DAY 1

2019-09-04 09:30 - 12:30 | Workshop

Workshop (only registered participants)

Room: EAA003

Beyond difference-in-differences: Advancements in non-experimental programme evaluation methods

Stephen O'Neill

2019-09-04 12:30 - 13:45 | Lunch

2019-09-04 13:45 - 14:00 | Conference Opening

2019-09-04 14:00 - 15:00 | Session 1

A Non-Parametric Approach for Combining Evidence on Restricted Mean Progression Free and Overall Survival Time in the Presence of Non-Proportional Hazards

Room: EAA006

Chair: Ricardo Gonçalves

•A Non-Parametric Approach for Combining Evidence on Restricted Mean Progression Free and Overall Survival Time in the Presence of Non-Proportional Hazards

Caitlin Daly, Ross Maconachie, AE Ades, Nicky Welton

Objectives: Evaluating the cost-effectiveness of cancer treatments may require synthesising evidence on time-to-event outcomes such as progression free survival (PFS) and overall survival (OS). The traditional approach of pooling hazard ratios from randomised controlled trials requires an often implausible assumption of proportional hazards. When this assumption is not reasonable, pooling the outcomes through a single parametric model may serve as an alternative approach; however, survival curves are unlikely to have the same shape across all trials. Our objective was to develop a novel non-parametric approach for synthesising evidence from Kaplan-Meier curves without assuming proportional hazards.

Methods: The proposed approach pools relative treatment effects as differences or ratios of restricted mean survival time (RMST), i.e., the mean survival time accrued from randomisation up to T years.

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RMST was estimated as the area under the survival curves (AUCs) for PFS and OS. The correlation between the AUCs of PFS and OS within trials was estimated using non-parametric bootstrap sampling techniques. We jointly modelled the PFS and OS AUCs in a Bayesian framework, where the synthesis model was given to PFS and post-progression survival (PPS). We applied this method to a network of trials evaluating three treatments for Stage IIIA-N2 Non-Small Cell Lung Cancer.

Results: Models assuming additive and multiplicative treatment effects were comparable in terms of fit and produced similar restricted mean PFS and PPS time for each treatment. However, only the latter most ensured the posterior distributions for restricted mean PPS were non-negative for all treatments.

Discussion: This method allowed us to estimate treatment effects on PFS and PPS in a situation where the survival curve shapes were heterogeneous and without needing to assume proportional hazards. The suitability and implications of assuming additive or multiplicative treatment effects are discussed, particularly in terms of interpretation and predictions for economic models. Economic models require estimates of the total mean time spent progression free and post-progression. The pooled RMST provides the contribution to the total mean time up until time T. External evidence on survival beyond time T can be combined with the pooled RMST to obtain total mean PFS and PPS time on each treatment. We also discuss how the NMA model may be further adapted in order to also incorporate discounting.

General Practitioners' income and activity: the impact of Multi-professional Group Practice in France

Room: EAA004

Chair: Julian Perelman

•General Practitioners' income and activity: the impact of Multi-professional Group Practice in France

Matthieu Cassou, Carine Franc, Julien Mousquès

Objectives: France has created an innovative additional payment to promote coordination related to Multi-professional Group Practice (MGP). Cooperation and teamwork are intended to improve both the efficiency of health care provision and the attractiveness of underserved areas for health professionals. To evaluate the sustainability of this type of organization in terms of practitioners' satisfaction we analyze the evolution of medical earnings (self-employed fees and salaries) for GPs enrolled in a MGP. We also study its impact on medical activity through the number of patients encountered and the quality of care provided according to their results in the French P4P system.

Methods: We use an exhaustive administrative database from the Public Fund on self-employed doctors' medical activities, and from household tax returns, their earnings and family structure for 2005, 2008, 2011 and 2014. We use a case-control design with coarsened exact matching (CEM) and difference-in-differences (DID) estimation on panel data to improve our control confounders and limit the exposure of our analyses to specification bias. The CEM is made for the year 2008, the pre-policy period, based on socio-demographic and geographical location variables that are known to affect GP's activities and incomes (2005 data are only used for pre-trend and robustness checks). The DID

parameters are estimated by both pooled OLS and Fixed Effects between 2008 and 2014, on the GPs' incomes and the number of patients encountered at least once. Finally, we conduct a cross-sectional analysis of P4P payment in 2014, assess MGPs' impact on the quality of care.

Results: Over the 2008-2014 period, GPs working in MGPs exhibit an increase in income 3% higher (about € 2,500) to that of their controls. Difference in their income growth is mainly driven by a much larger increase in their self-employed income (more than 80%). Besides, the enrolment into a MGPs increase the size of the GPs' patient list: the number of patients they have seen at least once per year increased by on average 4% (about 80 patients) more than their peers over the period. In addition, the analysis of P4P payments for GPs in 2014 shows that GPs practicing in MGP received 900 euros (+12%) more than their control.

Discussion: Due to a larger size and potential higher charges compared to solo practices, it was unclear that MGPs could be attractive for GPs in the long run regarding their net income. Our preliminary results suggest that medical revenue issues shouldn't be a barrier to the development of MGPs. On the contrary, it should be an attractive practice for new GPs. Moreover, these practices appear to favor a greater availability of GPs for a larger number of patients, and the quality also appears to be enhanced.

Impact of a personal letter on opioid prescribing

Room: EAA002

Chair: Marjon van der Pol

•Impact of a personal letter on opioid prescribing

Iiro Ahomäki, Visa Pitkänen, Aarni Soppi, Leena Saastamoinen

OBJECTIVES: In May 2017, the Social Insurance Institution of Finland sent a personal information letter to all physicians who had prescribed a large package, containing at least 100 tablets, of paracetamol-codeine to new patients, who had no paracetamol-codeine (mild opioid) purchases in previous three years. The aim of the letter was to draw physicians' attention to their prescribing practices and to decrease the package size of the first codeine prescription. In this study, our objective is to study the effect of the nudge letter on physicians' prescribing.

METHODS: We use individual level register data on drug purchases to study the effect of the letter on paracetamol-codeine purchases made by new patients. Our empirical analysis is based on patient level difference-in-differences analysis. As a treatment group, we use patients whose purchase a physician, to whom the information letter was sent, prescribed. The control group consists of patients whose purchase was prescribed by a physician who did not receive the letter.

RESULTS: Using nationwide high-quality register data on all paracetamol-codeine purchases, before and after the letter was sent, and an identification strategy that allows us to credibly estimate the effect of information letter on opioid prescribing we find that the letter decreased the probability of a physician prescribing a large package of paracetamol-codeine six percent. Additionally, we find that the letter also had a smaller effect on tramadol (mild opioid) prescribing, but no effect on oxycodone (strong opioid) prescribing

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DISCUSSION: The average number of tablets purchased declined approximately six tablets, corresponding to 10 percent decrease compared to the pre-letter mean. Six tablets mean two-days' supply of paracetamol-codeine, when measured in DDD's. When a physician does not start the treatment with package containing 100 tablets, he or she is mostly likely to prescribe one of the other common sized packages, which are 50, 30 or 10 tablets. A shift from 100 tablets to 50 tablets means 16.7 days reduction in paracetamol-codeine supply available to a patient. This decrease can be medically significant when aiming to reduce the risk of opioid addiction among patients receiving treatment for pain. Based on the results of our paper and previous research, the details of the information letter appear to be associated with the effectiveness of the nudge.

License to kill? The impact of hospital strikes

Room: EAA003

Chair: Rachel Meacock

•License to kill? The impact of hospital strikes

Eduardo Costa

OBJECTIVES: Hospital strikes in the Portuguese National Health Service (NHS) are becoming increasingly frequent, raising concerns in what respects patient safety. In fact, data shows that mortality rates for patients admitted in strike days are up to 10% higher relative to patients admitted in other days.

This paper analyses the effects of hospital strikes on patients' outcomes. Specifically, we analyze the impact of different strikes (physicians, nurses and other health professionals), on a set of outcomes such as in-hospital mortality rates, readmission rates, among others.

METHODS: We use patient-level data containing all NHS hospital admissions in mainland Portugal from 2012 to 2016, together with a comprehensive strike dataset comprising over 130 strikes. Data is pooled to increase the precision of our main model estimates. An extensive set of controls is introduced to isolate the strike impact on health outcomes. Controls were included for patient characteristics, admission characteristics, hospital locations, year, month, week, weekday, among others. Our identification strategy hinges on assuming that, after controlling for several factors, the difference in outcomes between hospitals in strikes and hospitals off strikes, can only be explained by the strike itself.

Such approach is validated with further robustness tests. We consider the possibility of endogenous strikes, patient selection, dynamic behavior, among other concerns. We also conduct a falsification test, as well a panel approach that validate our estimates.

RESULTS: Results, controlling for hospital characteristics and changes in patients' composition, suggest a 8% increase in in-hospital mortality rates for patients exposed to physicians' strikes.

Data shows a sharp reduction in surgical admissions (-40%) and a substitution from inpatient to outpatient care admissions during strikes. Additionally, the number of diagnoses and procedures for each admission tend to increase.

DISCUSSION: Results suggest that hospital operations and service levels are partially disrupted during strikes. Moreover, our estimates imply that physicians' strikes are associated with increased mortality for patients exposed to strikes and with a reduction on surgical admissions. This supports the thesis that hospitals rely on multi-disciplinary teams. Any health-profession strike disrupts teams, leading to negative health and hospital outcomes. Such negative impacts should be considered both by unions and hospital management during labor negotiations.

2019-09-04 15:00 - 16:00 | Session 2

Hospital Financial Performance and Quality of Care: Evidence from Portugal

Room: EAA003

Chair: Mujaheed Shaikh

•Hospital Financial Performance and Quality of Care: Evidence from Portugal

Iryna Sabat, Pedro Pita Barros

Objective: This paper aims at investigating the relationship between hospital financial performance and quality of hospital care and patient safety indicators using panel data on Portuguese public hospitals for the period of 2008-2017. Additionally, the study addresses the impact of Troika's regulation period on changes in quality and patient safety areas occurring through financial channels.

Methodology: We compute a set of financial indicators reflecting financial performance of hospitals using information from hospital monthly financial reports and utilize hospital-level diagnosis-related group (DRG) data to construct quality of in-hospital care measures, including overall and disease-specific mortality rates. We then combine these data with local municipality level variables reflecting market characteristics and hospital-level variables accounting for the case-mix of patients, to develop a model of potential determinants of hospital care quality. Additionally, we compute a range of patient safety indicators distinguishing between nurse- and surgery related adverse events and use them as dependent variables thereby seeking to answer whether worsened hospital financial conditions may compromise patient safety. The study adopts a partial adjustment mechanism thereby accounting for lags in the response of quality to changing conditions and addresses potential endogeneity by employing fixed effects estimation.

Results: The results suggest that hospital's transition to lower profitability quartiles may be associated with higher rates of mortality and adverse patient safety events. However, the significance and magnitude of the impact are indicator-specific, which suggests that some measures may not be sensitive enough to reflect the impact. Noteworthy, changes in quality and safety are responsive both to large and small transitions in profitability measures.

We find that in the short run Troika period had a more negative impact on hospitals in the lowest profitability quartiles, so that they had higher rates of adverse patient safety events as compared to the most profitable ones. This suggests that hospitals in the lowest quartile were likely becoming more financially fragile during austerity measures, which in turn unfavorably influenced their rates of patient safety indicators. In the long run Troika's period effect was associated with slightly higher

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mortality and higher PSI rates in hospitals that transitioned to lowest profitability quartiles. Noteworthy, the results show significance in case of several indicators out of the whole range tested, which demonstrates the need to consider a range of quality indicators, since some may not be responsive and not show the true effect.

The effect of long-term unemployment subsidies on middle-age workers health

Room: EAA002

Chair: Luke Munford

•The effect of long-term unemployment subsidies on middle-age workers health

Manuel Serrano Alarcon, Judit Vall Castelló, José Ignacio García Pérez

Objective: Our objective is to estimate the mental health effects of a long-term unemployment subsidy. In order to do that, we exploit a Spanish reform that increased the age eligibility threshold to receive such a subsidy from 52 to 55 years old in July 2012.

Methods: We use as treatment group individuals turning 52 just before the reform (born in the first semester of 1960), which had access to the subsidy and compare their mental health outcomes to those turning 52 just after the reform (born in the second semester of 1960) who no longer had access to the unemployment subsidy when turning 52. We first use a rich administrative database from the Social Security and a triple diff-diff specification (semester of birth, cohort and post reform period) to explore the differences in labour market outcomes between the treatment and the control group during the first three years after the implementation of the reform. Next, we use a dataset that includes the universe of hospitalizations in Spain occurring from 2009 to 2014 in order to explore the impacts of the subsidy on hospitalizations. We also estimate heterogeneous effects by sex and disease-group of main diagnoses paying particular attention to hospitalizations due to mental illness. Finally, we use data from waves 5 (2013) and 6 (2016) of the Survey of Health, Ageing and Retirement in Europe (SHARE) to shed light on the effects on mental health, self-reported health and consumption of drugs related to mental illnesses.

Results: We present three set of results: first our estimates of the labour market outcomes show a significant increase in the probability of receiving the subsidy by 4.7 and 2.1 percentage points for men and women born in the first semester of 1960. Those born in the second semester of 1960, who were no longer eligible for the subsidy, have an increased probability of receiving unemployment benefits and work. Second, we also report increases in hospitalizations for individuals that were not eligible for the subsidy. Such effect is mostly driven by men and by hospitalizations related to injuries and mental health. Our estimates from SHARE data show a significant (at 10%) increase in euro-d score and a decrease in self-reported health for men. As placebo tests, we run similar regressions with SHARE waves prior to the reform and no effect is found.

Discussion: The reform increased the number of hospitalizations particularly for the case of men, who were actually more exposed to the reform, as they received the subsidy in a much larger proportion. Results suggest that subsidies for long-term unemployed adults act as a protective device for the

health of affected individuals; particularly so with respect to their mental health and the incidence of hospitalizations.

The Impact of Copayment Abolition on Healthcare Utilization of the elderly

Room: EAA006

Chair: Yuanyuan Gu

•The Impact of Copayment Abolition on Healthcare Utilization of the elderly

Mingming Xu, Benjamin Bittschi

To generate savings for and improve the efficiency of Statutory Health Insurance (SHI) system, the Germany government enacted the SHI Modernization Act in 2004. In this Act, copayment for ambulatory care visits was newly introduced, which regulated that patients needed to pay €10 for the first doctor contact per quarter. In 2012, a balanced budget was achieved due to a series measures implemented. Germany has quickly recovered from the economic and fiscal crisis around 2009. Based on such public financial situation, the Germany Bundestag passed a unanimous vote to abolish the copayment scheme. Subsequently, copayment for ambulatory care was abolished on 1.1.2013.

In this background, we adopt fixed-effects negative binomial regression models and also Poisson model to explore the impact of copayment abolition on ambulatory care and inpatient care utilization among people over 50 in Germany. Interaction terms are also adopted to explore the differential impacts of copayment abolition among groups with varied socio-economic status, health status and gender. In order to control for endogenous problem, we add controls consecutively. Besides, we do robustness test by first excluding civil servants and then excluding both civil servants and the self-employed since we could not distinguish whether an individual is enrolled in SHI or PHS based on the available data while the copayment abolition policy is only suitable for SHI population.

Our results illustrate that after copayment abolition ambulatory care utilization has increased by 13.2% and inpatient care utilization has decreased by 10.6%. After copayment abolition, the increased times to see doctors of people with the highest individual net wealth are significantly 9.8% less than people with the lowest individual net wealth. One more chronic disease a patient has, 5.3% less impacts on times to see doctors and 5.6% less on total nights in hospitals copayment abolition could arouse. The impact of copayment abolition on people with the worst self-perceived health status is significantly 14.7% less than the impact on people with the best self-perceived health status. After copayment abolition the decreased nights in hospital for the male is significantly 21.8% higher than the female.

Based on our findings, people over 50 in Germany are indeed positively influenced by copayment abolition since some diseases have been prevented to deteriorate and they do not have to suffer evitable inpatient care. In addition, people with lower socio-economic status or better health status are more severely influenced by copayment abolition, which could positively narrow the health care utilization gap between people with different socio-economic status and health status.

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2019-09-04 16:00 - 16:30 | Coffee-break

2019-09-04 16:30 - 17:30 | Session 3

Brown Sugar, how come you taste so good? The impact of a Soda Tax on prices and consumption

Room: EAA006

Chair: Nigel Rice

•Brown Sugar, how come you taste so good? The impact of a Soda Tax on prices and consumption

João Pereira dos Santos

Objectives: Increasing obesity-related problems and rising healthcare expenditures have led governments in developed countries to consider the introduction of taxes on sugar-sweetened beverages (SSB). We study a recent attempt using detailed panel data from one of the two largest retailers in Portugal, covering the period between February 2015 to January 2018. The Portuguese soda tax was implemented nationwide in February 2017 and received extensive media coverage.

Methods: We take advantage of the tax breakdown by sugar levels to examine how prices and quantities purchased reacted. For identification, we use difference-in-differences models (and event study designs) with various vectors of high dimensional fixed effects, comparing each group of products to water. We obtained data from a retailer that has 20% of Portuguese market share. The uneven geographical dispersion of the more than 400 outlets, spanning urban and rural areas both in mainland Portugal and in Madeira, contributes to a high degree of national representativeness of the empirical exercise.

Results: For drinks with more than 80 grams of sugar per liter, results indicate almost full price pass-through to the consumer. For drinks with less than 80 grams of sugar per liter, price pass-through surpassed 100%. Untaxed drinks also saw modest price increases. Regarding consumption, our findings suggest stockpiling behavior in the quarter when the tax was approved, before it was actually implemented. In the implementation period, there are no significant changes in quantities purchased of most beverages vis-`a-vis water, with the exception of soda with low levels of sugar. Our results are robust to several exercises and falsification tests.

