17ª Conferência Nacional de **Economia da Saúde**

20 a 22 de Outubro de 2021

ISEG Lisbon School of Economics & Management, Lisboa, Portugal

Livro de Resumos

apes
associação portuguesa de economia da saúde

Índice

Introdução
Introduction

Caros Participantes,

Em nome da **APES** e das Comissões Científica e Organizadora, dou-vos as boas-vindas à 17ª Conferência Nacional de Economia da Saúde (**CNES**). A realização de mais uma **CNES** é sempre motivo de alegria pois demonstra a capacidade que temos de continuarmos a dinamizar os investigadores que se dedicam à economia da saúde. Espero que a 17ª **CNES** vá ao encontro das vossas expectativas.

Teremos, novamente, um primeiro dia inteiramente dedicado aos early career researchers. É um motivo de regozijo o número crescente de investigadores e investigadoras interessados em desenvolver uma carreira nesta área. Com um excelente naipe de oradores em três eixos – os contributos que a economia da saúde pode dar para os sectores público e privado, financiamento para investigação e temas emergentes para investigar – vamos continuar um diálogo que consideramos vital para os todos os nossos associados.

Ao longo dos dois dias seguintes iremos contar com a apresentação de mais de 75 comunicações orais, selecionadas de entre um elevado número de submissões, o qual é um excelente indicador da vitalidade da investigação nesta área e do interesse que este encontro desperta entre os investigadores nacionais.

Teremos três sessões plenárias subordinadas a temas de grande importância no contexto atual: políticas para redução do crescimento da despesa em saúde (Meredith Rosenthal, Harvard School of Public Health, **EUA**), diferenças de género na qualidade de vida (Judit Vall, Universitat de Barcelona, Espanha) e desigualdades sociais em Portugal e os múltiplos efeitos da pandemia (Carlos Farinha Rodrigues, **ISEG** – Lisbon School of Economics & Management, Portugal).

Como sempre, a 17ª **CNES** é o resultado do empenho, colaboração e dedicação da Comissão Organizadora, a quem quero agradecer o estarmos aqui hoje. O meu muito obrigado estende-se igualmente aos membros da Comissão Científica, pelo seu contributo para a organização do programa científico desta **CNES**, aos moderadores das sessões, e aos nossos patrocinadores. Finalmente, um obrigado muito especial a todos os que vão apresentar os seus trabalhos durante a 17ª **CNES**; a elevada qualidade científica desta conferência é-lhes devida.

Estou convicta que a 17ª **CNES**, à semelhança das conferências anteriores, continuará a ter um efeito multiplicador na investigação que se faz em economia da saúde em Portugal e um efeito agregador junto das pessoas envolvidas. Este é o maior contributo que a **APES** pode dar à ciência nacional; esta é a nossa principal missão.

Excelente conferência para todos!

Céu Mateus
Presidente da **APES**

Dear Participants,

On behalf of the Portuguese Association for Health Economics, the Scientific and Organizing Committees, it is my pleasure to welcoming you all to the 17th Portuguese National Conference on Health Economics. Each conference is a reason for joy and a demonstration of the dynamic environment between Health Economics researchers. I hope this conference will meet your expectations.

As in previous editions, the conference's first day is devoted to early career researchers. It is with great pride that I observe the increasing number of researchers interested in developing a career in Health Economics. The first day will provide a discussion along three main axes: the contribution of Health Economics to the public and private sector, funding for research, and future lines of research.

Throughout the following days, we will have over 75 oral presentations, selected out of a significant pool of submissions. This is an excellent proof of the dynamism and curiosity that Health Economics is raising among national researchers.

Moreover, we will have three plenary sessions devoted to major topics in the current context: policies to curb down health spending growth (Meredith Rosenthal, Harvard School of Public Health, USA), gender differences in health related quality of life (Judit Vall, Universitat de Barcelona, Spain) and social inequalities in Portugal and the effects of the pandemic (Carlos Farinha Rodrigues, ISEG – Lisbon School of Economics & Management, Portugal).

As always, the 17th CNES is the result of the commitment and cooperation of the Organizing Committee – to which I am grateful. Thank you to the members of the Scientific Commission for their contribution to the conference program, to the session chairs, and to our sponsors. Last but not least, a special thanks to all of those who are presenting their research during this conference. The scientific quality of the conference is to their merit.

I believe that this conference, as previous conferences, will have a multiplier effect on the volume and quality of Health Economics research in Portugal, by promoting networking opportunities. This is the largest contribution that APES can give to national science. This is our main mission!

I wish you all an excellent conference!

