerful lobbies.

Conclusions: Promoters of the first breast screening programs in Switzerland were the first specialists in the world who had figures precisely quantifying the risk of overdiagnosis and the unfavorable benefit/risk ratio of screening. These results came from a Swiss scientist. One of the key supporter of screening in Switzerland was his thesis supervisor. The results of the Swiss scientist were published in 1990 and confirmed 16 years later by the 2nd Cochrane Review (Gøtzsche / Nielsen). Instead of reflecting on the validity of breast cancer screening, Swiss program promoters buried these results, launched programs and sent biased information to participants. This arises the question of their conflicts of interest in the decisions they have made and this question still remains today. In 2014, the Swiss Medical Board has attracted international attention by recommending stopping current programs and not launching new ones. Proponents of the programs have

protested vigorously in the name of women's health. Our research shows that if screening would be stopped in Switzerland, they would lose a lot in terms of career, business model, legitimacy and notoriety. The current system is always opaque and undermined by conflicts of interest.

Mammographie de dépistage, surdiagnostic et conflits d'intérêts. Le cas d'école des premiers programmes de dépistage en Suisse.

Catherine Riva

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Objectives: Nous avons mené une enquête visant à établir quel était l'état des connaissances scientifiques et les intérêts en présence lors du lancement des premiers programmes de dépistage du cancer du sein par mammographie en Suisse au début des années 1990. Nous nous sommes penchés également sur l'information transmise aux femmes de plus de 50 ans ciblées par ces programmes pour voir si elle constituait une base suffisante pour prendre une décision libre et éclairée sur cette base.

Method: Recherche de documents et de publications scientifiques et grand public, confrontation des témoins de l'époque.

Results: Notre investigation montre que les promoteurs des premiers programmes de dépistage du cancer du sein en Suisse disposaient dès 1990 d'informations médico-scientifiques de qualité qui quantifiaient précisément le risque de surdiagnostic auquel le dépistage par mammographie exposait les participantes et le rapport bénéfice-risque négatif de cette mesure. Ces mêmes personnes ont néanmoins décidé d'implanter les programmes et massivement encouragé les femmes à s'y soumettre sans les informer des risques auxquels elles s'exposaient. Notre enquête met en évidence de nombreux conflits d'intérêts et un puissant dispositif de lobbying.

Conclusions: Les promoteurs des premiers programmes de dépistage du cancer du sein en Suisse ont les premiers spécialistes dans le monde à disposer de chiffres quantifiant précisément le risque de surdiagnostic auquel s'exposaient les femmes qui se faisaient dépister et le rapport bénéfice-risque défavorable de la mesure. Ces résultats émanaient d'un chercheur suisse, dont l'un des promoteurs du dépistage était le maître de thèse. Ils ont été publiés en 1990 et été confirmés 16 ans plus tard par la méta-analyse Cochrane (Gotzsche/Nielsen). Au lieu de lancer une réflexion sur le bien-fondé du dépistage du cancer du sein, les promoteurs des programmes suisses ont préféré enterrer ces résultats, lancer les programmes et transmettre aux participantes une information biaisée. La question de leurs conflits d'intérêts dans les décisions qu'ils ont prises se pose très clairement et demeure aujourd'hui encore. En 2014, le Swiss Medical Board a suscité l'attention au niveau international en recommandant de stopper les programmes en cours et de ne pas en lancer de nouveaux. Les promoteurs des programmes ont protesté vigoureusement au nom de la santé des femmes. Nos recherches montrent que si le dépistage cessait en Suisse, ces personnes auraient énormément à perdre en termes de carrière, de modèle d'affaires, de légitimité et de notoriété. Le système actuel est toujours opaque et miné de conflits d'intérêts.

Big Pharma and Economic Ghostmanagement; Analyzing the roots of Overdiagnosis

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Objectives: The capture of ideas, knowledge, institutions and narratives have become central in Big Pharma's success. Building on Sismondo's concept of ghostmanagement in science, the presentation will analyze corporate strategies for control and capture in the biopharmaceutical sector. These strategies are central in the promotion of overdiagnosis. Seven relevant categories of corporate capture are central in determining the commercial success of biopharmaceutical corporations:

1. Scientific Capture (publication planning)
2. Professional Capture (promotion and COI)
3. Technological Capture (patent portfolio)
4. Regulatory Capture (lobbying)
5. Market Capture (mergers/acquisitions)
6. Media Capture (advertising and echo chamber)
7. Civil Society Capture (astroturf organizations)

Method: After identifying the different forms of corporate capture, we use available databases and literature to estimate the resources spent in different forms of capture, as compared to what is spent in producing new drugs.

Results: Clearly, the biopharmaceutical sector spends more resources on producing the social determinants of value for their products:

- \$54 bn in promotional campaigns towards health professionals
- \$8.4bn in direct payment to physicians
- \$4 bn in direct-to-consumer advertising
- \$228 M lobbying policymakers
- \$500 M in funding charities and patient groups
- Plus, spending on media, patenting and mergers and acquisitions.

Than on producing products:

- \$50bn on R&D < spending on the production of the social determinants of value

Conclusions: We need to stop analyzing drug companies as entities producing drugs, and we should start analyzing them as organizations devoted to use every capacity they can to influence ideas and social structures in a way that maximizes commercial value. Only then we can start

Scaling up shared decision making to the general public through workshops in public libraries: proof of concept study

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Objectives: Shared decision making (SDM) is a process whereby decisions are made together by patients and/or families and clinicians. Nevertheless patients are often unaware of the importance of SDM and its proven benefits when faced with a decision in the consulting room. We therefore assessed the feasibility, acceptability, and impact of a SDM public awareness campaign in public libraries.

Method: We developed a partnership with the Quebec City public library network and co-designed a 1.5 hour interactive workshop to be presented in public libraries. First, we chose an important clinical topic of maximum reach: antibiotic overuse in treatment of acute respiratory infections. Then we designed the workshop content and devised a format whereby a physician presents the information and a scientific communicator/journalist invites questions and participation. We recruited 10 physicians (6 family doctors, 4 emergency physicians) and rehearsed the format with support from the scientific journalist team member. We publicized the event with the public at large. We gave the workshop free of charge in different areas of the city, at different times and days to maximize attendance and participant diversity. Using an evaluation form, we collected participants' sociodemographics, opinions and satisfaction level. We measured self-reported knowledge gain on antibiotics and SDM before and after workshops. Knowledge level was measured on a scale of 1-10. We used t-test and ANOVA to compare means at 5% threshold.

Results: Nine out of twenty-four public libraries participated in the project. All of the 10 planned workshops were held. The 10 physicians rehearsed the workshop. Out of 106 attendees (3 to 19 attendees per workshop), 89 participants were included in the analysis. A majority of participants were women (77.6%), retired (46.1%) and aged over 45 years. Overall, participants considered that the content of the activity was relevant (94.4%), well adapted (93.2%), and provided clear information (98.9%); 75% reported satisfaction above 8.7/10. Knowledge gain was significant on antibiotics: 2.4 (95% CI: 2.0-2.8) and on SDM: 4.0 (95% CI: 3.4-4.5). Knowledge gain about SDM seemed significantly higher than about antibiotics: 4.0 versus 2.4 (P <.001). Although there was an inverse relationship between knowledge gain about SDM and age, our data did not suggest it was significant (P =.239). Knowledge gain did not vary by sex or employment status.

Conclusions: This proof of concept demonstrated the feasibility and acceptability of scaling up SDM to the general public via the public library system.