Discussion: Soda taxes can decrease the intake of sugar from SSBs, and consequently lead to improvements in population health, through three channels. The first channel is by increasing prices. The second channel is the incentive for manufacturers to reformulate recipes towards formulas with less added sugar. The third channel is increased consumer awareness.

Our findings suggest that benefits of the SSB tax in terms of reducing sugar intake are mainly due to the reformulation of recipes, as producers reduced the sugar content of some drinks to fall below the 80 grams per liter threshold.

Estimating the Monetary Value of a QALY in Germany

Room: EAA003

Chair: Mickaël Hiligsmann

•Estimating the Monetary Value of a QALY in Germany

Jannis Stöckel, Sebastian Himmler, Werner Brouwer, Job van Exel

Objective: Evaluating the outcomes of cost-effectiveness analyses of health interventions requires an appropriate threshold value. One possible source for such a threshold is an estimate of the monetary value of a quality-adjusted life-year (QALY), as for instance used in the Netherlands and Sweden. These estimates are typically obtained through stated preference elicitation, e.g. willingness to pay experiments. Our study adds to the literature by choosing a different approach and, to the best of our knowledge, providing the first monetary QALY valuations for Germany on the basis of a well-being valuation approach.

Methods: We applied a well-being valuation method to general health, using life satisfaction as a proxy for experienced utility and the marginal rate of substitution between health and income to estimate the monetary value of health. The German Socioeconomic Panel, a nationally representative longitudinal survey, was used. We constructed SF-6D health utilities for 33,124 individuals answering the SF-12 questionnaire. The panel structure of our data was exploited using a fixed effects regression. Several robustness checks were conducted to explore subgroup differences and the sensitivity of our results to changes in underlying assumptions. The potential endogeneity of the effect of income on life satisfaction was addressed using an instrumental variable.

Results: Results from the fixed effects regression using income in a linear form resulted in an implied monetary value of a QALY of €73,925 in the German population. Considerable differences were found between age groups with estimates of €52,563 and €109,851 for individuals aged below and above 50. Gender affected estimates with €83,168 for females and €65,145 for males. In former East Germany the monetary value was estimated to be €24,728 and in former West Germany €92,684. This discrepancy is attributed to a higher observed impact of income and a lower observed impact of health on life satisfaction in former East Germany. Instrumental variable based estimates generally confirmed these estimates and patterns with the notable exception of a reversed relationship and reduced gap between former East and West Germany.

Discussion: Despite QALYs not being used in cost-effectiveness analyses in Germany, our study provides insight to policy makers about the value of benefits generated in the health care sector. It also provides evidence on the general applicability of well-being valuation methods for estimating the monetary value of a QALY. The differences in observed values between subgroups emphasize the importance of discussing the appropriateness and normative implications of using a single (average) threshold value as guidance for reimbursement decisions in health care.

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The association between nurse staffing and in- and outpatient nurse sensitive patient outcomes

Room: EAA002

Chair: Kim Rose Olsen

•The association between nurse staffing and in- and outpatient nurse sensitive patient outcomes

Karina Dietermann, Jonas Schreyögg, Vera Winter, Udo Schneider

Objectives: Minimum nurse staffing regulations in acute care are widely discussed to improve the quality of care in hospitals. There is already a plethora of studies providing evidence for a systematic relationship between nurse staffing and nurse sensitive patient outcomes (NSPO). However, most are performed on a hospital rather than a hospital unit-level and rely on limited samples. In addition, only very few studies have taken post-discharge NSPO into account.

The objective of our study is to address these limitations through a comprehensive empirical analysis of the link between nurse staffing and a well-selected set of eight NSPO on units' level in a large sample.

Methods: Our study combines two data sources: claims data from a major German health insurer covering almost 15% (i.e. ~10 mn) of all statutory health insured and self-reported quality reports of all German hospitals. The claims data contains information on NSPO, e.g. mortality, pressure ulcers or readmissions (dependent variables). The quality reports provide information on nurse staffing per unit (independent variable) and hospital. We aggregate the two data sources on a unit-level for different years, starting in 2014. Our final data sample comprises >4mn hospital stays in 24 units and ~1400 hospitals.

Accounting for the grouping structure of our data (i.e. patients grouped in hospital units), we estimate cross-sectional two-level GLM mixed models with patients on level 1 and hospital units on level 2. We apply two different risk adjustment mechanisms to account for differences across hospitals and assess to which extent results vary for different hospital sizes.

Results: Our results provide evidence for an inverse relationship between nurse staffing and unfavorable NSPO, yet with remarkable variations across hospital units. While frequently obtaining significant results in the units "hematology", "general surgery" or "orthopedics", we rarely find significant associations in the units "internal medicine", "geriatrics" or "neurology". Our results further reveal the importance of outpatient NSPO. For instance, outpatient NSPO reveal significant associations in some units such as "cardiology" while our results based on the mere consideration of inpatient NSPO were inconclusive.

Discussion: We find that the differentiation between hospital units and the inclusion of outpatient NSPO add relevant new insights for our understanding of the relationship between nurse staffing and NSPO. Our study provides important implications for practice, as it contributes to a refined evidence on units particularly vulnerable to changes in nurse staffing ratios. For further research on nurse staffing, considering the unit level and focusing on the most sensitive NSPO is suggested.

2019-09-04 17:30 - 18:30 | Session 4

Does quality of care matter for French patients?

Room: EAA003

Chair: Noemi Kreif

•Does quality of care matter for French patients?

Myriam Lescher, Le Neindre Charlène, Sirven Nicolas

Objectives: This paper investigates the factors influencing patients' willingness to travel some extra distance from the nearest appropriate hospital, especially the role played by hospitals' characteristics - including their healthcare quality. The referral system in France guarantees free patient's choice in the case of scheduled hospitalizations. In practice, a significant part of patients bypasses the nearest appropriate hospital, suggesting that other factors than geographical proximity remain important.

Methods: We combine four datasets: (i) the French health, healthcare and insurance survey (ESPS 2012-2014) providing nationally representative data on individual health, insurance and socio-economic attributes, (ii) the French national hospital database developed in the fields of medicine, surgery and obstetrics (PMSI-MCO, 2011-2014) which records the type of care delivered to the patient, (iii) the Annual hospital establishments statistics (SAE, 2012-2016) describing main production features and (iv) a unique dataset provided by the French National Health Authority for Health (HAS, 2013-2016) where hospital quality and safety in hospital is assessed by five measures (global certification, hospital-acquired infections prevention, pain assessment, medical record, links with external care). The extra distance from the nearest appropriate hospital is defined by geo-tracking of health care facilities and patients' homes. We use a negative binomial regression to analyse the influence of individual, local area and hospital characteristics on the additional distance to the nearest appropriate hospital.

Main results: Different hospital quality measures are found to increase the propensity to bypass the nearest appropriate hospital, suggesting that patients seeking quality of care have a demand function rather inelastic to the opportunity cost of travelling, particularly for specific surgical care. Age and socio-economic deprivation remain the most important drivers that confined the patients to go to the nearest appropriate hospital.

Discussion: As patients undergoing scheduled hospitalizations appear less sensitive to travel costs than the quality of care, competition among healthcare facilities may rise between hospitals that are far apart. In that case, economic theory predicts increased hospital specialization and differentiation across territories. However, this raises the question of equity in access to elective care for older and poorer populations.

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Human capital consequences of missing out on a grammar school education.

Room: EAA006

Chair: Matt Sutton

•Human capital consequences of missing out on a grammar school education.

Chiara Pastore, Andrew M Jones

Objectives: In 2018 the UK government announced a £50M fund for an expansion of selective schools (grammar), allocating places to pupils on the basis of ability tests at age 11. We study whether attendance to grammar school (academic track) affects long-term health and other human capital measures for a cohort who took the entry exam in 1969, when secondary modern school (vocational track) was the main alternative. We are particularly interested in disentangling the direct effect of school quality from that of having a more privileged background, given that more affluent pupils often do better in entry tests.

Methods: The identification strategy relies on a fuzzy regression discontinuity design, based on comparing outcomes for pupils who score near the pass mark in grammar school entry tests. This ensures that we are comparing individuals with very similar cognitive skills prior to school. Our rich dataset, from the National Child Development Study cohort, allows us to characterise individual background and follow up individuals into age 60. We study a variety of physical and mental health measures, biomarkers for risk of developing chronic disease, educational achievement and labour market outcomes. Finally, we include a battery of checks to evaluate the robustness of our findings, and analyse possible channels explaining the long-term effect of school quality.

Results: Grammar attendance significantly increases the probability of obtaining an academic secondary school qualification (25% increase) and a University degree (17% increase). Other outcomes examined are not directly affected by track attended, including physical and mental health, adult employment and wages. Background characteristics show stronger associations with long-term health instead. For pupils close to the grammar pass mark, being male and higher father's socioeconomic status are linked with higher adult wellbeing. Suffering illness in childhood and having a mother who smoked during pregnancy are negatively associated with several outcomes. Finally, we find that a possible channel explaining the higher educational achievement of grammar school pupils is having higher ability peers.

Discussion: Since nowadays obtaining secondary school qualifications and going to University is more common, the differences in educational outcomes by type of school observed in the older generation may not apply for current generations. Moreover, we find that in our sample of individuals with similar cognitive ability, pupils with higher socioeconomic status are more likely to obtain a grammar school place. Our conclusion is therefore that selective schools are more likely to reproduce existing inequalities rather than providing effective means to compensate for initial differences.

Longitudinal analysis of parents' influence on children discretionary food choices

Room: EAA004

Chair: Léontine Goldzahl

•Longitudinal analysis of parents' influence on children discretionary food choices

Ourega-Zoé Ejebu, Yu Aoki, Patrícia Norwood, Anne Ludbrook

Objectives: Children's food choices have multiple influences. Cross-sectional analysis of Scottish Health Survey identified associations with parents' health behaviours and characteristics, as well as sociodemographic factors. We explore these associations with panel data to identify causal links. We focus on children's discretionary food choices (snacking) which may be a more readily modifiable behaviour. International evidence points to children's excessive consumption of sugary and fatty foods increasing the risk of obesity, and health-related harms such as diabetes.

Methods: Secondary data are from Growing Up in Scotland. Variables include children's snacking frequency, the context of meals at home, other health behaviours of children and parents, and sociodemographic factors. Birth Cohort 1 has data on approximately 5,000 children and their parents, who were interviewed in 2006, 2009 and 2014. Panel data can identify causality rather than mere association, as well as controlling for unobserved heterogeneity. We test various econometric approaches. Blow up and Cluster (BUC) may be suitable with an ordinal ranked dependent variable (frequency of consumption) and panel data. However, limited variation in the dependent variable may lead to insignificant coefficients. Linear fixed effects (FE) is used for comparison. Finally, we consider the lagged effect of parents' health behaviours using OLS.

Results: Preliminary results from BUC models reveal smaller robust standard errors and smaller coefficients compared to the FE models. The relationship between the age of the child and frequency of sweets and drinks consumption is positive and significant; in contrast, frequency of crisps consumption reduces with age. Watching TV positively impact frequency of sweets and crisps consumption. The interaction between age and eating alone is positive and significant for sweets consumption. Whilst income is negative across every model, it only significantly impacts frequency of sweets consumption. Parents' health behaviours lacked variation over time and dropped out of BUC and FE models. However, cross-sectional lagged models indicate that the frequency of discretionary food consumption (crisps, sweets and soft drinks combined) is positively associated with parents who smoke, as well as age of the child and watching TV. Children eating with parents, higher income and higher social occupations are negatively associated with the frequency of discretionary food consumption.

Discussion: On this important topic, study methods are limited by availability of data across all sweeps and the lack of variation in potential explanatory factors. TV viewing and positive parenting behaviour around snacking as children age are important target in children's snacking choices.

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Value of Information Analysis to Evaluate the Potential Gains of an RCT for an antipsychotic reduction strategy

Room: EAA002

Chair: Nicky Welton

•Value of Information Analysis to Evaluate the Potential Gains of an RCT for an antipsychotic reduction strategy

Yifeng Liu, Nick Freemantle, Rachael Hunter, Caroline Clarke

Background: Long-term treatment with antipsychotic medications has long been the standard of care for patients with severe mental illness although they are often criticised for deleterious adverse effects and high comorbidity rates. Previous evidence suggests that reducing and discontinuing antipsychotic medications may result in better wellbeing amongst patients. Value of Information (VoI) analyses have been increasingly adopted alongside economic evaluations to determine the potential economic benefits, and "cost-effective" design of future studies. In this paper we investigate the use of VoI analyses to evaluate the potential gains of a study which compares the cost-effectiveness of a manualised and flexible antipsychotic reduction and discontinuation strategy versus the maintenance treatment, and discuss the results in comparison with standard sample size calculation for the trial.

Methods: We made use of a Markov simulated patient-level decision model we have been developing which compares the cost-effectiveness of reduction versus maintenance. We drew a sample of 1000 from the joint distribution of the probabilistic sensitivity analysis (PSA) alongside 61 input parameters in the decision analytic model. We calculated the Expected Value of Perfect Information (EVPI), Expected Value of Partially Perfect Information (EVPPI) and Expected Value of Sample Information (EVSI) based on the generalised additive modelling methods recently developed by Strong et al. and the Stochastic Partial Differential Equations and Integrated Nested Laplace Approximation (SPDE-INLA) methods by Heath et al. using only samples from PSA and input parameters. For EVSI, the optimal sample size was calculated with regard to the maximum Expected Net Gain of Sampling (ENGS).

Results: Under a £30,000 / QALY willingness-to-pay threshold, the individual EVPI is £1,084 per person. EVPPI suggested that uncertainty in the full-compliance probability variable accounts for majority of the EVPI (43.8%), suggesting potential great value in future research, followed by cost of treatment for unclassified coronary heart diseases (3.7%), and risk of relapse (0.1%). An observational study on further researching compliance probability suggested an optimal total sample size of 510 based on the EVSI and ENGS.

Conclusion: VoI analyses showed the potential to help trialists with sample size of running a study when considering both generalisability and the economic benefit of the trial results.

2019-09-04 19:00 - 20:00 | Welcome Reception

DAY 2

2019-09-05 09:30 - 10:30 | Session 5

Adaptation To Disability - Evidence From The UK Household Longitudinal Study

Room: EAA006

Chair: Thomas Barnay

•Adaptation To Disability - Evidence From The UK Household Longitudinal Study

An Ta, Aki Tsuchiya

Objectives: Do people adapt to disability? This study focuses on the phenomenon of hedonic adaptation, which refers to a process where an individual's subjective wellbeing responds to a good or bad change in life circumstance, but gradually reverts to its original level over time, even when the changed circumstance remains the same. Little work has examined hedonic adaptation to disability, especially by looking at physical and mental disability separately. This study is the first to investigate the effect of physical, mental, and general disability on subjective well-being (SWB), conditional on an observed reduction in SWB at onset of disability, and its heterogeneity across age at onset and gender. Methods: Using a fixed effects (FE) lag model, this study analyses data from The UK Household Longitudinal Study (UKHLS) 2009-2016. If there is no observed drop in SWB level following onset, there is no scope for observed adaptation to disability. Therefore, the main sample is restricted to only those individuals who reported a drop in SWB at onset. In all cases, there are approximately 60% of the observations are at onset, 20% for one to two years, 10% for two to three years and 10% for three or more years of disability. Furthermore, the analysis compares males and females by running FE regressions separately for the two genders. The study also looks at heterogeneity across age at onset, by grouping the observations based on the tertiles of age at onset. Results: Mental disability has larger negative impacts on SWB than physical disability at onset. There is evidence of partial adaptation (20% to 80%) to both physical and mental disability at three years or more after onset conditional on an observed reduction in SWB at onset. The impact of disability onset on SWB depends on gender and age at onset. Females and the middle-aged experience larger negative impacts. Regarding adaptation after onset, across most age groups, there is no evidence for adaptation to disability. The exception is the youngest onset group, which partially adapt to general disability after three or more years after onset. There appears to be no difference in hedonic adaptation to disability by gender. Discussion: The analyses find no evidence for adaptation to disability in most cases after three or more years after onset. This is in line with previous studies. Many previous research show evidence for adaptation after five or more years, although they do not find evidence for adaptation around three years after onset. The UKHLS is relatively short compared to other panels used in previous studies, which leaves more room for future research on the variation in SWB related to onset of disability.

EUHEA
2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
Porto, Portugal

More Consultations, Less Talking Medicine: Evidence of the Swiss Physician Reimbursement Reform

Room: EAA004

Chair: Nicolas Sirven

•More Consultations, Less Talking Medicine: Evidence of the Swiss Physician Reimbursement Reform

Camila Plaza, Stefan Felder

In October 2014 the Swiss TarMed reform improved the financial standing of general practitioners, including pediatricians, at the expense of specialists. The reform entitled general practitioners to bill an additional 9 CHF per consultation. At the same time, it reduced fees for certain technical services. This reform provided general practitioners with an incentive to increase consultations per patient and to decrease their duration. Using monthly insurance claims panel data aggregated at the physician praxis level, for 2013-2015, we run panel data difference in difference models with physician and time fixed effects in order to test for the causal effects of the reform. The treatment group is formed by GPs and the control group by specialists who were not intensely affected by the reform. Controlling for physician characteristics such as age, gender, specialty, and physician experience, we confirm the theoretical expectations. A before and after analysis reveals that once controlling for seasonality and physician fixed effects, general practitioners decrease the number of consultations per patient, and decrease their duration.