Céu Mateus

APES President

Comissão Científica
Scientific Committee

Judite Gonçalves – Nova School of Business and Economics (Presidente)
Carlota Quintal – Universidade de Coimbra
Céu Mateus – Universidade de Lancaster
Eliana Barrenho – **OCDE**
Joana Alves – Universidade Nova de Lisboa
Joana Pais –Universidade de Lisboa
Lara Ferreira – Universidade do Algarve
Luís Sá – Universidade do Minho
Maria Ana Matias – Universidade de York
Marisa Miraldo – Imperial College London
Mónica Oliveira –Universidade de Lisboa
Paula Veiga – Universidade do Minho
Pedro Pita Barros – Nova School of Business and Economics
Pedro Saramago – Universidade de York
Ricardo Gonçalves – Universidade Católica
Sofia Amaral Garcia – European Commission
Teresa Bago d'Uva – Erasmus University Rotterdam

Comissão Organizadora
Organizing Committee

Eduardo Costa (Presidente)
Céu Mateus
Joana Cima
Joana Gomes da Costa
Luís Filipe

Informação Geral

Certificados de presença
Os certificados de presença são distribuídos na entrega de documentação juntamente com o crachá.

Utilização de crachá
A utilização do crachá distribuído a cada participante é obrigatória em todas as sessões do programa científico.

Prémio para melhor comunicação oral
Este prémio é apoiado pela Merck e Novo Nordisk, patrocinadores de Prata. O regulamento e a constituição do júri estão disponíveis no sítio da Conferência, na Internet.

Almoço
Os almoços serão servidos no Terraço do Edifício Quelhas 6, do ISEG – Lisbon School of Economics & Management.

Jantar da Conferência
O Jantar da Conferência realiza-se na quinta-feira, dia 21, no Restaurante Sacramento, e tem início às 20h. O Restaurante Sacramento localiza-se na Calçada do Sacramento 40-46, 1200-394 Lisboa (ver mapa).

Sessão de Abertura
A Sessão de Abertura decorrerá entre as 9h00 e as 9h30 do dia 21 de Outubro.

Sessão de Encerramento
A Sessão de Encerramento decorrerá entre as 18h10m e as 18h40 do dia 22 de Outubro e será presidida pelo Senhor Secretário de Estado da Saúde, Diogo Serras Lopes.

General Information

Attendance certificates
Attendance Certificates will be distributed with the conference documentation and the badge, upon registration.

Badges
Participants are required to wear the badges during the conference events.

Best oral communication award
This prize is sponsored by Merck and Novo Nordisk, the Silver Sponsors.The rules and members of the jury are available at the conference website

Lunch
Lunchs will be served at the Quelhas 6 Deck, in the ISEG – Lisbon School of Economics & Management.

Dinner
The conference dinner will take place on Thursday, October 21, in Restaurante Sacramento, in Calçada do Sacramento 40-46, 1200-394 (see the map below).

Opening Session
The opening session will take place on Thursday, the October 21st between 9:00 am and 9:30 am.

Closing Session
The closing session will take place on Friday, the October 22nd between 6:10 pm and 6:40 pm. It will be chaired by the Minister of Health, Dr. Marta Temido.

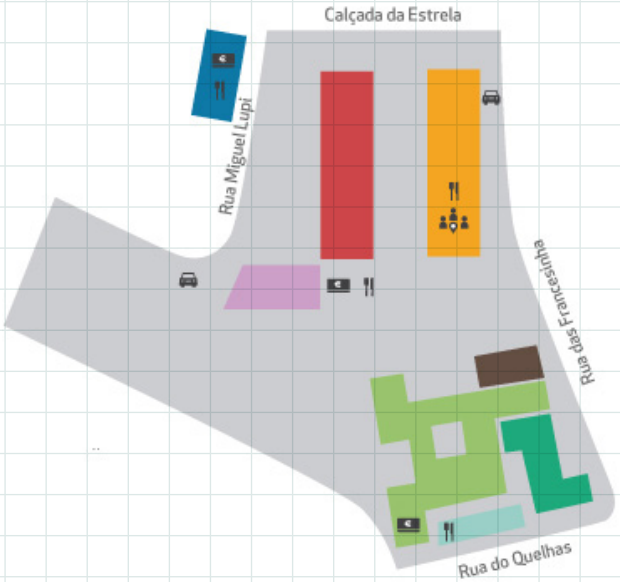
Localizaçao da conferencia
Conference Location

ISEG – Lisbon School of Economics and Management

Endereço / Address
Rua do Quelhas, 6
1200-781
Lisboa, Portugal

Website
https://www.iseg.ulisboa.pt/pt/

Telefone/Phone
(+351) 21 392 5800



Edifício Quelhas 6 – Piso 2
Quelhas 6 Building – Second Floor

Jantar da conferencia, 21 de outubro
Conference Dinner, October 21st

Restaurante Sacramento

Endereço/Address
Calçada do Sacramento 40-46,
1200-394 Lisboa, Portugal

Telefone/Phone
+351 21 342 0572

Como chegar / How to get here:

From ISEG – Lisbon School of Economics and Management:

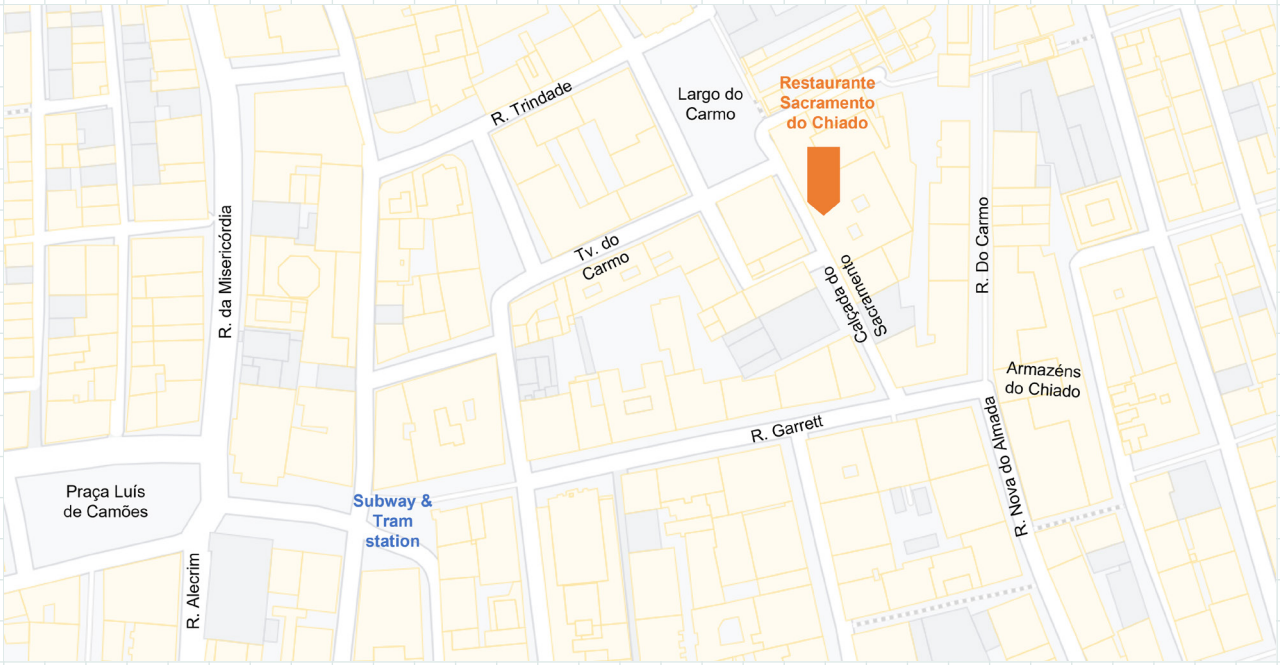
— Bus: 28E direction Campo Ourique - Prazeres (Calçada da Estrela). Finish your journey at “Chiado”

From Hotel Marquês do Pombal / Hotel Dom Carlos Park / Hotel Holiday Inn Express-Av da Liberdade:

— Metro: Station Marquês do Pombal (Direction: Santa Apolónia – Blue Line). Finish your journey at “Chiado” Station.

— Bus: 732, Station Marquês do Pombal (direction Caselas). Finish your journey at “R. Ouro”.

— Bus: 736, Station Marquês do Pombal – Avenida Fontes Pereira de Melo (direction Odivelas (B Dr. Lima Pimentel)). Finish your journey at “R. Ouro”.



Apoios e Patrocínios
Sponsors and Support

A organização da 17ª Conferência Nacional de Economia da Saúde agradece às seguintes entidades:

PATROCINADORES PRATA

PATROCINADORES BRONZE

APOIO

Organização Organization

Associação Portuguesa de Economia da Saúde
Escola Nacional de Saúde Pública,
Universidade Nova de Lisboa
Avenida Padre Cruz
1600-560
Lisboa – Portugal

http://www.apes.pt

Programa Programme

20 Outubro 2021 quarta-feira

11:00–12:40 **Financiamento em Economia da Saúde (PT)**

Auditório Caixa Geral de Depósitos

— **Rute Dinis de Sousa**
Directora Executiva do Comprehensive Health Research Centre, Faculdade de Ciências Médicas da Universidade Nova de Lisboa

— **Patrícia Calado**
Vogal Executiva na Agência de Investigação Clínica e Inovação Biomédica e Delegada Nacional para a Saúde no Horizonte Europa

— **Sandra Maximiano**
Professora Associada em Economia no ISEG Lisbon School of Economics and Management

12:40–14:00 **Almoço**

Terraço Quelhas 6

14:00–15:00 **Future Research in Health Economics (EN)**

Auditório Caixa Geral de Depósitos

— **Aleksandra Torbica**
Professora Associada do Departamento de Ciências Sociais e Políticas da Università Bocconi e Presidente da Associazione Italiana di Economia Sanitaria

— **Joanna Coast**
Professora Catedrática em Economia da Saúde na Universidade de Bristol e Professora Honorária no Institute of Applied Health Research da Universidade de Birmingham

— **Céu Mateus**
Professora Catedrática em Economia da Saúde na Universidade de Lancaster e Presidente da Associação Portuguesa de Economia da Saúde

15:00–15:10 **Intervalo**

15:10–16:40

Economia da Saúde & contributo para o sector público (PT)

Auditório Caixa Geral de Depósitos

— **Sofia Nogueira da Silva**
Presidente da Entidade Reguladora da Saúde

— **Joana Carvalho**
Vice-Presidente da Administração Central do Sistema de Saúde

— **Claúdia Furtado**
Directora do Gabinete de Informação e Planeamento Estratégico do Infarmed

— **Luís Goes Pinheiro**
Presidente do Conselho de Administração dos Serviços Partilhados do Ministério da Saúde

16:40–16:50 **Intervalo**

16:50–18:10

Economia da Saúde & contributo para o sector privado (PT)

Auditório Caixa Geral de Depósitos

— **Ema Paulino**
Presidente da Associação Nacional das Farmácias

— **Maria José Barros**
Directora da CUF Academic Center

— **José Pedro Inácio**
Chief Executive Officer, AdvanceCare S.A.

18:10–18:40

Cerimónia de Entrega do Prémio Pedro Pita Barros (PT)

Auditório Caixa Geral de Depósitos

18:40

Cocktail

Terraço Quelhas 6

21 Outubro 2021 quinta-feira

09:00–09:30 **Sessão de Abertura (PT)**

Auditório Caixa Geral de Depósitos

09:30–10:30 **Sessões Paralelas I**

1. COVID-19: better data for better decision making (PT)

Auditório Caixa Geral de Depósitos / Moderador: Óscar Lourenço

— *A Cautionary Tale on Using Covid-19 Data for Machine Learning*
Diogo Nogueira Leite, **João Miguel Alves**, Manuel Marques da Cruz and Ricardo Cruz Correia

— *Spatial and Temporal Analysis of COVID-19 in the Elderly living in Residential Care Homes in Portugal*
Felipa de Mello-Sampayo

— *Time between COVID-19 vaccination doses: does it makes a difference?*
Catarina Silva, Hugo Anjos, Miguel Gouveia, Luís Graça, Paulo Jorge Nicola and António Vaz Carneiro

2. Formal and informal long-term care for diverse subpopulations: elderly, mentally-ill, and post acute health shock (Sessão Organizada) (EN)

Auditório 3 / Moderador: Francisco von Hafe

— *Long-term care for the mentally ill: the impact of supported housing arrangements on survival, health care use and employment*
Francisca Vargas Lopes, Pieter Bakx, Sam Harper, Bastian Ravesteijn, Tom Van Ourti

— *Trajectories of long-term care utilization after impairing acute health shocks*
Judite Gonçalves, **Luís Filipe**

— *Patterns of informal support to European older adults during the COVID-19 pandemic. A closer look at the role of friends and neighbors*
Judite Gonçalves, France Weaver

3. Health systems: efficiency, sustainability, and public-private mix (PT)

Auditório 2 / Moderadora: Eliana Barrenho

— *Should we adjust health expenditure for age structure on health systems efficiency? A worldwide analysis*
João Vasco Santos, Filipa Santos Martins, Joana Pestana, Júlio Souza, Alberto Freitas and Jon Cylus

— *Modeling Health spending financial sustainability*
Eduardo Costa

— *The changing public-private pattern of the Portuguese health system over the last decade*
Nuno Pereira and **Julian Perelman**

10:30–11:00 **Coffee Break**

Claustros do Quelhas 6

11:00–12:00

Sessões Paralelas II

4. COVID-19 restrictions and their impacts (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Micaela Antunes

— *Closing the net: How restrictive policies towards COVID-19 pandemic affect patient mobility and medication adherence?*
Joana Gomes da Costa, Marisa Miraldo and Nuno Sousa Pereira

— *Opening up to death - A DCE approach in Portugal*
Luís Filipe, Eduardo Costa, Sara Valente de Almeida, Francisca Vargas Lopes, João Vasco Santos and Joana Gomes da Costa

— *COVID-19 government response in 2020: analysis in the European Union*
Vera Pinheiro and Alberto Freitas

— *Qualidade de vida durante o primeiro confinamento COVID-19*
Lara Ferreira, Luis Pereira, Maria da Fé Brás and Kateryna Ilchuk

5. The economics of the hospital care workforce: determinants and policies affecting nurses' and doctors' retention (Sessão Organizada) (EN)