Re-visiting the Impact of Conditional Cash Transfer in India: Reviewing the Existing Evidence through the Partial Identification Approach

Room: EAA002

Chair: Laura Anselmi

•Re-visiting the Impact of Conditional Cash Transfer in India: Reviewing the Existing Evidence through the Partial Identification Approach

Toshiaki Aizawa

Objectives: In India, the Conditional cash transfer (CCT) programme, the JSY, was introduced in 2005, which promotes the use of maternal and child healthcare with cash incentives in order to reduce infant and neonatal mortalities. In contrast to other countries with CCT programmes, a rigorous RCT was not conducted in India for the JSY, and hence a valid instrumental variable has not been available for researchers. Evidence in most previous studies has largely relied on inappropriate data or potentially untenable identification assumptions such as the conditional independence assumption in order to yield a definitive causal impact. Until now, no study has ever tried to explore the validity of the identification assumptions employed in previous studies on the JSY. The main goal of this paper is to re-estimate the causal impact of the JSY on maternal and child healthcare use, with weaker but more credible identification assumptions than used in previous studies.

Methods: We non-parametrically identify the average treatment effect (ATE) by bounds. The partial identification approach abandons the point identification with strong assumptions and instead seeks

causal effects with much more credible assumptions (Manski 1990; 1997; 2000). We perform inference under a spectrum of assumptions of varying identification power. Specifically, we impose the monotone treatment response (MTR), the monotone treatment selection (MTS) and the monotone instrument variable (MIV) assumptions in a step-by-step manner. Then we compare the estimated bounds with the point identified ATEs under the assumptions imposed in previous studies.

Results: If the imposed assumptions are valid, any point-estimate of ATE should lie within the ATE bound. We find, however, that the ATEs under the conditional independence assumption lie beyond the ATE bounds, suggesting the invalidity of identification assumptions and the possibility of over- or under-estimation of the existing evidence. We find that the point-identified ATEs are below the lower ATE bound of institutional delivery, skilled birth attendance, postnatal care for mothers and children. On the other hand, for antenatal care at least once and antenatal at least three times, the point-identified ATEs are over the upper limit of the ATE bounds.

Discussion: Overall, this study provides sufficiently strong evidence that the point-estimated ATEs could have been biased in previous studies. Certainly, the ATE bounds themselves do not give definite values of the causal impacts. We believe, however, that the honest estimation of the bounds based on the weak but credible assumptions could be more useful and valuable in policy making than definitive ATE estimates that heavily rely on potentially invalid or untenable assumptions.

The impact of ambulatory care spending on ambulatory care sensitive hospitalizations

Room: EAA003

Chair: Carine Franc

•The impact of ambulatory care spending on ambulatory care sensitive hospitalizations

Wiebke Schuettig, Leonie Sundmacher

Objectives: To investigate the impact of spending and continuity of care in the ambulatory sector on ambulatory care sensitive hospitalizations in patients with type 2 diabetes while controlling for a wide range of individual risk factors.

Methods: Data sources: Observational data from Germany's major association of insurance companies from 2012 to 2014 with 55,924 patients, as well as data from other sources.

Study design: We investigated the impact of spending and continuity of care on ambulatory care sensitive hospitalizations using negative binomial regression analyses with random effects at the district level. In order to control for potential endogeneity of spending and physician density in the ambulatory care sector, we used an instrumental variable approach. We controlled for a wide range of covariates such as age, sex, and comorbidities.

Results: The results of our analysis suggest that spending in the ambulatory care sector has weak negative effects on ambulatory care sensitive hospitalizations. We also found that continuity of care and regular diagnostic tests as recommended by clinical practice guidelines were negatively associated with hospital admissions.

EUHEA
2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
Porto, Portugal

Discussion: Patients with type 2 diabetes are at an increased risk of hospitalization due to ambulatory care sensitive conditions. Our study provides preliminary evidence that increased spending, improved continuity of care, and adherence to medical guidelines in the ambulatory care sector may be effective ways to reduce the rate of potentially avoidable hospitalizations among patients with type 2 diabetes.

2019-09-05 10:30 - 11:30 | Session 6

Does childhood obesity hinder human capital development? A review of evidence and analysis of data from three UK cohorts

Room: EAA004

Chair: Anne Nolan

•Does childhood obesity hinder human capital development? A review of evidence and analysis of data from three UK cohorts

Alexa Segal

OBJECTIVES: Evidence suggests that childhood obesity may affect human capital development and social outcomes later in life. However, evidence of the causal nature of this effect is limited and causal pathways are not well understood due to confounding and reverse causality. This study aims at assessing the causal pathways linking childhood overweight and obesity to these outcomes over the life-course using data from three large population-based cohorts in the United Kingdom (ALSPAC, NCDS and BCS70) and state-of-the-art causal inference approaches. We will be reporting the early findings using the National Child Development Study (NCDS) dataset and selected instrumental variables (IV) including pre-pregnancy BMI and its square, lagged weight status, mother and father obese status, mother obese status, and mother and father BMI. These IV sets selected are based on a review by ABS (to be published) that systematically reviewed studies that employed IV methodology to measure the effect of childhood overweight and obesity on educational achievement or cognitive performance.

METHODS: Descriptive statistical analysis of childhood body weight and selected outcomes in the three UK cohorts will be included. A series of genetic and non-genetic IV models, exploiting the nature of longitudinal data, will estimate the causal relations between childhood obesity and later cognitive and educational outcomes. Our preliminary analysis exploits the NCDS 1958 cohort from birth until age 16. We use the five IV sets aforementioned to estimate the effect of endogenous child weight (continuous BMI and overweight status) on two educational outcomes – maths exam scores and the number of lower secondary level passes, keeping covariates constant.

RESULTS: Preliminary findings using the NCDS data show that all but one of the IV specifications likely pass the IV criteria; models using contemporaneous parent weight as an IV are likely invalid due to unobservable factors. A one-unit increase in child BMI is associated with a decrease of 0.387 to 0.800 points on the math exam score; on average, overweight children score between 4.387 to 9.674 points lower on their math exams than that of their non-overweight peers ($p<0.05$).

DISCUSSION: Analyses highlight the importance of childhood BMI trajectories, suggesting that improving BMI during later stages of childhood may lead to similar adult outcomes to those of consistently normal-weight children. Elucidating the pathways and mechanisms through which childhood obesity affects human capital outcomes will inform effective strategies to combat the childhood obesity pandemic. Evidence that is being generated from these three UK cohorts will strengthen support for targeted interventions to improve lifetime health and socioeconomic outcomes.

How to improve a mental health patient status when treatment non-adherence is a problem? A payment mechanism approach.

Room: EAA003

Chair: Florence Jusot

•How to improve a mental health patient status when treatment non-adherence is a problem? A payment mechanism approach.

Maria Ana Matias, Pedro Pita Barros, Pedro Chaves

Objectives: In mental health, treatment non-adherence is an important issue and is linked to poor outcomes such as hospital admissions, readmissions, and mortality. On the other hand, the payment model of physicians plays an important role in improving the delivery of evidence-based care and health outcomes. In this paper we analyse the physician's payment if treatment non-adherence is a possibility.

Methods: We design a model with a patient diagnosed with a mental health problem being followed by one semi-altruistic physician. The Government has to decide how to pay the physician so that she provides the proper treatment to the patient, knowing that its resources come from taxpayers. The physician receives a bonus if the patient adheres to the treatment and an additional improvement bonus if the patient's health status improves. That is, we introduce two types of payments: an adherence bonus if the patient adheres to the treatment; and an improvement bonus if the patient's health status improves. The adherence bonus can be seen as a proxy of fee for service (FFS) while the improvement bonus can be assumed as a pay-for-performance (P4P) mechanism. The patient, who faces an adherence cost, has to decide whether to adhere to the treatment or not.

Results: Our results show that when the patient and the physician need to be convinced to turn to the adherence side, the Government decision is based on the level of tax distortion. Specifically, when the tax distortion is low the optimal adherence bonus is zero and the improvement bonus decreases with the level of altruism and with the benefit the patient gets if his health status improves. On the other hand, if the tax distortion is moderate, it does not matter how the optimal adherence and improvement bonuses are distributed as long as the expected payment to the physician does not change. That is, it is possible to achieve the same result combining both bonuses or only using one of them. When the tax distortion is too high, it is not optimal to induce adherence.

In our model the first-best is characterized by an optimal adherence bonus of zero and an improvement bonus equal to the benefit that the patient gets if his health status improves. However, the first-best is never attained unless there is no tax distortion.

EUHEA
2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
Porto, Portugal

Discussion: We conclude that payment mechanisms can induce adherence. However, and in periods of tight budgets where adherence is not guarantee, the way bonuses are paid to the physician is not relevant as long as the expected payment remains the same. Therefore, other reasons such as administrative simplicity can dictate which payment system prevails.

Investigating the impact of unrelated future medical costs on health opportunity cost estimates

Room: EAA005

Chair: Francesco Longo

•Investigating the impact of unrelated future medical costs on health opportunity cost estimates

Meg Perry-Duxbury, Martine Hoogendoorn, Miqdad Asaria, James Lomas, Pieter van Baal

Objective: Two key economic criteria involved in deciding whether or not to reimburse a health care intervention are: (1) cost-effectiveness, i.e. the costs per benefit should be lower than that of the comparator intervention and (2) the benefits must outweigh the opportunity cost of implementing said intervention. Here opportunity cost refers to the benefits that would have been gained if the money for the intervention were to have been spent elsewhere; also sometimes referred to as health forgone, the supply-side threshold, or k. Empirical estimates of these opportunity costs have been produced by researchers in the UK, by estimating the relationship between changes in health care expenditures and health care outcomes. However, up until now these estimates have excluded future unrelated medical costs. This paper aims to illustrate how empirical estimates of opportunity costs of disease can be adjusted to account for future unrelated medical costs.

Methods: We adjust the opportunity costs estimated by Claxton et al. (2015) to account for future unrelated medical costs. In order to calculate future costs, spending patterns by age, gender and proximity to death are needed. We combine various data sources to construct these and developed a framework for adjusting these estimates for costs of disease. Using cause-deleted life tables we illustrate how the resulting estimates of unrelated NHS spending can be combined with previously calculated disease related opportunity cost estimates. Additionally we run various sensitivity analyses to show a range of estimates.

Results: Preliminary results show that opportunity cost calculations are impacted by including future unrelated medical costs. The magnitude of this impact is dependent on how far into the future these costs are incurred, the age of the patient when these costs are incurred, and the health related quality of life of the patient in any additional time lived resulting from the treatment. For instance, re-estimated opportunity costs for typical cardiovascular and cancer interventions increased by approximately £1,400 and £2,100 per life-year respectively.

Discussion: It has been suggested that by including future unrelated medical costs when estimating both ICERs and opportunity cost, the two cancel each other out. However, our results demonstrate that this is not the case. We demonstrate how to adjust opportunity cost estimates for future unrelated medical costs, and show how the reallocation of health care resources resulting from such an adjustment improves both the consistency and the efficiency of health care investment decisions.

Understanding the role of inequality of opportunity in the Body Mass Index and Waist Circumference among Mexican Adults

Room: EAA002

Chair: Toni Mora

•Understanding the role of inequality of opportunity in the Body Mass Index and Waist Circumference among Mexican Adults

Andrea Salas Ortiz

OBJECTIVES: Mexico faces an acute obesity crisis. The overweight and obesity joint adult prevalence is the second highest in the world. While most of the literature has focused on studying the immediate causes of the phenomenon, very few have gone further to explore the structural causes of the public problem. Thus, the aim of this study is to measure, identify and analyze the dynamics of the role of inequality of opportunity (IOp) in the body mass index (BMI) and waist circumference (WC) indicators for Mexican adults.

METHODS: This study adopted an ex-ante approach to measure IOp, which assumes that circumstances are defined as exogenous situations or an initial inherited background in which people do not have any control or can be held responsible for. The set of circumstances of this study incorporates the normative framework materialized in the Mexican Constitution and the research evidence about the main socio-economic determinants of obesity. The relative importance of each circumstance to IOp was identified using the Shapley decomposition approach. In addition, given the socioeconomic and cultural contrast between geographical areas of Mexico, Oaxaca decomposition was used to examine the differentials in the structure of IOp across Mexican States. Moreover, quantile regressions were performed to further explore the variation of IOp across the distribution of the BMI and WC. All the analyses were performed independently for women and men, and for 2012 and 2016.

RESULTS: Inequalities related to circumstances in the BMI and WC exist and vary from 6.3% to 12.2%. The Shapley decomposition analysis showed that age and the diabetic condition inherited from the parents are the main drivers of inequality. The former explains 42% to 84% of the heterogeneity of the IOp, while the latter 28% to 11.2%. Using the Oaxaca-decomposition technique, it was found that even though IOp decreased from 2012 to 2016, in the States of Quintana Roo, Coahuila and Nayarit IOp systematically increased across women and men, and in both health outcomes. Quantile regressions exhibit that IOp is higher in the lower quantiles of the distribution for both health indicators and years.

DISCUSSION: This analysis reveal that IOp in the BMI and WC not only exists, but presents significant nuances across women, men and geographical areas. These findings highlight the need to design differentiated social policies that effectively level the terrain of opportunities, so that circumstances of origin do not matter. The fact that intergenerational circumstances are inherited represents a challenge that must be addressed by policies that incorporates a life course perspective. A better understanding of IOp is paramount to tackle one of the most worrying health problems of our times.

2019-09-05 11:30 - 12:00 | Coffee-break

EUHEA
2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
Porto, Portugal

2019-09-05 12:00 - 13:00 | Plenary Session

Plenary session

Room: Auditório Carvalho Guerra

Chair: Céu Mateus

Measurement error in surveys and (some possible) implications for empirical analyses in health economics

Teresa Bago d'Uva, Erasmus University of Rotterdam

2019-09-05 13:00 - 14:00 | Lunch

2019-09-05 14:00 - 15:00 | Session 7

Doing more with less – Measuring efficiency in the primary care management of chronic diseases, maternal and child health care

Room: EAA002

Chair: Leonie Sundmacher

•Doing more with less – Measuring efficiency in the primary care management of chronic diseases, maternal and child health care

Joana Pestana, Pedro Pita Barros

Objectives: The reform introduced in 2005 in the primary care in Portugal aimed at improving efficiency and access through organizational changes and a mixed payment system. Team-based units were created with extended office hours, larger patient's lists, and quality targets in order to increase the utilization of these services and relieve the over-burdened emergency services. These units benefited from more autonomy and performance-contingent payments dependent on the development stage of the teams.

This study examines the relationship between the models governing the general practitioners' teams and the technical and allocative efficiency of these teams. Of special interest was to establish the extent to which the team's resources and the organizational model contributed to the inefficiency's variations.

Methods: We use a longitudinal database of administrative data from the public providers of primary care nationwide (~900 units) over a three-year period. An extensive set of indicators related to the

quality of care to specific groups - patients with chronic diseases, mothers and children - was used, as well as a range of contextual characteristics of the units, the clinical resources and of the population treated. The estimation also included a set of variables not analyzed in previous research such as the age and tenure of the practitioners. We apply parametric methods to estimate both technical and cost efficiency of the practices and to analyze the factors that influence the efficiency using a one-step approach for panel data by Battese and Coelli (1995).

The estimation of the production frontiers goes beyond the volume dimension as we express the production and costs as a function of quality in multiple disease areas, socio-economic variables and other environmental factors.

Results: The study identifies a high variation of the efficiency scores within each organizational model. Not all units are equally efficient in producing the same outputs, but the team-base models obtain more consistent results suggesting a lower sensitivity to the regional variations. The results also suggest differences in the technical and cost inefficiencies of the practices highlighting the importance of analyzing both efficiencies simultaneously.

Regarding the structural and personal factors, we find that the maturity of the team is associated with significantly higher technical efficiency and the socio-economic conditions of the population and urban-rural context contribute to the costs and outcome discrepancies.

Discussion: Our findings reflect the impacts of similar reforms in non-integrated primary care systems. The results are relevant to advise policymaker's action to minimize variation on the efficient achievement of quality targets and uses of resources.

Effects of Performance-Based Financing on maternal care: evidence from Mozambique

Room: EAA004

Chair: Alexander Turner

•Effects of Performance-Based Financing on maternal care: evidence from Mozambique

Sérgio Chicumbe, Julius Ohrnberger, Maria do Rosário Oliveira Martins, Eleonora Fichera, Laura Anselmi

Objectives: Performance based financing (PBF) has been promoted in low- and middle- income settings as aa way to improve availability, accessibility and quality of health services, with specific focus to child and maternal care and additional services varying by country and scheme. However, to date the growing evidence of PBF effects is mixed. Since 2011 a pilot PBF scheme, targeting HIV program indicators through child and maternal care, was implemented in Mozambique, where maternal mortality rates are twice as high as the average for low and middle-income countries and mother to child HIV transmission reaches as high as 11%, one of the highest in the world. Positive PBF effects on several perinatal care indicators as well on HIV screening and treatment for pregnant women were reported from Mozambique. We extend this by assessing PBF effects on using nationally representative individual level data covering longer pre- and post-intervention time period.

EUHEA
2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
Porto, Portugal

Methods: We used the Mozambique Demographic and Health Survey (DHS 2011 and 2015) data to measure health care indicators (antenatal consultations, institutional delivery, HIV testing and counselling). For each woman who gave birth in the five years preceding the survey, we identified the district of residence and the closest health facility. Based on information on district involved in the scheme, and specific start date, we defined women's individual exposure to PBF. Difference-in-differences approach tested whether introduction of PBF across districts were associated with antenatal consultations, institutional deliveries and HIV testing and counselling.

Results: results show that overall the introduction of PBF increased four or more antenatal consultations by 31 percentage points and the effects on institutional delivery was not different from null; the intervention also increased the probability being offered HIV/AIDS testing during antenatal consultations by 13 percentage points and the probability of test being performed by 20 percentage points.

Discussion: This study highlights the importance of examining effects of PBF on health care outcomes for individual beneficiaries in the longer term using nationally representative data, as a way to understand the impact on extended care. Our findings suggest that PBF can contribute to reduce mother to child HIV transmission. However, it has not holistically strengthened maternal health care in which the vertical HIV transmission is tackled.