Auditório 3 / Moderadora: Anna Georgina Ditter

— *Stand by me: The impact of the Retention Support Programme on nursing staff retention in the English NHS*
Melisa Sayli, Giuseppe Moscelli, Jo Blanden, Chris Bojke, Marco Mello

— *As long as you engage me: panel data evidence on the effect of staff engagement on workforce retention in the English NHS*
Giuseppe Moscelli, Melisa Sayli, Marco Mello

— *Gone with the wind: the impact of the 2016 national contract reform on junior doctors' retention within the English NHS*
Marco Mello, Giuseppe Moscelli, Melisa Sayli, Ioannis Laliotis

6. Medication Issues (PT)

Auditório 2 / Moderador: Diogo Marques

— *Deprescribing for community-dwelling elderly: A systematic review of economic evaluations*
Sónia Romano, Débora Figueira, Inês Teixeira and Julian Perelman

— *The Phollow cohort: real-world therapeutic adherence to oral anticoagulants in Portugal*
Rodrigo Murteira, José Pedro Guerreiro, Maria Cary and **António Teixeira Rodrigues**

— *Pharmacoepidemiological study on the use of Growth Hormone therapy in Portuguese Paediatric Patients*
Luís Silva Miguel, Francisco Lourenço, Luísa Prada, Bernardete Pinheiro, Rita Sousa, João Costa and Margarida Borges

— *High antidepressant therapy prescription, do psychologists help? — Evidence from Portugal*
Joana Pestana and Francisca Vargas Lopes

12:00–12:10 **Intervalo**

12:10–13:10

Sessões Paralelas III

7. COVID-19 and the health system (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Carolina Santos

— *Learning and congestion in the treatment of COVID-19: the first year of the Portuguese NHS*
Pedro Pita Barros

— *Necessidades de cuidados de saúde não satisfeitas na primeira vaga da pandemia, em Portugal*
Carlota Quintal, Óscar Lourenço, Luis Moura Ramos and Micaela Antunes

— *Impact of transferring the dispensing of hospital-only medicines to community pharmacies during COVID-19 pandemic: A single-arm, before-and-after study*
Rodrigo Murteira, **Sónia Romano**, Inês Teixeira, Heloísa Galante, Carolina Bulhosa, Sérgio Sousa and António Teixeira Rodrigues

8. Acute Care I (EN)

Auditório 3 / Moderadora: Joana Cima

— *What to expect when you're expecting? Probit analysis of childbirth in Portugal*
Anna Ditter

— *Master surgery scheduling in operating rooms: comparing static and flexible approaches*
Mariana Oliveira, Filippo Visintin, Daniel Santos and Inês Marques

— *Transplantes renais intervivos e falecidos no Brasil: uma análise a partir de vetores autoregressivos*
Tallys Kalynka Feldens, Paulo de Andrade Jacinto and Victor Rodrigues de Oliveira

— *Is Faster Better? Treatment delay and patient's outcome in hip fracture surgery*
Francesca Cassanelli

9. Healthcare costs I (PT)

Auditório 2 / Moderadora: Ana Teresa Paquete

— *The cost-analysis of digitizing the care process in a nursing home: a pilot study*
Francisco von Hafe, Salomé Azevedo and Ana Rita Londral

— *A criação de um standard de mensuração da Consulta de Enfermagem Hospitalar – Estudo de caso no Centro Hospitalar Oeste, EPE*
Sónia Penas and Sandra Oliveira

— *Health care costs associated with Developmental Coordination Disorder in children: a longitudinal register-based cost comparison study*
Tengiz Samkharadze, Isak Persson, Kine Johansen, Jonas Lundkvist, Richard Ssegonja and **Filipa Sampaio**

— *Patient Preferences and Willingness-to-Accept a Collaborative Care Intervention Model in Hypertension and Hyperlipidemia Management between Pharmacies and Primary Care in Portugal: A Discrete Choice Experiment Alongside a Trial (USFarmácia)*
Suzete Costa, José Pedro Guerreiro, Inês Teixeira, Dennis Helling, Céu Mateus and João Pereira

13:10–14:30

Almoço

Terraço Quelhas 6

14:30–15:30

Sessão Plenária I (EN)

Auditório Caixa Geral de Depósitos
Moderador: Eduardo Costa

— **Meredith Rosenthal**
Harvard School of Public Health
Price and utilization effects of vertical integration between physicians and hospitals

15:30–15:40 **Intervalo**

15:40–16:40

Sessões Paralelas IV

10. COVID-19: pharmaceutical and non-pharmaceutical interventions (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Francisca Vargas Lopes

— *Did we do it right? The Comparative Effectiveness of COVID-19 vaccines across age groups*
Miguel Gouveia, Catarina Silva, Paulo Jorge Morais Zamith Nicola, Maria João Aleixo, Rute Sousa and Helena Canhão

— *COVID-19 non-pharmaceutical intervention compliance in Portugal*
João Vasco Santos, Joana Gomes da Costa, Eduardo Costa, Sara Almeida, Joana Cima and Pedro Pita-Barros

— *Running away from The Jab: Politics influence on Covid-19 Vaccine Hesitancy in Brazil*
Marco Antonio Catussi Paschoalotto, Eduardo Polena Pacheco Araújo Costa, Sara Valente de Almeida, Joana Cima, Joana Gomes da Costa, João Vasco Santos, Pedro Pita Barros, Claudia Souza Passador and João Luiz Passador

11. Child and adolescent health (EN)

Auditório 3 / Moderadora: Filipa Sampaio

— *Can intersectoral interventions reduce substance use in adolescence? Evidence from a randomized controlled multicentre study*
Sara Valente de Almeida, Rafael Correa and Judite Gonçalves

— *Estresse Materno e Desenvolvimento Infantil*
Flavia Chein, Igor Procópio and Cristine Pinto

— *Do time constraints affect single-parent households' diet quality?*
Ricardo Alves and Julian Perelman

12. Quality and Performance (PT)

Auditório 2 / Moderadora: Joana Pais

— *Do non-urgent emergency visits affect hospital productivity? An analysis of Portuguese NHS hospitals, 2015-2020*
João Fachada and **Julian Perelman**

— *Heterogeneity of primary health care performance in Portugal: a multilevel analysis*
Joana Pestana, Julio Souza, Andreia Pinto and João Vasco Santos

— *A avaliação da performance nos Cuidados de Saúde Primários*
Leonor Amaral, André Roque, Diana Sobreira, Eliana Nave, Inês Rua, Pedro Ruivo, Sofia Rodrigues and Teresa Amaral

— *Quality provision in hospital markets with demand inertia: The role of patient expectations*
Luís Sá

16:40–17:10 **Coffee Break**
Claustros do Quelhas 6

17:10–18:10 **Sessões Paralelas V**

13. Economic Evaluation (PT)

Auditório Caixa Geral de Depósitos / Moderador: Miguel Gouveia

— *Cost-effectiveness and cost-utility of the first collaborative care intervention in hypertension and hyperlipidemia management between pharmacies and primary care in Portugal alongside a trial (USFarmácia)*
Suzete Costa, José Pedro Guerreiro, Inês Teixeira, Dennis Helling, João Pereira and Céu Mateus

— *Public health benefit of switching to high dose quadrivalent vaccine for influenza seasonal vaccination in Portuguese elderly population*
Margarida Borges, Ricardo Lopes, Hélène Bricout, Margarida Martins, Caroline de Courville and **Luís Silva Miguel**

— *Custos e sobrevivência para o tratamento da estenose aórtica severa em doentes com alto risco cirúrgico: a TAVI em Portugal sob perspetiva*
Rui Campante Teles, **Fernando Genovez Avelar** and Joana Alves

— *Measuring the value of solidarity based on health needs: the impact of a financial assistance program (ABEM)*
Miguel Gouveia, Margarida Borges, João Costa, Francisco Lourenço, Francesca Fiorentino, António Teixeira Rodrigues, **Inês Teixeira**, José Pedro Guerreiro, Patrícia Caetano and António Vaz Carneiro

14. Inequalities I (EN)

Auditório 3 / Moderadora: Ana Moura

— *Equal (non)utilisation in breast and cervical cancer screening in Portugal? Analysing target versus non-target groups*
Micaela Antunes and Carlota Quintal

— *Equal (non)utilisation in breast and cervical cancer screening in Portugal? Analysing target versus non-target groups*
Luis Roxo and Julian Perelman

— *Gender and socioeconomic differences in depressive symptoms and related perception of mental healthcare needs: a latent-class analysis*
Monica Oliveira, Teresa Cipriano Rodrigues, Liliana Freitas, Ana Vieira, Klára Dimitrovová, João Bana e Costa, Aris Angelis, Panos Kanavos and Carlos Bana e Costa

15. Health-related behaviors: diet, obesity, drug use, and organ donations (PT)

Auditório 2 / Moderador: Luís Sá

— *European mature adults and elderly are moving closer to the Mediterranean diet - a longitudinal study, 2013-2019*
Ricardo Alves and Julian Perelman

— *The links between obesity, economic growth, globalisation, urbanisation, and poverty in Latin America and Caribbean countries*
Matheus da Costa Koengkan, José Alberto Fuinhas, **Aida Isabel Tavares** and Nuno Silva

— *Policy does matter! A cross-country study on the impact of drug policy on prevalence rates*
Ricardo Gonçalves, Ana Lourenço and Hélia Marreiros

— *A mídia contribui para aumentar a conscientização pela doação de órgãos? Evidências a partir do Brasil*
Tallys Kalynka Feldens and Paulo de Andrade Jacinto