Financial incentives and prescribing behaviour in primary care

Room: EAA003

Chair: Søren Rud Kristensen

•Financial incentives and prescribing behaviour in primary care

Olivia Bodnar, Hugh Gravelle, Nils Gutacker, Annika Herr

While most OECD countries fully prohibit physician dispensing, there are some exceptions as, for example, in Japan, Switzerland, the UK and lately politically discussed in Germany. On the one hand, dispensing physicians may be incentivized to increase their profits through overprescribing or cost-inefficient prescribing. On the other hand, wholesale margins are higher for more competitive markets which could lead to a positive association between physician dispensing and the use of generic drugs.

We evaluate drug dispensing by physicians in the National Health Service (NHS) in England between 2012 and 2018. Rooted in historic regulation, physicians in the NHS can dispense drugs to patients who live more than one mile away from a pharmacy, implying that physicians only dispense drugs to some of their patients. We use this unique variation to answer the following questions: (1) What are the effects of physician dispensing on drug expenditures in the NHS? (2) Does physician dispensing benefit patients due to an increase in good prescribing practice or does it possibly harm patients due to overpricing of harmful drugs? (3) Which type of physicians follow financial incentives from drug dispensing most?

We apply linear regressions and instrumental variable (IV) estimators to identify causal effects using quarterly prescription data from all general practitioners in the NHS from January 2012 to December

2018. In total, we observe 8,000 GP practices (224,000 observations) of which 1,000 can dispense drugs. We control for a large mix of patient characteristics, such as age, gender, disease, and travel time. We also control for general practitioner characteristics, such as age, gender, country of education, employment and practice contract structure and several regional characteristics. By interacting our main variable of interest with practice ownership type and physician age information, we analyze the heterogeneity in the financial incentives of the physicians.

Our first estimates suggest that drug dispensing increases expenditures per patient by 25% (9,44 pounds sterling per year). This effect is mainly driven by an increase in the number of prescribed items. Furthermore, we observe substitution to smaller package sizes due to a fixed-fee payment for each dispensed item.

Physician dispensing can be related to higher drug costs per patient as well as increased prescribing of harmful drugs. These findings should be incorporated when expanding responsibilities of physicians, as for example lately politically discussed in Germany.

Low Emission Zones and Population Health: Evidence from Germany

Room: EAA006

Chair: Daniel Kamhöfer

•Low Emission Zones and Population Health: Evidence from Germany

Shushanik Margaryan

Objectives: Traffic contributes to more than one quarter of ambient air pollution in urban areas. Various solutions such as direct user charges, congestion pricing and low emission zones have become popular tools to reduce traffic-induced pollution. The policies aiming to improve air quality have population health at heart. This paper studies the effectiveness of low emission zones (LEZ). LEZs are designated areas that restrict access to cars based on their emission class.

Methods: LEZs in Germany are among the tightest, as they impose a permanent ban over all week days and hours, and the restrictions apply to all vehicles, with few exemptions. The roll-out started in 2008 as a response to realization that most large cities do not comply with the EU Air Quality Standards. The rich temporal and spatial variation in LEZ implementation provides a compelling setting to study the impact of LEZ on ambient air pollution and population health in the German context.

To study the impact of LEZ I rely on air pollution measurements from the German Environmental Agency and administrative records on all inpatient hospital admissions covering the years 2004-2014. I focus on two criteria pollutants: particulate matter of diameter ten or smaller (PM10) and nitrogen dioxide (NO2). To quantify the health impact of LEZ, I study acute cardiovascular and acute respiratory hospital admissions as two diagnoses groups robustly linked to air pollution. From the universe of admissions I draw two subgroups of special interest due their susceptibility: children under age six and elderly over age 65. I use a difference-in-differences framework that captures post-LEZ changes in pollution and hospital admissions in treated versus control areas. To increase the validity of common

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4-6 September 2019
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Porto, Portugal

trend assumption I restrict both control and treated units to large cities, which are more comparable in terms of income, population and density.

Results: The findings suggest that LEZs reduce monthly PM10 concentrations by 3-5%. The reductions in monthly NO2 concentrations are smaller in magnitude and often imprecisely estimated. Yet I find that the policy-induced reductions in air pollution are not accompanied by lower number of patients with respiratory disease for either the general population or the susceptible groups. The findings suggest a reduction in cardiovascular disease, particularly for the elderly.

2019-09-05 15:00 - 16:00 | Short Oral Presentations

Short Oral Presentations 1

Room: EAA003

Chair: Victoria Soto

The causal effect of geographical accessibility on utilisation of maternal health care services: evidence from Malawi

Finn McGuire, Noemi Kreif, Peter Smith

Despite the advent of universal health coverage, underutilisation of health care remains a problem in LMICs. Even when the direct financial costs of accessing care are removed, geographical accessibility may still prevent individuals from utilising health care. In an effort to address this, many LMICs set distance thresholds within which their populations should have access to a health care facility. However, evidence to determine these thresholds is sparse, for three main reasons. First, many studies have treated distance to health care providers as exogenous, despite there being good reason to believe distance may be endogenously determined. Second, estimates of the relationship between distance and utilisation may suffer from measurement error which can lead to underestimating the effect of distance on utilisation. Third, while there is evidence that women trade-off distance for quality, not always utilising health care from the nearest facility, most previous studies only include rudimentary controls for facility quality. The aim of this study is to address these challenges using a range of complimentary econometric techniques.

Using data from the Malawi Demographic and Health Survey (DHS) and Service Provision Assessment we link data on maternal health care utilisation with comprehensive facility data. Based on the geospatial coordinates of DHS clusters, for each woman we identify the nearest health facility that offers maternal health services through spatial joining of the datasets, and construct a range of metrics to capture geographical accessibility of these facilities, including distance and travel time. We treat distance as a continuous treatment variable and attempt to identify its causal effect on the utilisation of maternal services using propensity score matching techniques combined with regression calibration and experimental geospatial techniques to account for measurement error in the calculation of distance. We also implement an innovative instrumental-variable approach to simultaneously address

the potential endogeneity of distance and measurement error. We include a rich set of facility quality variables and examine any distance-quality trade-offs.

Most women reside within 6km of a health facility with 92% of women having a facility delivery as opposed to home delivery. Women who have a home birth on average reside further than those having a facility delivery. After controlling for a number of individual characteristics we find distance to be significantly negatively associated with having a delivery. There is also evidence of bypassing.

Within the context of large scale provision of free health care, distance may now represent the key barrier to health care utilisation. Next steps will attempt to elicit causal effects.

The relationship between early-life non-cognitive skills and later-life health: going beyond the mean with self-reported health and biomarkers

Rose Atkins

In recent years, non-cognitive skills have been shown to predict health and health behaviours. A topic that has not yet been explored is how this relationship varies along the health distribution. Studies that go beyond the mean are especially relevant, as public policy is concerned with the extremes of the health distribution. I use the unconditional quantile regression approach to analyse the effects of early life non-cognitive skills across the entire distribution of self-reported and objectively measured health, at ages 45 and 50. I use data from the National Child Development study and draw on measures of conscientiousness, agreeableness and neuroticism recorded at age 16. I apply a Oaxaca-Blinder decomposition at various quantiles of the health distributions to analyse gender differentials in health and to measure the contribution of non-cognitive skills to these differentials. I find non-cognitive skills significantly impact health, and that these effects are most prominent at the lowest quantiles of the health distribution. I also find that there is heterogeneity in the association of health to non-cognitive skills across gender.

Use of EQ-5D in economic evaluation of housing interventions to improve health

EIRA WINROW, Rhiannon Tudor Edwards

Background - The UK norms have not been updated for the EQ-5D-3L since the original dataset for the population norms was collected in 1993 in a stated preference, time-trade off study in England, Scotland and Wales (Kind et al., 1993?).

Objectives – To assess the validity of EQ-5D-3L used in a housing study in 2014

Methods – Participants were recruited using purposive sampling of social housing tenants in North East England who were in receipt of a suite of home improvements aimed at reducing health risks.

Participants were asked to fill in questionnaires about the whole household, including demographic, health service use and health related quality of life questions.

EQ-5D-3L was completed at baseline, pre-intervention and at follow-up post-intervention by the main tenant at 6 and 12 month follow-up.

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2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
Porto, Portugal

The EQ-5D-3L results from this North East England cohort were compared to the published weighted health state index according to age, housing tenure, smoking status, gender, and region of the UK.

The results of the health questionnaires and demographic data for this cohort were compared with national and local level data to build a comparative picture of the health status of the participants.

Results – The participants in this study demonstrated significant poor health in comparison to their regional and UK counterparts in 2014. Following the home improvement interventions, the main tenant self-reported health through completion of EQ-5D-3L showed a significant difference of 7.5% improvement in the main study (Bray et al, 2017).

Discussion – The EQ-5D-3L is used in the reference care for NICE however, we have little information about whether these norms do actually still reflect groups within the population, particularly those who may have poor health.

Impact of occupational accidents on the consumption and overconsumption of benzodiazepines

François-Olivier Baudot, Thomas Barnay

Objectives: Benzodiazepines are a class of drugs widely used for their anxiolytics and hypnotics properties. They can be addictive if guidelines are not applied. Several studies have focused on the links between work and mental health. In some case, work can have a negative effect on health. In particular, when an occupational accident occurs, the impact on mental health can be important (depression, anxiety, concentration and sleep disorders). Considering this, we could assume that work accidents can cause consumption of benzodiazepines and, maybe, overconsumption. Our objective is to estimate the impact of a work accident on the consumption of benzodiazepine and on the risk of overconsumption in the following year.

Methods: We used French national healthcare reimbursement data system (Système national des données de santé, SNDS), which contains data for the entire French population. Our study concerned people aged 18 to 65 years, insured by general health insurance scheme (employees and former employees in the private sector and their dependents). We selected people with a single work accident in 2016, and no work accident since 2007, which represent more than 350,000 people, and people without work accident from 2007 to 2017 (randomly selected at the 20th), which represent more than 1.1 million people. We compute a two-step selection model (Heckman) to estimate the impact of work accident on overconsumption, with control for sociodemographic variables, health status, and past consumption of benzodiazepines. Overconsumption is defined as at least 4 months with benzodiazepine delivery, in 5 months.

Results: We show that an occupational accident will induce a consumption of benzodiazepine, mainly during the first month after the accident. However, this consumption is not likely to lead to overconsumption. On the contrary, the accident would rather have a protective effect of the risk of overconsumption, of small size but significant: about 2 percentage points less. This result is robust to variations in the choice of overconsumption definition, of controls for health, and of choice of control population (randomly selected, matched, or for population with daily benefit the previous year). We perform further analyses according to the severity of accident: the longer the time off work following the accident, the higher the probability of overconsumption.

Discussion: Our results show that a work injurie is not likely to induce overconsumption of benzodiazepines. Several explanations are possible, including a better medical follow-up after the accident. We need to explore care consumption in more detail to identify the mechanisms at work.

Adaptation in Life Satisfaction to Adverse Health Shocks - Evidence from the UK

Jannis Stöckel, Job van Exel, Werner Brouwer

Objective: Experienced utility measures such as life satisfaction or subjective well-being have receive increasing attention in health economics and public policy in general. In the context of health economic evaluations experienced utility measures provide two advantages: they capture the broader effects of different health states, capturing a wider range of benefits and are based on actual experiences of affected individuals instead of stated preferences over hypothetical health states. However, these measures also pose practical and normative challenges. For example, several studies show that individuals adapt to changed health states and that their experienced utility tends to revert to pre-change levels across time. This paper further explores the prevalence of adaptation to ill health across different subgroups and disease areas.

Methods: We used all 8 waves (2009-2018) of the United Kingdom Household Longitudinal Study, a nationally representative longitudinal survey of the adult UK population. The analysis sample contained 20,746 individuals providing extensive information on life satisfaction, used as a measure for experienced utility in our analysis, socio-economic status, pre-existing health conditions, self-reported health states and newly diagnosed medical conditions during the observation period. The panel structure of our dataset is exploited using a dynamic ordered response model to explore the effects of ill health on individuals' life satisfaction across time while accounting for health state dependence.

Results: Preliminary results indicate evidence for the presence of adaptation to negative health shocks, defined as the self-reported onset of an undefined chronic condition significantly impeding one or multiple domains of physical functioning (e.g. sight). While the initial onset negatively affects reported life satisfaction, already after one year the magnitude of the effect decreases, becoming insignificant with increasing time. This pattern is roughly consistent across specifications using an alternative outcome capturing subjective well-being.

Discussion: The preliminary results are in line with evidence from previous literature. These studies have provided robust evidence on adaptation to ill health based on longitudinal analysis, however they have often focused on distinct subgroups such as relatively young or elderly individuals. In ongoing analyses, we aim to provide further insights into the possible heterogeneity of adaptation patterns by exploring whether adaptation occurs with different magnitude and persistence across sub-groups.

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4-6 September 2019
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Short Oral Presentations 2

Room: EAA002

Chair: Céu Mateus

Suicide rates among adolescents – does school kill?

Christiane Wuckel, Dörte Heger, Vincent Chandler

Schooling is generally associated with positive outcomes, both at the individual level and for society. However, school could also represent a significant source of stress due to performance anxiety and bullying. Previous research finds evidence linking the seasonality of adolescents' suicides – which differs from the one of adults' suicides – with the school year. In particular, the increase in stress experienced by students at the beginning of the school year coincides with a peak in youth suicide. Unfortunately, this research is unable to disentangle the effects from seasonality and from summer holidays, because these holidays always happen at the same time.

Our paper is the first to do so by using the fact that the timing of summer holidays in Germany varies both annually and between the 16 federal states. We are therefore able to estimate the causal effect of school holidays on suicide rates of teenagers. More specifically, we apply Poisson and binominal models with daily count data from the official German "causes of death statistics" covering all deaths from 2001 to 2015. We control for the unemployment rate and weather information (precipitation and sunshine duration) as well as state and year fixed effects to account for seasonal effects and other possible sources of stress.

Our results show that the probability of youth suicides decreases during (summer) holidays and increases again as classes resume. They demonstrate the need to reduce stress for teenagers and to raise awareness about the timing of suicides to better target potential victims.

The impact of time and risk-preferences upon the management of type 2 diabetes

Davide Tebaldi

Objectives: Diabetes is a major burden to the National Health Service (NHS). It accounts for 10% percent of the total NHS budget for England and Wales. According to the National Diabetes Audit, more than 3 million people are living with this condition in the UK and this figure is expected to increase to nearly 4 million by 2020. Despite the clear urgency, one in two patients with diabetes receive the recommended care suggested by the National institute for Health Care and Excellence (NICE). The aim of this research is to investigate the relationship between people attitudes toward risk and delayed gratifications and the receipt of recommended care for type 2 Diabetes. It will exploit data on all individual with diabetes from waves 4 and 6 of the Longitudinal Study of Ageing (ELSA) linked to wave 5 individual time and risk preferences.

Methods: Ordered logistic regression with receipt of recommended care as dependent variable. We investigate whether people who value the future more are more likely to adhere to recommended care.

Results: If the reward is more distant into the future, future-oriented individuals have a 35% higher chance to receive an additional diabetes process. If the pay-off is closer in time, results are reversed and of similar magnitude. Risk-preferences do not have any impact.

Discussion: Very few studies explored the role of risk and time-preferences on the management of type 2 diabetes using preferences elicited from a controlled lab experiment. Most of the research in this field relies on proxies or at best small laboratories experiment. On one hand, using proxies for preferences, like planning –horizon for example, usually involves hypotheticals choices which can potentially lead to hypothetical bias. On the other hand, small laboratories experiment could not be very representative of the general population (van der Pol, 2017) (Sloan, 2009). Incentivised choice experiment like the one we exploited in this study instead, performed well in predicting individual's real behaviour (ELSA 2015). Our findings reveal that preferences impact significantly on the receipt of recommended care for type 2 diabetes even if the sign is not clear and depends on the pay-off considered; results displayed both, a positive or a negative coefficient for time-preferences. Gafni and Torrance (1986) posit that people's attitude toward health-risk is the sum of three distinct effects: pure time-preference effect which captures time trade-off between current cost and future benefits, quantity effect reflecting diminishing marginal utility and gambling-effect for risk-preferences. The more distant into the future pay-off seems to detect pure time-preference effect, whereas the more imminent one, seems to capture the quantity-effect.

Legal access to alcohol and its impact on alcohol consumption and alcohol-related hospital admissions – RD evidence from the German MLDA

Anne Mensen, Fabian Dehos

We estimate the effect of the German Minimum Legal Drinking Age (MLDA) on youth alcohol consumption and alcohol-related hospital admission rates using an age-based regression-discontinuity design. We contribute to the existing literature by providing evidence for a very young age cohort in Europe, while previous studies mainly analyzed higher age thresholds in the US-, Canadian or Australian setting. In Germany, young adults are allowed to drink beer, wine and sparkling wine when they turn 16 and any kind of alcohol beverages as soon as they turn 18. By focusing on the 16th birthday threshold, we are able to circumvent potential confounders that limited causal inference in previous studies, where legal access to alcohol and reaching the age of majority both occur at the same age threshold. We use survey data on alcohol consumption from the Federal Centre for Health Education and daily data on hospital admissions from a large German health insurance covering around 10% of the German population for the years 2006-2012. Our results show large and significant increases in the probability to drink alcohol and in the amount of alcohol consumed. Concerning hospital admission rates, our results are mixed. While we do find significant increases in the number of hospital admissions that are potentially related to alcohol (e.g. physical injuries), the amount of hospital admissions that are explicitly alcohol-related (e.g. alcohol intoxication) does not increase significantly. Potential explanations for our findings are the very young age groups that are affected by the law and the stepwise legalization of alcohol access in Germany.

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4-6 September 2019
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Does family matter? The effects of parental cancer on children's school achievements: A Danish register-based cohort study

Maiken Skovrider Aaskoven, Dorte Gyrd-Hansen, Trine Kjær

Objectives: As cancer incidence increases and parenthood is postponed, an increasing number of children experience parental cancer. A cancer diagnosis, and subsequent treatment, is a burden not only for the patients but may also affect their children. Research suggests that parental cancer affects the children's emotional, behavioural, physical and cognitive development. Besides reducing children's well-being, school performance may also be affected if the illness impacts daily routines and reduces parents' investment in their children. The magnitude of the effect may vary over a wide range of factors, such as child's gender, cohabitation status of the parents, and whether grandparents are alive.

The aim is to identify family-related characteristics that moderate the impact of parental cancer on children's primary school achievements and whether they commence upper secondary education. We hope to identify families who might benefit from appropriate support, thereby fostering educational and health equality.

Methods: This is a population-based cohort study, in which children born in Denmark from 1986 through 2000 are linked to their parents and grandparents via a personal identification number. Information on the families is collected from several nationwide Danish registers containing comprehensive information on health and social issues.

Primary school achievements are assessed as the final grade point average (GPA) of the compulsory subjects in ninth grade (Danish, English, Mathematics) when students are 15-16 years old. A child is exposed to parental cancer if at least one parent is diagnosed with cancer before the child's 15th birthday. To ensure exogeneity we consider non-lifestyle cancers and do robustness checks of this assumption. We use ordinary least squares and logistic regressions to estimate the effect on GPA and upper secondary education commencement, respectively. Children without parental cancer is the reference group. The regressions are adjusted for, among others, birth characteristics and parental socio-economic position, and cluster-robust standard errors are applied to account for the dependency between siblings in the sample. The analyses are conducted separately for boys and girls.

Results and discussion: The preliminary results indicate that parental cancer affects school achievements. They suggest a child-parent-gender effect with girls being more vulnerable and fathers' cancer diagnoses being less significant. Moreover, children from broken homes seem to be more affected by parental cancer. This promotes a need for preventive and supportive interventions that could help these exposed families. Further analysis of how family characteristics affect resilience will be presented in the manuscript submitted to the conference.

An investigation of the impact of prescription drug co-payments on medicines use for publically insured older people in Ireland

Gretta Mohan, Anne Nolan

Objectives: Access to outpatient drugs is a cornerstone of efficient healthcare systems. Many healthcare systems incorporate cost sharing for prescription medications, although often exemptions

exist for vulnerable population groups. A large body of international evidence demonstrates that prescription drug co-payments reduce medicines usage. However, to stem a rapidly increasing publicly financed drugs budget, Ireland introduced co-payments on prescription items for the first time in October 2010 for publicly insured patients (medical cardholders). The initial cost was set at €0.50 per item, progressively increasing to €1.50 in January 2013 and €2.50 in December 2013.

Methods: We investigate the impact of co-payments on the utilisation of medicines among older medical cardholders in Ireland. To inform the analysis we use four waves of panel data from The Irish Longitudinal Study on Ageing (TILDA), a nationally representative survey of over 50's. A difference-in-difference research design is employed to estimate the impact of the introduction (and increase) of co-payments on the number of medicines used, polypharmacy and the type of drugs used by Anatomical Therapeutic Chemical (ATC) classifications.

Results: Medical cardholders had higher utilisation of medicines across all waves. The growth in the number of medicines over time was greater for medical cardholders than non-medical cardholders (the control group). Adjusting for age, demographic and socioeconomic information, private health insurance, the health and health behaviours of study participants, the difference-in-difference estimates show an increase in the use of medicines and polypharmacy rose among medical cardholders. There was some variation in the direction of the estimated effect of the policy across different medication types – negative effects were observed for lipid modifying and anti-inflammatory medications.

Discussion: In general, the research did not find that small co-payments on prescription items for publicly insured older people in Ireland reduced medications use. The unexpected positive direction of 'effect' arises from the relatively greater growth of medicines use among medical cardholders. Since medical card eligibility is means tested in Ireland, this group typically represents individuals from lower socio-economic positions. Medical cardholders had more health problems than non-medical cardholders. Over the same period, the progression of existing health conditions may be more severe for medical cardholders, requiring greater medicalisation.

Short Oral Presentations 3

Room: EAA006

Chair: Mimi Xiao

What is the impact of emergency departments on the number of hospital admissions? Evidence from the French private hospital industry.

Alexis Dottin, Brigitte Dormont

The rise in the number of emergency department (ED) visits has become an important source of concern in many countries over the last decades. In France, the number of visits to EDs increased by 30% in ten years, reaching more than 21 million visits in 2017. Many factors can explain this growth, with mechanisms that work on the demand and the supply sides of the market for care services. This paper explores a supply side explanation that has not yet been investigated: Opening a new emergency department could enable hospitals to increase their number of admissions. The French

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4-6 September 2019
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Porto, Portugal

hospital payment system was reformed during the period when ED visits increased sharply. The reform introduced an activity-based prospective payment system that generated strong incentives for multiplying the number of hospital admissions and increasing the average casemix. If visits to an emergency department can help hospitals to recruit inpatients, then the observed increase in emergency visits could be seen as an indirect outcome of the hospital payment reform. In order to test this hypothesis, we evaluate at the hospital level the impact of opening and closing an ED on numbers of admissions for long stays (at least one night) and day care. We focus on private-for-profit (PFP) hospitals. Indeed changes regarding ED opening or closing mostly concern PFP hospitals on the period under review, when private hospitals where encouraged to meet demand. We use administrative data coming from the Programme de Médicalisation des Systèmes d'Information (PMSI) that records all hospital admissions at the patient level and the Statistique Annuelle des Etablissements de santé (SAE), a mandatory survey recording hospitals inputs and activity. Our dataset is a panel of 380 French private hospitals observed from 2002 to 2012 in which we observe 32 ED openings and 7 ED closings. We specify fixed effects models to control for unobserved heterogeneity at the hospital level. In the simplest model we assume that hospitals with and without EDs have identical yearly changes in their number of admissions. In a second model we relax this constraint by finely specifying trends that differ with regard to emergency activity. Our estimates show that opening an ED leads to a 16% increase in the number of long stays, with no significant impact on day care. Symmetrically, an ED closing decreases by 17% the number of long stays. But this doesn't lead to a significant reduction in activity because the number of day care stays increases by nearly 24%. It suggests that hospitals are repositioning their activity towards more profitable care after a closing.

You Can Win for Losing! Incentivizing Motivation and Self-Control Preferences: Evidence from the DietBet Weight Loss Program

Maryna Ivets

Objectives: In this paper we investigate the notions of self-control and motivation in connection to weight loss. We first develop a theoretic model and then test its conclusions with the data from DietBet.

Method: We insert the idea of changing motivation into a self-control (SC) framework based on Gul & Pesendorfer (GP) (2001).

Contrary to GP we assume the choice menu to be given. This includes more tempting alternatives and higher costs of self-control. Hence, an agent might have a preference for commitment, but cannot choose the least tempting menu. Then, the agent wants to introduce incentives to behave the way he prefers rationally. Also, we adapt GP's model such that the perceived cost of self-control depends on the degree of motivation.

We develop a 2-period model. In period 1, before the agent faces the temptation, he chooses an investment-payoff combination that maximizes his period 1 utility given his expectation to commit to his normatively preferred choice in period 2. In period 2 the agent chooses a lottery from a given set of lotteries, given his investment-payoff choice from period 1. If his period 2 choice coincides with his period 1 preferences, he receives a payoff larger than the investment; else he receives nothing.

As an application of our model, we focus on the following: The investment could be a wager, when the agent bets on himself. If he reaches his goal to resist temptation, he gets a share of the pot. This is the idea behind DietBet (players bet on the percent of body-weight they lose in a given amount of time). We use their data to show whether there is a relationship between the amount of the wager and the amount of weight-loss.

Results: The results show that there is a positive relationship between the wager and the amount of weight loss and probability of winning the game, therefore validating the model. We additionally explore differences by gender and other individual and game characteristics.

Discussion: Research has noted that some observed behavior cannot be explained by the standard theory of rational preferences (DellaVigna & Malmendier (2006)) and suggests that agents can be overconfident and about future self-control. Thus, it calls for a new theoretical approach when trying to explain observed behavior.

In this paper we develop an alternative model that links commitment preferences, self-control costs and motivation. We apply the model to the DietBet weight loss program.

We find that the amount of wager positively influences people's behavior with respect to weight loss. Our findings support the idea that agents can use an investment-payoff mechanism to incentivize a change in their behavior in the normatively preferred direction.

Informal care provision and receipt in the UK Household Longitudinal Survey

Sean Urwin, Yiu-Shing Lau, Gunn Grande, Matt Sutton

Informal care research relies upon the valid identification of carers. Incorrectly identifying carers and the hours they provide may have a substantial impact on the conclusions of informal care research. The development and evaluation of informal carer policy around the world hinges upon the reliable identification of carers and recipients. This is challenging to overcome as informal care is a non-market good with little means of verifying reports compared to, for example, formal employment. This study has two aims: (1) to explore the degree to which providers and recipients confirm each other's reports of provision and receipt of care, respectively and (2) to develop a prediction model of the discrepancy in carer and recipient reports. The UK Household Longitudinal Survey (UKHLS) in wave 7 (2015-2017) provides a unique opportunity to analyse informal care information from both the provider and recipient perspectives. Further, variable selection and cross validation methods are used to develop a prediction model which explores factors related to the discrepancy of carer and recipient reports. This study finds that among 914 dyads identified by the provider, 86.45% (n=664) of these are confirmed by the nominated recipient. Among 1594 dyads identified by the recipient, only 43.43% (n=664) of these are confirmed by the nominated provider. These results indicate that carers may be 'under-identified' in surveys and therefore 'under-identified' in nationwide estimates. Current carer policy and its evaluation could be underestimating the scale of caregiving. Obtaining informal care information from the perspective of the care recipient may help researchers judge the quality of caregivers' reports.

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2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
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Does Perspective Matter in the Economic Evaluation of Social Care Services? An Application to Vision Rehabilitation Services in England

Francesco Longo, Pedro Saramago, Helen Weatherly, Parvaneh Rabiee, Yvonne Birks, Ada Keding, Illary Sbizzera

Objectives: The number of economic evaluations of social care (SC) interventions continues to expand. For interventions with a SC focus, NICE guidance in the UK offers multiple choices as to the cost and outcome perspective for consideration. This might result in methodological diversity in practice across analysts as to the perspective/s taken. This study investigated whether the perspective taken matters. We undertook a cost-effectiveness analysis of in-house vs contracted-out vision rehabilitation (VR) services under a SC and an integrated social and health care (S&HC) perspective. In England, VR services are provided by local authorities through two dominant models, i.e. in-house and contracted-out VR services featuring either no or some integration with the NHS. Regardless of how VR is delivered, it aims to promote users' health and wellbeing, and support users' independence in daily living at home and within the community.

Methods: We collected data on VR users' outcomes and costs, based on a prospective cohort study with a 6-month follow-up. Under the SC perspective, we analysed SC-QALYs obtained using ASCOT, and SC costs. Under the integrated S&HC perspective we undertook two evaluations, (i) using SC-QALYs and (ii) using HC-QALYs obtained using EQ-5D-5L. Both (i) and (ii) used S&HC costs. Incremental outcomes and costs were estimated using regression analysis, accounting for user and LA characteristics as potential sources of confounding. In addition, we used multiple imputation to deal with missing data.

Results: Our findings showed that, from a SC perspective, in-house VR services had a high probability (greater than 80% vs contracted-out VR services) of being cost-effective. Under an integrated S&HC perspective, however, in-house VR services were found to have a reduced probability (less than 45%) of being cost-effective, whether based on SC-QALYs or HC-QALYs. Irrespective of the outcome being considered, results were driven mainly by higher use of hospital services by in-house VR users compared to contracted-out VR users.

Discussion: Our results have the potential to inform different decision makers, i.e. those in a non-integrated SC system, and those in an integrated S&HC system. Focusing on a narrow SC perspective may introduce inefficiency by ignoring broader impacts.

Should health economists care about implementation?

Robert Heggie, Olivia Wu, Kathleen Boyd

Objective: In assessing complex interventions, in both clinical and population health context, it is critical to account for implementation. Current Medical Research Council (MRC) guidance has highlighted four phases for the assessment of complex interventions in a "cyclical sequence": development, feasibility/piloting, evaluation and implementation. We argue that implementation should not be considered as a distinct phase, but as one of the interacting components within a single framework incorporating implementation and economic evaluation throughout of the assessment.

Methods: A systematic review of National Institute for Health Research (NIHR) monographs over the last five years, to examine how implementation has been assessed and evaluated within HTAs. We will describe and critique the approaches that have been used. In particular, we will focus on how implementation has been incorporated within the economic evaluation.

Results: Our preliminary results showed that there is little consistency in how implementation has been incorporated into economic evaluations. The issues of economic evaluation and implementation are typically considered in isolation – with implementation factors only considered after the economic evaluation has taken place. Several studies estimated the value of implementation, focusing on the trade-off between directing resources towards further research or implementation activities, but not on the value of considering implementation early within the economic evaluation. Other studies have presented qualitative data alongside quantitative results, without being explicitly integrated within the economic evaluation or without an interpretation of these mixed method results.

Discussion: The failure to consider implementation factors within the economic evaluation of complex interventions may lead to sub-optimal allocation decisions. Ideally, economic evaluation and implementation should be considered throughout the assessment of complex interventions – i.e. not only to evaluate, but also to inform the development and feasibility of an intervention. Where full implementation of interventions has non-trivial budget implications, the inclusion of implementation factors within the economic evaluation can allow for the prioritisation of subgroups with the greatest potential to benefit from treatment. Further research is necessary to recommend which type of data will be required to inform economic evaluation and how this can best be captured.

Short Oral Presentations 4

Room: EAA004

Chair: Francisca Lopes

Universal healthcare coverage effects on health inequality

Ivan Ochoa

Background: By the year 2000, roughly half of the population in Mexico had no health insurance, and more than half of health spending was out-of-pocket. These inequalities in access to healthcare produced deep inequalities in health outcomes. To address this situation, the Ministry of Health implemented the Seguro Popular Programme (SP), a large-scale healthcare expansion in 2004 to guarantee universal coverage.

Objectives: The objective of this study is two-fold, to estimate the programme treatment effects along the distribution of children nutritional status; and to assess the change in health inequality resulted from the implementation of the healthcare expansion. The hypothesis is that if the programme is effectively expanding coverage in healthcare access, then it may have a positive effect on health status. Moreover, by targeting the poorest uninsured families – generally with the worst nutritional outcomes–, they must receive the greatest benefit from the program, which would reduce the health inequality.

Methods: In order to isolate the SP treatment effects on children nutrition, we use the gradual roll-out of the programme as an identification strategy. The data sources are administrative data on

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enrolment and the three waves of the Mexican Family Life Survey, a panel survey. We assess children's nutritional status using height-for-age z-scores. Distributional treatment effects, in contrast to average effects, allow us to assess programme effects along the distribution of health. We are especially concerned about the lower part of the distribution: undernourished and stunted children. We estimate the impact of SP on childhood nutrition using a changes-in-changes approach, a non-linear DD method. We expect that SP might have different quantile effects along the health distribution, with higher effects in the lowest part. We compare inequality measures on the estimated quantile functions to assess if the programme had an effect on children's health inequality.

Results: The results of this study show that Seguro Popular healthcare coverage expansion had a positive average effect on the nutritional status of children caused by a higher effect on the lower part of the health distribution. The programme also had a health inequality reduction effect caused by the health improvement of children with worse nutritional status.

Conclusion: These results have important implications for the evaluation of public health insurance programmes. We show that the treatment effects may vary along the health distribution and children with worse health may be the primary beneficiaries. Another implication is the usefulness of non-linear DD methods for programme evaluation in the presence of heterogeneous effects.

Mental Health and Employment during the Great Recession

Akissi Stéphanie Diby, Pascale Lengagne, Camille Regaert

Objectives: To study the probability to be in employment among people with diagnosed severe mental disorders before and after the 2008 economic crisis in France, and to assess the extent to which the economic downturn have yielded a higher risk of job loss amongst individuals having severe mental disorders, as compared with the pre-crisis period.

Methods: We use a large French longitudinal administrative dataset providing information relative to individuals' professional career, general information such as gender, age and residence department, health care consumption, and long-term mental health diseases diagnosed by doctors and administratively recorded. The sample consists of a cohort of 216 332 persons, aged between 25 and 50 years old in 2005 and followed between 2005 and 2011. Based on the International Classification of Diseases, we distinguish five types of mental disorders — schizophrenia; moods disorders; neurotic, related-stress somatoform disorders; mental and behavioral disorders due to psychoactive substance use; disorders of adult personality behaviors — forming the group "mental disorders". Controlling for age structure and socio-economic characteristics that influence the status on the labor market using exact matching and difference in differences method, separately by gender, we estimate the evolution of the probability to be in employment over the period 2008-2011 amongst individuals having severe mental disorders in 2008, and compare it with the same evolution over the pre-crisis period 2005-2008 amongst those without severe mental disorders. We carry out these estimations for two other groups, persons with long-term musculoskeletal diseases and the other group corresponding to persons without any diagnosed long-term diseases.

Results: The probability to be in employment amongst people having mental health disorders declined on average by 5 points for the men and 4 points for the women between 2008 and 2011, as compared with the period before the crisis. For men and women suffering from musculoskeletal diseases, the

probability to be in employment decreased by 2 percentage points, as well as for people without any diagnosed long-term diseases.

Discussion: We find that people living with severe mental health diseases are more strongly exposed to job-loss risks and thus particularly more vulnerable during economic downturns, as compared with other populations. These results add to the recent literature showing that poor health conditions are important sources of job vulnerability during macroeconomic crises.