19:30 **Jantar da Conferência**

Restaurante Sacramento (Chiado)

22 Outubro 2021 sexta-feira

09:30–10:30 **Sessões Paralelas VI**

16. COVID-19 impacts on health and wellbeing (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Carlota Quintal

— *Será que vai ficar tudo bem? - Impactos da COVID-19 na saúde e bem-estar dos cidadãos Portugueses*
Lara Ferreira, Luís Pereira and Pedro Ferreira

— *The Incidence of Serious Covid-19 Risks Across the Socioeconomic Status Distribution*
Miguel Gouveia and Maria Teresa Figueiroa

— *Estado de saúde mental nos 50+ portugueses depois e antes da pandemia: uma caracterização quantitativa*
Óscar Lourenço and Silvia Sousa

— *Estimating the health impact of the first 4 months of COVID-19 vaccination in Portugal*
Catarina Silva, Hugo Anjos, Miguel Gouveia, Luís Graça, Paulo Jorge Nicola and António Vaz Carneiro

17. Innovation (EN)

Auditório 3 / Moderadora: Rita Bastião

— *No ordinary leaders - Evidence from Female-headed households in Palestine Refugee Camps*
Sara Valente de Almeida, Pedro Pita Barros and Hala Ghattas

— *Innovation Diffusion and Physician Networks: Keyhole Surgery for Cancer in the English NHS*
Marisa Miraldo

— *The determinants of early adoption and diffusion of biosimilars: a longitudinal analysis of Portuguese NHS hospitals*
Julian Perelman, Filipa Duarte-Ramos, António Melo Gouveia, Luis Pinheiro, Francisco Ramos and Céu Mateus

18. Primary and integrated community-based care (PT)

Auditório 2 / Moderadora: Joana Alves

— *What explains primary health care coverage? Monitoring family physician coverage variation in Portugal*
Marco Paschoalotto, Joana Pestana, Eduardo Costa and Pedro Pita Barros

— *Design, challenges, and effectiveness of the first collaborative care intervention in hypertension and hyperlipidemia management between pharmacies and primary care in Portugal: a multicenter quasi-experimental controlled trial (USFarmácia)*
Suzete Costa, José Luís Biscaia, Maria Rute Horta, Sónia Romano, José Pedro Guerreiro, Peter Heudtlass, Maria Cary, Mariana Romão, António Teixeira Rodrigues, Ana Miranda, Ana Paula Martins, Ana Sofia Bento, João Pereira, Céu Mateus and Dennis Helling

— *Remote patient monitoring: A scoping review of models and initiatives from an integrated care perspective*
Rafael Miranda, Mónica Oliveira, Paulo Nicola, Filipa Baptista and Isabel Albuquerque

— *The impact of the economic crisis on primary care utilization, expenses, and quality: The case of Portugal*
Joana Pestana and Pedro Barros

10:30–11:00 **Coffee Break**
Claustros do Quelhas 6

11:00–12:00 **Sessões Paralelas VII**

19. Burden of illness I (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Inês Teixeira

— *Custo e carga da atrofia muscular espinhal em Portugal*
Luís Silva Miguel, Teresa Coelho, Teresa Moreno, Luís Negrão, Joana Ribeiro, Manuela Santos, Miguel Oliveira Santos, José Pedro Vieira, Edgar Pinheiro, Rita Guerreiro, João Costa and Margarida Borges

— *Chronic Pain and Health Related Quality of Life - Results from a Primary Care Setting*
Miguel Gouveia, Rita Tinoco and Filipe Antunes

— *The Phollow cohort: quality of life of patients using antidiabetic or oral anticoagulants agents in Portugal*
Rodrigo Murteira, José Pedro Guerreiro, Maria Cary and **António Teixeira Rodrigues**

— *The Landscape of Non-Melanoma Skin Cancer in Portugal*
Raquel Ascenção, João Maia Silva, Paula Borralho, Miguel Correia, Osvaldo Correia, João Costa, Tiago Machado, Beatrice Mainoli, **Filipa Sampaio**, Luís Silva Miguel and Margarida Borges

20. Novel methodologies and data (EN)

Auditório 3 / Moderadora: Suzete Costa

— *Can multicriteria decision analysis assist hospital-based HTA of medical devices? Results from three case studies developed in Portuguese hospitals.*
Edgar Mascarenhas, Susana Afonso, Beatriz Coelho, Carla Pereira, Hugo Quintino, Teresa Bandeira, Ricardo Fernandes and Mónica Oliveira

— *Developing behavioural research in Web-Delphi processes: results from a real-world Delphi experiment in Health Technology Assessment*
Liliana Freitas, Ana Vieira, Monica Oliveira and Carlos Bana e Costa