Are Ambulatory Care Sensitive Condition admissions an incomplete indicator of how primary care quality affects the need for emergency hospital care?

Beth Parkinson, Rachel Meacock, Katherine Checkland, Matt Sutton

Background: Admissions for Ambulatory Care Sensitive Conditions (ACSCs) are those where effective community care and case management could potentially prevent the need for hospital admission. ACSC admissions are therefore widely used as a measure of primary care quality. However, only patients whose conditions are severe enough to warrant admission are captured by these measures. In England, approximately 70% of people attending the emergency department (ED) are not admitted to hospital. A proportion of these ED attendances could also be potentially prevented through better quality primary care, but are not captured by current metrics.

Objectives: To assess whether the volume of potentially preventable ED attendances can be identified by analysing which types of attendances are most associated with ACSC admissions, among patients admitted from the ED.

Data: Attendance records at all 139 NHS providers with major EDs in England were linked with emergency admission records using a matching algorithm based on an encrypted person identifier, dates of discharge from the ED and dates of admission to hospital, using data from 2015/16. We classify ACSC admissions using established ACSC diagnoses lists. This resulted in 3,799,407 linked records of patients who were admitted from the ED, of which 23% were for an ACSC.

Methods: We run a series of probit regressions to examine whether attendance characteristics hypothesised to be indicative of the preventability of an attendance explain the probability of an ACSC admission following an ED attendance. We examine the following ED attendance characteristics: diagnosis categories, reason for attendance, treatment and investigation procedures, and incident location.

Results: As expected, ED attendance categories which reflect preventable conditions are were positively associated with admission for an ACSC whilst diagnosis categories which indicate an injury were negatively associated. Receipt of more resource intensive procedures, and attending for an accident were negatively associated with the probability of an ACSC admission. Further analysis will be done to assess the sensitivity and specificity of these categories in their ability to predict an ACSC admission.

Discussion: The results suggest that characteristics on a patient's ED attendance record may be used to indicate potentially preventable attendances. Developing a measure for potentially preventable ED attendances will allow for a more complete examination of the link between primary care quality and avoidable emergency hospital utilisation. Such a measure may be more sensitive to changes in primary

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care quality, and identify potentially preventable emergency hospital utilisation currently not captured.

Health-risk attitude and preference heterogeneity in discrete choice experiments

Samare Huls, Vikas Soekhai, Job van Exel, Carin Uyl-de Groot, Esther de Bekker-Grob

Objectives: The analysis of patient heterogeneity is becoming increasingly important in parallel with the focus on personalised medicine. From earlier research it is known that the average patient does not exist; patients have different preferences for treatments that often vary in terms of efficiency and risk. The ability to discriminate between subgroups of patients in terms of risk attitude can be informative in many domains of health care and it might even be predictive in terms of uptake and adherence to treatment. Therefore this study aimed to analyse whether patients with varying health-risk attitude have different treatment preferences.

Methods: Using a discrete choice experiment, a sample of patients with hip-and knee-arthrosis (n=648) were asked to make a series of choices about treatment types. To measure health-risk attitude, the 13 item Health-Risk Attitude Scale (HRAS-13) was used. Respondents traded-off treatments that varied in terms of waiting time, type and number of professionals involved, out-of-pocket costs, time per consult, travel time and whether additional equipment was needed. The discrete choice data were analysed using latent class conditional logit regression, to allow for heterogeneity across the respondents.

Results: Four different classes of respondents were identified based on treatment preferences for hip-and knee arthrosis. Health-risk attitude was found to be associated with latent class membership. For example, respondents who are more risk-averse were more likely to be in the class of respondents that preferred treatment by a specialist over a general practitioner.

Discussion: The analysis shows a clear and plausible relation between risk attitude and treatment preferences for hip-and knee arthrosis. To analyse the generalisability of the results, we are collecting additional data in other patient groups and risk contexts. One of these patient groups concerns people with Graves' disease. In this study respondents trade-off type and efficiency of treatment with the risk of hoarseness, calcium deficiency and side effects, allowing to explore whether patients differing in risk attitude weigh the risk attributes in the choice experiment differently. If data collection proceeds as planned, the analysis of this data will be added to the paper. If ongoing studies confirm the findings in the hip-and knee-arthrosis sample, we'd argue that it might be helpful to consider patient risk attitude more explicitly in discussions and decisions about treatment in clinical practice.

Short Oral Presentations 5

Room: EAA005

Chair: Chiara Pastore

Cross-Sector Cost-Substitution: Evidence on the relationship between Primary and Secondary Care Costs amongst Diabetes Patients

Ryan Pulleyblank, Kim Rose Olsen, Giovanni Mellace

Objectives: Theoretical reasons for expecting both complementarity and substitution effects between primary and secondary care exist. Empirical evidence mostly suggests substitution effects dominate, but evidence has not focussed on costs. Using Danish public health sector data, we investigate relationships between healthcare costs across primary and secondary care. The December 2010 national contract for GPs mandated enrolment within three years in a national electronic health record system with a disease management program (EHR/DMP) targeting diabetes patients. Different timing in GPs' enrolment provides exogenous variation in primary care costs, which can be exploited to identify their effect on secondary costs.

Methods: Using data from 2008 to 2014 (when the EHR/DMP was discontinued), we cover a time period preceding and following the 2010 GP contract. GP practices where the EHR was never used at a high level (never coding more than 10% of visits and never logging into the DMP features) were compared with GP practices which demonstrated a high-level of use (coding 70% of patient visits and using the disease management features). We use Difference-in-Differences Instrumental Variable to control for endogeneity. In particular we use DiD between treated and control clinics as an instrument for primary care costs amongst diabetes patients.

Results: Primary care costs were considered as potentially substituting for total secondary costs, as well as secondary care cost components including hospital-based inpatient, outpatient, ED admissions, and non-hospital-based specialists. Preliminary results suggest that while the average annual costs of treating diabetes patients in primary care did increase by a small amount amongst patients who were exposed to the EHR/DMP, this did not translate into statistically significant impacts on secondary care costs over the observed time period. Average annual inpatient costs tended to drop while outpatient costs tended to increase. Costs of hospital admissions originating through emergency departments – which could result in either inpatient or outpatient admissions – dropped.

Discussion: Diabetes is considered to be an Ambulatory Care Sensitive Condition – meaning that the quality of primary care is known to be linked to reducing hospitalizations. While it is sensible to expect increased quality (costs) of primary care for these patients to decrease (costs of) hospitalizations for diabetes patients, hospitalizations are irregular events for most patients, and impacts of primary care improvements are likely to manifest for patients over many years. The short time-horizon for this analysis is an important limitation.

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Católica Business School
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Waiting time inequalities in the country where (almost) everyone is equal

Nicolai Simonsen, Anne Sophie Oxholm, Søren Rud Kristensen, Luigi Siciliani

Background: In publicly funded health systems, waiting times act as a rationing mechanism, but should be based on need rather than socioeconomic status (SES). Studies have found a negative gradient between waiting time and SES. With an income inequality amongst the lowest in the world, Denmark represents an interesting case, and the data additionally allow us to estimate the impact of being an immigrant on waiting times.

Objectives: To determine whether socioeconomic inequalities in access to health care exists in one of the most income equal countries in the world.

Data: Individual level data from the Danish National Patient Register and Statistics Denmark for 2015. 54,434 patients treated for hernia repair, gallstone removal (GR), hip replacement (HR), knee replacement (KR), cataract surgery (CS), prostatectomy (PS) or hysterectomy (HS) at Danish hospitals. Waiting time is defined as days between referral to treatment and the hospital procedure date.

Methods: For each condition, and separately for men and women, we estimate linear models of the log of waiting time using OLS. We model waiting time as a function of patient characteristics (age, van Walraven comorbidity score, marital status, parenthood), SES (highest level of education, income quintile, occupational status and being an immigrant or descendent) and hospital fixed effects.

Results: For GR, income and education does not affect waiting times for any gender, but immigrants and their descendants wait significantly longer for treatment. This is also true for CS, but for men there is a positive income gradient: patients in the 2nd—6th decile wait longer than patients in the first decile. Female immigrants also wait longer for KR. This is not true for men, but instead we find a negative income gradient: waiting times for patients in income decile 4—10 are significantly shorter than for patients in the lowest deciles. For HR, we find women in income deciles 2—7 wait longer than others. We find no income effect for men, but patients with secondary to medium long education wait longer than patients with primary school education only. Retired men experience shorter waiting times for PS. We find no socioeconomic differences in waiting times for HS for women, or hernia repair for neither men nor women.

Conclusion: In Denmark, a negative income gradient is only observed for men undergoing KR and PS. There are examples of a positive gradient, where patients with higher income or education wait longer than those with the lowest level of education, which may be due to unmeasured differences in need. The most consistent marker of inequality is being an immigrant, which is associated with longer waits for three out of seven observed procedures. Ongoing work is seeking to explain the findings.

Measuring the Impact of Foot Pain on Health Related Quality of Life: Is it Worth the Opportunity Cost in the presence of Comorbid Disease?

Linda Fenocchi, Gordon J. Hendry, Helen Mason

OBJECTIVES: To evaluate the measurement properties of EQ-5D-5L and SF-6D (using SF-12v2) compared to condition-specific patient-reported outcome measures (PROMs) in a foot pain population and to estimate the effect of MSK foot pain symptoms and comorbid conditions on measuring HRQoL following podiatric treatment.

METHODS: A mixed methods approach was used. Phase 1 was a cross-sectional and longitudinal design to assess measurement properties including concurrent validity, ability to detect change and estimates of meaningful change. Phase 2 used qualitative interviews to broaden and deepen understanding of Phase 1 data. Adult participants with foot pain attending a first MSK biomechanical podiatry appointment completed questionnaires at 0, 3 and 6 months. Data about foot pain, other health conditions (reported using Self-Administered Comorbidity Questionnaire), and demographic information was collected alongside four PROMs: EQ-5D-5L, SF-12v2, Foot Health Status Questionnaire, Foot Function Index. PROMs were assessed using anchor and distribution-based methods. Standard effect size statistics were estimated. Regression analyses tested health utility scores, foot pain and comorbid conditions. A subsample of participants took part in semi-structured interviews.

RESULTS: 115 participants enrolled. Most were female (59%), an average age of 55 years, employed or studying (52%) and had at least one comorbid condition (77%). 25 were interviewed. Both EQ-5D-5L and SF-6D could detect change indicated by external measures of foot pain. Comorbidity weakened associations between generic and condition-specific PROMs. Foot pain severity was higher on average for those with a comorbid condition. Regression analysis found reporting a worse health outcome was 3 times more likely in the presence of comorbidity, and 7 times more likely if the comorbid condition was depression.

DISCUSSION: The PROMfoot study supports the validity and responsiveness of both EQ-5D-5L and SF-6D (using SF-12v2) for measuring HRQoL following podiatric treatment, and provides estimates for the interpretation of change for use in clinical trials. Exploration of impacts on HRQoL indicated that the impact of an improvement in foot pain is often marginal relative to the impacts that comorbid conditions and multimorbidity have on overall HRQoL. It was the case that the majority of PROMfoot participants presented with comorbid conditions. The prevalence of comorbidity in patient populations presents a challenge to the collection of utility data for use in economic evaluation. If patients with comorbid conditions are unable to perceive and assess the value of treatment for a single condition independently within their health status there may be systematic underestimation of the utility of treatment.

Impact of provider payment reform on hospital outcomes: an interrupted time series

Daliya Kaskirbayeva

Background: In 2012 Kazakhstan introduced a case-based payment system based on Diagnostic Related Groups (DRGs) to replace fee-for-service (FFS) remuneration for public hospitals. Prior to nationwide implementation, 20 hospitals were piloted for a period of 17 weeks starting in September 2011.

Objective: This paper examines whether the introduction of DRGs was associated with changes in inpatient, day cases, surgery cases for two age groups (adults and children), and average length of stay (ALOS) to capture hospital activity and hospital standardised mortality rate as a proxy for quality of care.

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Methods: We used hospital episode records of 2011/2012 and 2012/2013. We used interrupted time series across three levels (regional, city and rural) with matched controls to allow for structural changes in outcomes due to payment reform.

Results: In regional hospitals, the surgery cases for children increased by 1.3 cases per week and hospital standardised mortality rate decreased by 0.06 points during the piloting stage. In city hospitals, average length of stay decreased by 0.12 days during the piloting stage. After the nationwide DRG introduction the inpatient cases increased by 1.3 cases per week, day cases decreased by 0.3 cases per week, while the fall in hospital standardised mortality rate was negligible (0.02 points). The results show no effect in rural hospitals during either period. The study findings suggest that despite the slight reduction in length of stay and increased hospital activity, the quality of care was not affected by the implementation of DRGs. In general, the piloted hospitals adapted during roll-out period faster compared to others.

Discussion: This is the first study evaluating the shift from FFS to DRGs in the Post Soviet region. Despite some evidence of an association between DRGs and hospital activity and quality of care, the principal goal of reform – an increase in day cases and reduced ALOS – was not observed. Possible reasons for the moderated outcomes of the reform are lack of support for hospitals and general unpreparedness of the health care system for the ad hoc implementation of the new payment system.

2019-09-05 16:00 - 16:30 | Coffee-break

2019-09-05 16:30 - 17:30 | Session 8

Estimating the Impact of Patient Safety Incidents on Patients' Quality of Life using Patient Reported Outcome Measures

Room: EAA004

Chair: Job van Exel

•Estimating the Impact of Patient Safety Incidents on Patients' Quality of Life using Patient Reported Outcome Measures

Mimi Xiao

Background: The burden of patient safety incidents (PSIs) is often characterised by their impact on mortality, morbidity and treatment costs. Few studies have attempted to estimate the impact of PSIs on patients' quality of life and these have primarily relied on a narrow set of conditions, or strong assumptions about the impact of incidents on healthy life years.

Objectives: To estimate the impact of PSIs on health related quality of life (HRQoL) of patients undergoing elective surgery in England.

Methods: We examine a unique linked data set consisting of Patient Reported Outcome Measures (PROMS) for varicose veins, hip and knee replacements, and hernia repair patients linked to Hospital Episode Statistics (HES) between 2013/14 and 2016/17. We identify patients with any of 10 US Agency for Healthcare Research and Quality (AHRQ) PSI indicators and HRQoL using the general EuroQol five dimensions questionnaire (EQ-5D) and visual analogue scale (EQ-VAS) before and after surgery. We use, multinomial logit regression to estimate the impact of having a PSIs on health profile change after surgery, ordinary least squares regression, to estimate the impact of having a PSI on change in EQ-5D and EQ-VAS index change after surgery, and ordinal logit regression to estimate the impact of PSI on likelihood of improvement in individual dimensions of health .

Results: Patients experiencing a PSI are more likely to report worse health after surgery. They report lower improvements in EQ-5D and EQ-VAS indices for eight out of ten PSIs and are more likely to report worse health states on five dimensions of EQ-5D after surgery.

Conclusion: PSIs are associated with a substantial negative impact on health related quality of life in patients undergoing elective surgical treatment.

Spatial determinants of cervical cancer screening in France

Room: EAA006

Chair: Marta Trapero-Bertran

•Spatial determinants of cervical cancer screening in France

Anne-Marie Konopka, Thomas Barnay, Nathalie Billaudeau, Christine Sevilla-Dedieu

Context: In France, cervical cancer is the 10th leading cause of death for women. There are approximately 3000 new cases and 1100 deaths each year. Cervical cancer screening is mainly based on individual screening performed by a health professional (gynaecologist, general practitioner or midwife) in a medical practice, health centre, family planning clinic or hospital. The French National Health Authority (Haute Autorité de Santé) recommends cervical cancer screening every 3 years (after 2 annual normal pap smears) for women aged 25 to 65 years old.

Objectives: Since only 60% of French women aged 25 to 65 years old are screened for cervical cancer, the goal of this study is to analyse the drivers of spatial disparities in cervical cancer screening in France.

Methods: This study was carried out on administrative data from the MGEN, which is a French non-for-profit health insurance organisation providing both national health insurance (NHI) and complementary health insurance (CHI) coverage. A multilevel model with random effects was used to estimate the association between cervical cancer screening and individual and contextual variables. Individual variables consist of women's characteristics such as age, socioeconomic status and medical follow-up. Contextual variables comprise local characteristics of their place of residence like healthcare supply. The studied sample includes women aged 25 to 65 years old, covered by NHI with or without CHI provided by MGEN, from 1st January 2012 to 31st December 2014.

Results: The multilevel model confirms spatial disparities in cervical cancer screening. Moreover, it shows that the likelihood of being screened decreases with age, the price of the gynaecological visit

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4-6 September 2019
Católica Business School
Porto, Portugal

and living in a deprived area, and increases with living in a couple, being covered by both NHI and CHI, being followed for contraception or pregnancy, being screened for breast cancer and the local density of health professionals.

Discussion: These results are of particular interest to policy makers since the very recent implementation of organised cervical cancer screening in France. This programme provides free screenings every 3 years for women aged 25 to 65 years old. However, women may face balance billing for the health professional's visit as most cervical screenings are performed by gynaecologists, who can charge extra fees. Different policy levers will thus be discussed in relation to the major role played by health professionals in access to cervical cancer screening, in regards to their unequal distribution within the country and the existence of potential financial barriers.

The stability of physicians' risk attitudes

Room: EAA003

Chair: Arthur Attema

•The stability of physicians' risk attitudes

Xuemin Zhu, Marjon van der Pol, Anthony Scott, Julia Allan

Objectives: Risk attitudes are known to influence physician's decision-making including the use of laboratory services and admission of patients. Research on risk attitudes of physicians is therefore important, for example, to assist a better understand practice variations. However, little is known about the stability of risk attitude in physicians. Standard economics assumes that an individual's risk attitude is stable over time. This assumption has been challenged in recent years. The aim of this paper is to explore the stability of risk attitude in physicians over time and to examine the impact of negative personal life events.

Methods: This paper uses data from Medicine in Australia: Balancing Employment and Life (MABEL), a prospective panel study of Australian doctors. Waves 6 to 9 (2013-2016) included risk attitude questions in the financial, career and professional, and clinical domains. The survey also collects information on a range of personal life events such as serious personal injury or illness, death of family member and being named as defendant in a medical negligence claim. Data are available for over 5000 physicians. We examine the mean level changes in risk attitude between wave 6 and 9. The lagged effect of personal life events on physician's risk attitude is identified using panel data analysis (pooled cross sectional and fixed effect regression). Robustness checks are performed around the assumption of heterogeneity of life events and attrition.

Results: Preliminary results show that the unconditional mean level changes in risk attitude are very small. The stability of risk attitude is similar across genders and type of physician but varies by age. Controlling for systematic panel attrition, we find that risk attitude is not sensitive to negative personal life events. Full results will be available at the conference.

Conclusion: The results of this study show that risk attitudes are relatively stable among physicians. This may be due to the relatively short time frame examined (3 years). It suggests that risk attitudes

can be assumed to be stable when examining the relationship between risk attitude and clinical decision making.

Time to retire? A register-based study on GP behaviour prior to retirement

Room: EAA002

Chair: Bruce Hollingsworth

•Time to retire? A register-based study on GP behaviour prior to retirement

Jamie O'Halloran , Anne Sophie Oxholm, Line Bjørnskov Pedersen, Dorte Gyrd-Hansen

Aim: In many health care systems, the population of general practitioners (GPs) is ageing and a large proportion are seeking retirement. The literature is scarce on how approaching retirement affects physician behaviour. This study aims to investigate whether and how GPs change their treatment behaviour in the years prior to retirement.

Background: GPs are typically self-employed giving them some flexibility in their work. Choosing to retire indicates a need for additional leisure time, suggesting that GPs may gradually change their behaviour in the years prior to retirement. We hypothesise that GPs reduce the amount of effort they exert into health care when approaching retirement. This could potentially result in spill-overs to other parts of the health care sector. We also hypothesise that GPs alter their service composition by substituting high-effort services with low-effort services.

Data: We use administrative register data from Denmark. These registers include information on all health care services provided to patients and key health and socio-economic characteristics of patients and their GPs.

Methods: We estimate the effect of approaching retirement on GPs' effort levels using a balanced sample of GPs from 2005 to 2015. Our treatment group consists of GPs in solo practices who retire at 60+ in 2015 to 2017 (N= 182). We compare these GPs' effort levels with a control group of non-retiring solo GPs (N = 401). To minimise the risk of observing an age effect rather than a retirement effect, we use propensity score matching. We then run a regressions on this matched sample.

The models control for the GPs' and their patients' socioeconomic characteristics and health states.

Results: We find that retiring GPs have fewer patients on their lists and that they reduce the number of home visits in the years prior to retirement. However, there is no change in their revenue per patient. We find no evidence of a spill-over effect measured by the rate of referrals or rates of prescriptions.Additionally, we observe no changes in the quality of care proxied by hospital admissions for ambulatory care sensitive conditions and patients' use of out-of-hours GP services.

Discussion: We expect that the behaviour change is generalisable to GPs in shared practices and anticipate that it may be more pronounced in settings where the GP is not incentivised by fee-for-service payment schemes.

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4-6 September 2019
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2019-09-05 17:30 - 18:30 | Session 9

Cost-effectiveness and cost-utility analysis of a web-based computer tailored for prevention of binge drinking in Spanish adolescents

Room: EAA006

Chair: Caroline Clarke

•Cost-effectiveness and cost-utility analysis of a web-based computer tailored for prevention of binge drinking in Spanish adolescents

Ana Magdalena Vargas-Martínez, Marta Lima-Serrano, Marta Trapero-Bertran

Background: Many interventions aim to prevent alcohol use among adolescents, but their efficiency has seldom been assessed. This study sought to assess the cost-effectiveness and cost-utility of Alerta Alcohol, a web-based computer-tailored intervention to prevent binge drinking (BD) among Spanish adolescents.

Methods: The sample was drawn from a study evaluating the Alerta Alcohol program in Spain. The population consisted of Andalusian adolescents aged 15-19. Data were recorded at baseline and four months. A decision tree analysis was used to estimate costs and health outcomes, measured by number of BD occasions and quality-adjusted life years (QALYs). Incremental cost-effectiveness and cost-utility ratios (ICERs, ICURs) were also calculated. Uncertainty was studied through multivariate deterministic sensitivity analysis of best/worst scenarios by subgroups.

Results: Although there were fewer BD episodes in the intervention group than in the control group, this did not result in positive ICERs due to the high cost of reducing BD episodes by one per month. Subgroup analyses showed that the intervention could be cost-effective for older adolescents and for those who had little or no weekly pocket money. Nevertheless, even in the best possible scenario, the intervention was not efficient, considering willingness to pay per QALY gained.

Conclusions: Computer-tailored feedback could be a cost-effective way to reduce BD among specific subgroups of this adolescent population. However, long-term follow-up would probably be needed to capture changes in quality of life from a behavioral change intervention. Countries should consider this type of intervention in designing public health policies targeting alcohol use among adolescents.

Efficiency analysis and its determinants in the context of the experimentation of the general practitioner-nurse cooperation

Room: EAA004

Discussant: Rhiannon Tudor Edwards

Chair: Mujaheed Shaikh

•Efficiency analysis and its determinants in the context of the experimentation of the general practitioner-nurse cooperation

Christophe LOUSSOUARN

Since 2004, the Asalée association, financed by the state and the national health insurance, has been experimenting innovative forms of cooperation between GP and nurses.

Objectives: The aim of this paper is both theoretical and empirical. Our main goal consists of identifying differences between GPs in Asalee and GPs who did not enter the experiment during the period of observation in terms of technical efficiency (TE), and possibly modification in their production function, using nonparametric approaches (in a case-control design). It also implies to determine how the cooperation has to be modelled: either as an additional input in the production function or as technical progress influencing the functional form of the production function. We assume that our results should help us to choose the best way to model cooperation. The aim is to see if an organisational change (the nurse with new abilities in the office) impacts the production function of GP.

Methods: This work mobilise nonparametric empirical framework to measure TE of the production of primary healthcare. Nonparametric approaches suit particularly well both to the research questions and dataset because i) it does not require knowing a priori the functional form of the production function, ii) it deals with the multi-inputs multi-outputs specificity of the primary healthcare production function.

Using national health insurance administrative data from France, TE is measured and compared by several nonparametric methods (Order-m [Cazals et al., 2002), double bootstrap for two stage methods [Simar and Wilson, 2007], …), in a multi-output context with the following indicators, trying to best resume the GP objective: number of patients, number of office visits, number of home visits. The input used is the number of working days. In a second step, we regress TE in a difference-in-differences model to see if the experiment has an impact on TE compared to controls and by considering initial differences and global trends during the observational period.

Results & discussion: Preliminary results highlight a slight increase of TE for both control and Asalée GP during time. GP in Asalee are on average for all the time observation less efficient than their controls and entering in the experiment does not impact TE. As already pointed out in the literature, skill mix (cooperation) does not allow making efficiency gains for a given level of healthcare quality. Yet, including the quality dimension in the production function in further work is expected to improve the performance of cases compared to controls. Our results could also indicate that we cannot really compare GPs inside and outside Asalee because cooperation does change GP's production function who must not share the same frontier

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4-6 September 2019
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The determinants of Physician Prescribing Behavior of Innovative Hypoglycemic Agents

Room: EAA003

Chair: Simon Reif

•The determinants of Physician Prescribing Behavior of Innovative Hypoglycemic Agents

Joana Gomes da Costa, Nuno Sousa Pereira

Objectives: Relying on a large matched doctor-patient panel dataset we assess the determinants of innovation diffusion within a relevant chronic disease. We focus on learning effects for doctors associated with the number and diversity of patients, as well as incentives associated with the settings and field the doctor works.

Methods: We use a large longitudinal matched doctor-prescription-patient dataset for all Portuguese e-prescriptions collected from Ministério da Saúde from January 1, 2015 till December 31, 2017 that contained at least one anti-diabetic drugs.

The study population contained 1835417 e-prescriptions, with 23677 doctors and 108993 patients for all regions in Portugal.

We use a Probit Model with Sample Selection to assess the probability of prescribing an innovative drug given physician characteristic using two dependent variables: i) physician characterization as prescriber or non-prescriber of innovative hypoglycemic agents and ii) classification of the prescription as containing innovative hypoglycemic agents or not. We build on Eisenberg (1979) Model of Physician Decision Making which assumes that their behavior is influenced by features of the patient, physician and pharmaceuticals as well as physician-healthcare interaction and physician-patient relationship.

Results: Data has 1835417 e-prescriptions, of which 1484036 are for mono, 302865 are for dual and 48516 are for triple therapy.

Except for patients under monotherapy, Internal Medicine and Endocrinologists are more propense to prescribe innovative hypoglycemic agents than General Practitioners. Controlling for other effects, namely severity of disease, doctors are also more apt to prescribe innovative agents to patients that they see more often, suggesting their openness to innovation with patients that they know better. Doctors working exclusively in a public setting are less likely to prescribe innovative drugs as compared to doctors working in both private and public workplaces.

Regarding patients, women become more probable to be associated to prescriptions with innovative drugs in dual and triple therapy. Older patients that are exclusively under NHS coverage and with a higher number of comorbidities are less likely to be associated with innovative drugs in all three therapy types. On the other hand, there is a higher probability of a prescription containing innovative drugs in all three therapy types when the patient is prescribed treatment for a higher range of therapeutic areas.

Discussion: Results suggest a relevant learning effect related to the scope of cases that a doctor has to tackle. The incentives related to the setting where the doctor works are also relevant determinants of his openness to innovation. Further research will consider dynamic learning effects.

Work Activities and Dementia

Room: EAA002

Chair: Helena Hernández-Pizarro

•Work Activities and Dementia

Nicolau Martin Bassols, David Johnston, Sonja Kassenboehmer, Michael Shields

Objective: In this project we examine the relationship of different work activities that individuals perform at their longest lifetime occupation with their probability of developing dementia at old age. The Health and Retirement Study (HRS) of the US has information regarding the cognitive status of a big sample of old age individuals over time. It also includes useful information such as the longest lifetime occupation of these individuals, demographics, etc. The O*NET database has detailed information regarding many work activities performed at a large group of occupations.

Methods: From a factor analysis, we generate three main work activities: "Mental processing", "Interacting with others" and "Working with machines". We merge both databases and through OLS and individual fixed effects models, we analyse the relationship of these three work activities over the probability of suffering from dementia at old age. We include several robustness and complementary analysis, with the aim of establishing the cleanest possible relationship between both variables and examine the potential paths from work activities to dementia.

Results: Our main findings are that occupations with high loadings in activities involving "Mental processing" and "Interacting with others" are negatively and significantly correlated to developing dementia at old age. In other words, individuals having main lifetime occupations with high mental processing and many interactions with others present lower rates of dementia at old age, respect to individuals with low mental processing and few interactions with others. On the contrary, occupations with high loadings in activities involving "Working with machines" are positively correlated to suffering dementia at old age. The results considering "Working with machines" are less robust respect to both other work activates.

Discussion: Our results are consistent to the ones found for other countries (Andel et. al. 2005, Kroeger et al. 2008, Bosma et al. 2003). Although there are differences in the definitions for the work activities, in general terms these are minor. As such, our work contributes to confirm their results, adding up evidence for a large database with plenty of complementary information.

They do also extend the work of Fisher et al. (2014). Working in an occupation characterized by higher levels of mental demand is associated not only with higher levels of overall cognitive functioning before retirement and a slower rate of cognitive decline after retirement, but also with a lower prevalence of dementia at old age and a slower decline towards it. Furthermore, we consider a wider spectrum of work activities than they do.

2019-09-05 20:00 - 22:00 | Conference Dinner

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2019 EuHEA Student-Supervisor Conference
4-6 September 2019
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DAY 3

2019-09-06 09:30 - 10:30 | Session 10

A methodological approach to aggregate multiple measures of hospital quality using variance-based weights

Room: EAA003

Chair: Ansgar Wübker

•A methodological approach to aggregate multiple measures of hospital quality using variance-based weights

ANGELA MEGGIOLARO, Rudolf Blankart, Tom Stardgart, Jonas Schreyögg

Objective: This study presents an econometric approach to measure hospital performance and potentially compare quality of care between different health care systems. The method is based on the simultaneous estimation of accelerated failure time (AFT) models across four cardiovascular interventions and two outcomes. The two stages variance-based weights approach has several advantages: first, the extent to which an indicator contributes to the aggregate index depends on the amount of its variance, second the risk adjustment reduces a potential hospital selection bias. The method was restricted to acute cardiovascular events occurred in Germany from 2005 to 2016.

Methods: Data were extracted from a large German sickness fund and further information on hospitals were obtained from Inkar databases. The two-stage regression approach estimated hospital performance over four specific indicators for Germany: ST elevation (STEMI), non-ST elevation (NSTEMI) acute myocardial infarction (AMI) in primary or secondary diagnosis, Coronary Bypass Surgery (CABG or bypass) and Cardiac Resynchronization (ICD/CRT or HZM). Mortality and hospital readmissions were used as outcomes and severity of readmission was weighted for the length of hospital stay. The hospital estimates obtained in the first stage were aggregated in the second-stage. The AFT models were fitted by maximum likelihood (Newton Raphson algorithm). Results were normalized into an index range from zero to one. The sensitivity analysis tested several scenarios of mortality and comorbidity.

Results: Overall, 137,046 episodes occurred in 446 hospitals that fulfilled the defined inclusion criteria, 551 patients died, and 136,495 were readmitted; we categorized 22,967 as CABG, 41,481 as ICD/CRT, 28,618 as STEMI, and 43,980 as NSTEMI . There were 36,259 right-censored observations related to death and 100,787 right-censored observations related to readmission. Precision-based weights were higher for mortality than readmission in case of CABG, ICD/CRT, and AMI-STEMI; conversely, NSTEMI exhibited a larger weight in case of readmission. Correlations between the intervention-specific indices and the aggregated index were highly significant ($p < 0.001$) for all interventions with Spearman's Rho above 0.5. Additionally, mean standardized 95% confidence intervals were larger for STEMI and NSTEMI specific indices.

Discussion: Overall AFT is more efficient compared with GLM models that rely on dichotomized data, additionally, SUR allows for correlation between different outcomes. Although the method can still raise issues pertaining to unobserved effects, endogeneity and heterogeneity of quality across

providers and time, we consider the approach robust, despite the variability and the limited mortality events.

Does Unemployment Predict Health and Well-being in Later Life? Evidence from UK Panel Data

Room: EAA006

Chair: Christine Le Clainche

•Does Unemployment Predict Health and Well-being in Later Life? Evidence from UK Panel Data

Helen Hayes

Objectives: The proportion of older people in the population is rising in developed countries and this pattern is expected to continue. As these people often account for the biggest expenditure on health services, this is generating increased demand for health and social care putting increasing pressure on health systems. While there is a well-known link between unemployment and short-term health and well-being, the longer term consequences of unemployment as people enter older age are less well known. The current evidence base relies on recall studies, which have been shown to be biased. In this paper, we use a long panel of contemporaneously-collected data to identify the impact of working age unemployment on health outcomes in later life.

Methods: We use data from the British Household Panel Survey linked to its successor Understanding Society to track around 6,600 people over 26 years as they enter older age from working age. We use contemporaneously reported information on employment status, and use this to predict contemporaneously reported later life health and well-being, thus removing the need to use recall data. We estimate this relationship using linear and non-linear models, with and without random effects, clustering standard errors at the individual level and conditioning on pre-unemployment health. Given the long delay between unemployment and health the findings are not prone to reverse causation.

Results: Preliminary results show that becoming unemployed leads to long lasting negative effects on health and wellbeing. These include large and statistically significant reductions in mental health (GHQ; reduction of 0.6 to 0.7, $p<0.05$), well-being (life satisfaction; reduction of 0.2, $p<0.01$), self-assessed health (reduction of 0.3, $p<0.01$), the physical and mental health components of the SF12 (reduction of around 1 to 2, $p<0.01$), and the SF6D health utility index (reduction of 0.02, $p<0.05$).

Discussion: Most existing studies try and improve health and well-being once people have entered older age. It may be possible to identify groups of people who are more likely to have poorer later-life health and well-being using information from their working lives, particularly unemployment. This information can be used to target vulnerable groups earlier, by e.g. introducing schemes to get unemployed people back into work or to protect them from the health damage caused by unemployment.

In future/ongoing work, we plan to: (1) look at the nature of employment (e.g. we expect there to be differences between blue and white collar workers); (2) utilise more sophisticated econometric techniques to account for attrition and sample selection; and (3) exploit exogenous variations in employment status (e.g. plant closures).

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Trust me; I know what I am doing Does specialist training reduce preference reversals in decision making for others?

Room: EAA001

Chair: Aki Tsuchiya

•Trust me; I know what I am doing Does specialist training reduce preference reversals in decision making for others?

Sebastian Neumann-Böhme, Stefan Lipman, Werner Brouwer, Arthur Attema

Introduction: Preference reversals refer to the situation that people prefer A over B in one exercise or situation, but B over A in another. These reversals have been shown quite common, both for decisions for oneself and others. However, they pose multiple problems, also in the field of health care, for instance when dealing with treatment choices or with health state valuations.

Objectives: This paper examines if people with specialist training, e.g. in the field of medicine or finance, show fewer preferences reversals in their respective areas of expertise. Furthermore, we investigate different approaches to reduce the degree of preference reversals in the context of decision making for others.

Methods: We used a sample (N=245) of medical and business administration/economics students, asking about medical and financial decision making for others. Respondents had to choose between two risky options on how to treat a patient with a terminal condition in the medical domain and evaluated both options against a certainty equivalent later on. A similar set of questions was used in the financial domain where respondents had to make investment decisions for others. Additionally, we investigated if the use of choice lists for the valuation task reduced the rate of preference reversals in both settings.

Results: Results indicate that people with specialist training show fewer preference reversals in their area of expertise. Preference reversals were 6.2 percentage points lower for medical students in the health care setting (59.4%), compared to the financial setting (65.6%). Economics students showed a rate of preference reversal that was 14.6 percentage points lower in the financial (44.4%) than in the health care setting (59.0%). The results further suggest that choice lists reduced the degree of preference reversals in the financial setting and in the health care setting.

The results from logistic mixed effects regressions substantiate these findings. We observe that preference reversals are more likely to occur: i) for medical students, ii) in the health care scenario, and iii) for open valuation questions. Describing risks in natural frequencies did not affect the degree of preference reversals. We also observe several significant interaction terms, which indicate that familiarity with the domain (i.e. medical or financial) reduced the likelihood of preference reversals.

Conclusion: Preference reversals are an important problem in estimating preferences. This problem seems to be more substantial when people are unfamiliar with the domain they are asked about. This highlights the importance and effects of specialist training. Using choice lists to simplify valuation tasks seems to help respondents to state more consistent preferences across procedures

Valuing health states associated with breast cancer: a primary study exploring methods, challenges and the issue of overdiagnosis

Room: EAA004

Chair: Salvador Peiro

•Valuing health states associated with breast cancer: a primary study exploring methods, challenges and the issue of overdiagnosis

Hannah L Bromley, Dennis Petrie, G Bruce Mann, Carolyn Nickson, Daniel Rea, Tracy E Roberts

Background: Utilities informing breast screening and treatment policy are limited in their ability to adequately capture the benefits and risks. Evaluations of breast cancer do not include the disutility of overdiagnosis in economic outcomes and may potentially bias the decision on screening. However, not all methods for deriving utility may account for uncertainty in disease progression and risk of overdiagnosis during the valuation process.

Objectives: The objective of this paper was to explore methods to derive the utilities associated with breast cancer, including the potential overdiagnosis and unnecessary treatment of low-risk disease. In doing so, the methodological challenges in health state valuation are explored, in particular the uncertainties associated with valuing population screening outcomes, overdiagnosis and the impact of risk on utility.

Methods: We conducted a primary study interviewing 172 women with and without a history of breast cancer in Melbourne, Australia between April and September 2018. Participants were recruited from the Breast Cancer Network Australia and Lifepool registries. Women were presented with seven vignettes describing breast cancer treatments, which explicitly included the risk of overdiagnosis and unnecessary treatment in the description. Utilities were collected using the visual analogue scale, standard gamble and EQ-5D-5L questionnaire to explore the validity, reliability and feasibility of direct and indirect approaches in capturing the utility associated with the overdiagnosis and risk of potential unnecessary treatment.

Discussion: The results of the empirical work are currently being analysed. The findings will likely discuss the methodological challenges of valuing overdiagnosis using conventional valuation approaches and highlight further research necessary to address the issues identified. Whilst interpretation of the results is ongoing, we believe the values have the potential to advise policy decisions by explicitly capturing disutility in the evidence informing breast cancer screening programmes.

EUHEA
2019 EuHEA Student-Supervisor Conference
4-6 September 2019
Católica Business School
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2019-09-06 10:30 - 11:30 | Session 11

Health insurance decision: a theoretical and experimental investigation

Room: EAA003

Chair: Odd Rune Straume

•Health insurance decision: a theoretical and experimental investigation

Doriane MIGNON, Léontine Golzahl, David Crainich, Florence Jusot

Objectives: The health economics literature does not fully explain the wide heterogeneity in voluntary health insurance coverage (Baillon et al., 2018; Finkelstein et al., 2016; Barnes and Hanoch, 2017) by elements such as potential exposure to high medical expenses, size and likelihood of medical expenses, distorted beliefs, risk preference in the loss domain. Health insurance is a decision involving both wealth and health domains. Relatively little attention has been paid to the health dimension of health insurance decisions. It has consequences in both domains as it lower health care expenses and reduces health damages through access to care (Aron-Dine et al., 2013; Dourgnon et al., 2012). It also involves a trade-off between consumption in a good health status and in a poor health status. In this article, we propose to explore new determinants of health insurance to better capture the heterogeneity in voluntary health insurance coverage and account for health and wealth in the health insurance decision.

Methods: We model theoretically health insurance decision with a bi-dimensional utility function including a financial and a health components in an Expected Utility framework, considering the health insurance consequences on individuals' health state through its relationship with treatment decisions. This captures the involvement of both health and wealth in the health insurance decision. We draw predictions from the model that we test in a laboratory experiment. Subjects face a hypothetical health insurance decision linked to a hypothetical treatment decision. We also measures individuals preferences.

Results: The demand for health insurance is predicted in our bivariate model by: 1) relative preference for wealth and health; 2) risk aversion in the financial domain; 3) correlation aversion. We are able to predict whether the individual may choose no insurance, partial insurance, complete insurance or overinsurance according to her preferences.

We present here the first results of the pilot. The main survey is to be conducted in April 2019. These preliminary results are ambiguous regarding our predictions. Otherwise, subjects with higher willingness to pay for health tend to choose better treatment. When accounting for individual's correlation aversion and risk aversion, we predict correctly overinsurance.

Discussion: We provide a new approach of health insurance decision, considering the relationship between treatment and health insurance decisions. This highlights the role of multivariate preferences which are little or not considered in the health insurance demand literature. Improving our understanding of the demand for health insurance is essential to assess the potential welfare losses and gains of health insurance policies.

Hospital Competition Under Patient Inertia: Switching Costs vs Strong Preferences

Room: EAA004

Chair: Pedro Pita Barros

•Hospital Competition Under Patient Inertia: Switching Costs vs Strong Preferences

Luís Sá

Recent studies establish past use as a strong predictor of hospital choice and indicate that state dependence and persistent tastes explain patient inertia. By mapping a theoretical model with the empirical literature that disentangles the sources of choice persistence in the hospital industry, this paper provides a theory that reconciles the empirical evidence with its implications for hospital competition. In a model of quality competition between two semi-altruistic and horizontally differentiated hospitals with exogenous past demand, I allow for two sources of inertia: switching costs and a share of patients with persistent and strong preferences for a given hospital.

Due to patient inertia, the hospital with higher past demand always retains its position as market leader. Lower switching costs lead to a more efficient sorting of patients across hospitals even holding quality fixed as aggregate mismatch costs decrease. If the cost of quality outweighs the hospitals' degree of altruism (or preference for high volume), the majority of patients in the market is served by the hospital that offers lower quality, and a reduction in switching costs is beneficial. By shifting patients from the hospital with higher past demand to its less cost-constrained rival, it drives average quality upward. If the degree of altruism outweighs the cost of quality instead, lower switching costs have an ambiguous effect on average quality, though quality at the smaller hospital improves. It is also ambiguous whether hospitals operating in markets with a larger share of patients with fixed preferences (e.g., patients with chronic illnesses) offer higher or lower quality relative to hospitals in otherwise identical markets.

Patient inertia may be weakened by policies that facilitate switching such as the increasingly common adoption of shared Electronic Health Records systems in OECD countries. While patients might value facilitated switching in itself, these results suggest that there may be unwanted consequences. If high volume contributes to higher quality, reduced inertia and, hence, a more equal distribution of demand narrow the scope for high quality provision at larger hospitals, and overall quality declines.

EUHEA
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4-6 September 2019
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Investigating empirical patient pathways before cardiac catheterization with sequence clustering on insurance claims

Room: EAA002

Chair: Jérôme Wittwer

•Investigating empirical patient pathways before cardiac catheterization with sequence clustering on insurance claims

Anna Novelli

In Germany, patients are free to choose when, how often and which physician they visit. The absence of a gate-keeping system leads to high frequencies of patient-physician contacts (Riens et al. 2007). To coordinate and streamline processes, normative care path-based programs are in place for certain diseases (G-BA 2012). However, little is known on how patients actually navigate through the health care system. In this exploratory study we apply data mining techniques on insurance claims data to extract clusters of empirical pathways/sequences of patients that receive coronary angiography (CA). This case group is of particular interest, since 11.163 CAs per 1 mio population were performed in 2015 in Germany (German Heart Foundation 2016), outnumbering rates of other European countries (Bruckenberger 2011).

We perform sequence clustering on insurance claims data of 14 933 patients with known coronary artery disease (CAD) from three major German health insurances (2014-2016), who received a CA in 2016. Based on medical guidelines (NVL 2016, ESC2013) and a physician panel, events relevant in the care of CAD are identified. Physician visits and medication events are extracted and combined to define states. States sequences covering 1.5 years before CA are calculated. To cluster sequences, their similarity is measured using optimal matching and theory-based substitution costs. The optimal number of clusters is identified via the average silhouette width (ASW). We visualize clusters and perform descriptive statistics. Finally, we use logistic regression to analyze the relation between clusters and the occurrence of invasive therapeutic consequence (percutaneous coronary intervention (PCI)/bypass) within 90 days after CA.

Physician visits and medication events were used to define care states for sequences. We identified 5 clusters (ASW=0.35). Cluster differ mainly in medication events. Patient characteristics differ between clusters. Logistic regression reveals that some care patterns are correlated with the share of CA with therapeutic invasive consequence.

Our analyses show that not all patients undergoing CA receive the same medical therapy. Clusters show different patient population; in addition different level of patients' CAD morbidity, or patient- and/or physician preferences might be reflected by clusters. The variation in care patterns, as well as the correlation between care patterns and decision for CA and invasive therapeutic consequence deserve further investigation.

Long term trends in health care utilisation and treatment costs of frail elderly in England

Room: EAA006

Chair: Sue Jowett

•Long term trends in health care utilisation and treatment costs of frail elderly in England

Khanh Ha Bui

Background: The concept of frailty was introduced to capture the heterogeneity of the aging process, where some people remain healthy until their 90s, while others begin to develop symptoms of health-related problems in their 50s or 60. Frail patients have been shown to have higher use of health care services, costlier hospital admissions and be more susceptible to adverse outcomes than the non-frail, but little is known about the long term trends in resource use and costs of care for the frail population, and the drivers of these costs.

Objectives: We evaluate the long term trends in the relationship between frailty and healthcare use and costs among elderly patients in England, and how different aspects of frailty affect these costs.

Methods: We use patient level Hospital Episode Statistics (HES) data to assess frailty amongst patients aged 65 years and older who have emergency or planned admissions to NHS hospitals from 2004 to 2014. In line with Soong (2015), we define frailty as the presences of any of 9 frailty syndromes (anxiety and depression, functional dependence, falls and fractures, incontinence, pressure ulcers, mobility problems, delirium, dementia, senility) identified using ICD-10 diagnosis codes. We conduct a retrospective longitudinal analysis of healthcare resource use (planned and emergency admissions and readmissions) and costs of admissions, controlling for patient demographics (age, sex, and deprivation). Furthermore, we estimate the association between different markers of frailty and increased healthcare use and costs.

Results: Over time, the percentage of patients with at least one frailty syndrome has increased from 17.6% in 2004 to 24.8% in 2014. The most commonly observed frailty syndromes are falls and fractures, which are present in 36.8% of the frail cohort (2014). This is followed by dementia present in 27.9% of the population and anxiety and depression which almost doubled between 2010 and 2014 from 11.2% to 19.6%.

Patients with 1 frailty syndrome have on average 1.3 emergency admissions per year, compared to 0.5 in the non-frail cohort. The gap increases with the number of frailty syndromes present to 3.1 emergency admissions per year for patients with 4 frailty syndromes. On the other hand, the frail population has fewer elective admissions: 0.9 on average for patients with 1 frailty syndrome compared to 1.6 per patients that is not frail. This gap also increases with frailty, and patients with 4 frailty syndromes have on average just 0.3 elective admissions per year. For both groups, the ratio of elective and emergency admissions for frail vs non-frail are steady over time.

Conclusion: Frailty is increasing in the population over time and is consistently associated with higher healthcare use and costs.

2019-09-06 11:30 - 12:00 | Coffee-break

EUHEA
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4-6 September 2019
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2019-09-06 12:00 - 13:00 | Session 12

Bed Constraint? Occupancy Rates and Hospital Readmissions

Room: EAA002

Chair: Pieter van Baal

•Bed Constraint? Occupancy Rates and Hospital Readmissions

Luís Filipe

Objective: In some periods of the year, the number of people hospitalized surpasses the number of beds available which may lead to early discharges or to a decrease in treatment standards. This paper uses the DRGs dataset from 2014 to 2016 to analyze the impact of occupancy rates on the delivery of inpatient health care in the Portuguese National Health Service.

Methods and results: The effects are measured in terms of the variation in the likelihood of readmission episodes. Leveraging on a wide range of fixed effects, the model concludes that high occupancy rates lead to readmission episodes, with strong evidence indicating early discharges as the main cause. Additionally, the paper shows that occupancy rates affect mostly care provided to the elderly, constituting a source of age inequality in inpatient care.

Discussion (the story): Whenever hospitals get crowded, physicians face a strong pressure to discharge, to accommodate new patients. These rushed decisions lead to early discharges, which, for a non adaptive criteria, affect mostly the frailer part of the population, in this case, the elderly.

Does moving away from home to university affect life satisfaction? Evidence from the Longitudinal Survey of Young People in England.

Room: EAA003

Chair: Andrew Jones

•Does moving away from home to university affect life satisfaction? Evidence from the Longitudinal Survey of Young People in England.

Jack Higgins, Bruce Hollingsworth, Ian Walker

Objectives: Geographical mobility, and its effect on socioeconomic status, health and wellbeing, has become an increasingly important topic for policy and research. Moving to University is often the first opportunity for such movement in the life of a young person. A recent report by the Sutton Trust showed that roughly half of students moved more than 55 miles from their home address; those that do so are from socially, ethnically and geographically distinct groups. There have been calls in the media for schools to encourage pupils to move away for university. Despite this, there is little to no empirical evidence of the impact of moving away from home to university on post graduation outcomes.

This paper addresses that gap, using data on a cohort of university attendees from the Longitudinal Survey of Young People in England (LSYPE) and the follow-up study, Next Steps, to assess the impact of moving away from home on early-adult life satisfaction. A random sample of children, born in 1989/1990, were surveyed annually between the ages of 13 and 19 years old, and then again when aged 25 (Next Steps wave).

Methods: I model life satisfaction for graduates aged 25 years, using an Ordered Probit approach, controlling for individual characteristics at various points in the student's life, such as external locus of control and psychosocial health. I also partial out parental and household factors such as household income, parental education, parental occupation, and the number of siblings in the home.

Results: Preliminary results show that moving away from home to university increases life satisfaction. However, a striking gender difference persists through specifications: moving away greatly increases life satisfaction for males (between 5 and 7 percentage points more likely to report "very satisfied" $p<0.01$; between 1 and 4 percentage points less likely to report "fairly" or "very dissatisfied" $p<0.01$), but has no effect for females.

Discussion: The paper considers several potential mechanisms for this result, including the mediating effect of wage premiums from moving away. These results suggest that some caution should be taken by policy makers aiming to influence pupils' decision to move away from home, as there appears to be substantial heterogeneous effects, particularly by gender.

Patient-regarding altruism in medicine: First evidence from an experimental panel study

Room: EAA006

Chair: Sara Machado

•Patient-regarding altruism in medicine: First evidence from an experimental panel study

Mona Groß, Arthur Attema, Matteo M. Galizzi, Heike Hennig-Schmidt, Olivier L'Haridon, Daniel Wiesen

The assumption of altruistic preferences is key in modeling physicians' behavior (e.g., Arrow 1963, AER). Furthermore, for example the requested inclusion of altruism measures to UK medical schools' selection criteria supports the practical relevance of physician's altruism (Wicks et al. 2011, BMJ). While its importance has been largely recognized in theory and in practice, the empirical measurement of physicians' altruistic preferences towards their patients is still in its infancy. The experimental evidence mainly supports the notion that altruistic concerns affect physician's decisions while it also indicates substantial heterogeneity therein. However, what determines the heterogeneity is not well understood. Moreover, empirical evidence on how patient-regarding altruism develops over time is still lacking.

We introduce an experimental method to analyze patient-regarding altruism. In a medical frame, medical students decide in the role of physicians between two alternative treatment options for 30 stylized patients. Each binary decision scenario contains a trade-off between the physician's profit and

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4-6 September 2019
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the patient's benefit. The tradeoffs are systematically varied across decisions, while one treatment option is always more patient-regarding.

In order to build a panel, we follow students over the course of their study to explore how altruism develops over time at a within subject-level. A comprehensive questionnaire enables us to investigate the link to various individual characteristics as well as medical students' stated job-related preferences.

The cross-sectional analysis from the first panel wave (N=709) shows that medical students behave in a patient-regarding way with considerable heterogeneity in their behaviors. First of all, we find that patient-regarding altruism declines with study progress. The results further indicate that altruism is higher in the practical year compared to the pre-clinical and clinical study phases. Second, we find females to be more altruistic. Third, the relative sacrifice of own profit significantly increases in (general) altruism, trust, and positive reciprocity. Finally, students who sacrifice more of their own profit are more likely to state pediatrics as their preferred specialty.

Our findings indicate that treatment decisions of future physicians are driven by concerns for patient's benefit. While we find medical students to behave altruistically towards patients, we also find substantial heterogeneity in the extent of altruism. Medical education seems to affect medical students' patient-regarding altruism as it is significantly smaller in preclinical, clinical, and practical year compared to freshman. Patient-regarding altruism is positively related to preferring a specialty in pediatrics.

2019-09-06 13:00 - 13:15 | Conference closing