— *Estimating disease burden through modifiable risk factors: a model simulation*
Diogo Nogueira Leite, João Miguel Alves, **Manuel Marques da Cruz** and Marta Temporão

— *Cross-country comparisions of National Drug Policies – A Leximetrics approach*
Helia Marreiros, Ricardo Goncalves and Ana Lourenço

21. Acute Care II (PT)

Auditório 2 / Moderador: Luis Filipe

— *Prevalence and inequality in screening of breast and cervical cancers in Portugal: where do we stand in the European panorama?*
Micaela Antunes and Carlota Quintal

— *Abortion access in Portugal: the relationship with abortion rates, timings, type of providers, and methods*
Antonio Melo

— *Hospitalizations for intestinal infectious diseases in early childhood: spatial analysis among Brazilian micro-regions*
Cristiéle Vieira, Cassia Favoretto and Paulo Jacinto

12:00–12:10 **Intervalo**

12:10–13:10 **Sessão Plenária II (EN)**

Auditório Caixa Geral de Depósitos
Moderadora: Judite Gonçalves

— **Judit Vall**
Universitat de Barcelona
Gender gaps in Health: past/current trends and future evolution

13:10–14:30 **Almoço**
Terraço Quelhas 6

14:30–15:30

Sessões Paralelas VIII

22. Acute Care III (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Joana Pestana

— *How do hospitals respond to incentives? The case of c-section rates*
Ana Moura and Pedro Pita Barros

— *Waiting times for scheduled surgery in the Portuguese NHS: a spatial econometric analysis*
Joana Cima and Álvaro Almeida

— *Epidemia de Cesarianas: o Efeito do Projeto Parto Adequado*
Igor Procopio, **Flávia Chein** and Cristine Pinto

23. Healthcare costs II (EN)

Auditório 3 / Moderador: Luís Silva Miguel

— *A cost analysis of an intervention targeting emergency department high users*
Francisco von Hafe, Simão Gonçalves, Flávio Martins and Ana Rita Londral

— *Applying a "government perspective" fiscal analysis to analyse health conditions: The example of uncontrolled osteoarthritis pain in the UK*
Rui Martins, Nikos Kotsopoulos, Ana Paquete and Mark Connolly

— *Healthcare Resource Utilization by Cardiovascular Disease Risk Category in a Portuguese Local Health Unit*
Cristina Gavina, Francisco Araújo, Marisa Pardal, Diana Grangeia, Filipa Moreira, Andreia Leitão and **Tiago Taveira-Gomes**

24. Pharmaceutical markets (PT)

Auditório 2 / Moderador: Diogo Pereira

— *Effects of the policy regulation on generic competition and pharmaceutical savings in Portugal. Do incentives matter?*
Inês Teixeira, Joana Mansinho, António Teixeira Rodrigues, Humberto Martins and José Pedro Guerreiro

— *Estratégias de dissuasão da entrada no mercado do medicamento*
Carolina Monteiro and Paula Veiga

— *Uncovering Competitive Forces in Prescription Drug Markets - Evidence from Statins*
Carolina Santos, Eduardo Costa and Sara R. Machado

15:30–15:40 **Intervalo**

15:40–16:40

Sessões Paralelas IX

25. Inequalities II (PT)

Auditório Caixa Geral de Depósitos / Moderadora: Mariana Oliveira

— *Income-, and education-, related inequalities in colorectal cancer screening: is Portugal aligned with other European countries?*
Carlota Quintal and Micaela Antunes

— *Desigualdade de oportunidade em saúde no Brasil 2013-2019*
Cristiéle Vieira, Rafael Ricco and Sabino Porto Júnior

— *Mental health services use for depressive symptoms in Portugal: socioeconomic status, needs perception and affordability concerns*
Luis Roxo and Julian Perelman

26. Pharmaceuticals and medical devices (EN)

Auditório 3 / Moderador: Emmanuel Ngoy

— *Pharmaceutical pricing dynamics in a reference price system - Evidence from changing drugs' co-payments*
Eduardo Costa and **Carolina Santos**

— *Which value aspects are relevant for the evaluation of distinct types of medical devices? A Web-Delphi process to explore the views of health stakeholders in Portugal*
Liliana Freitas, **Ana Vieira**, Monica Oliveira, Helena Monteiro, Claudia Santos and Carlos Bana E Costa

— *The agreements between the Government and the Pharmaceutical Industry in Portugal: an analysis since the financial crisis and its further developments*
Diogo Teixeira Pereira

27. Burden of Illness II (PT)

Auditório 2 / Moderadora: Joana Gomes da Costa

— *Cost of osteoporosis-related fractures in postmenopausal women in Portugal*
Judite Gonçalves, Ana M Rodrigues, Anabela Barcelos, Helena Canhão and Céu Mateus

— *Burden of Disease and Cost of Illness of Alzheimer's Disease in Portugal*
João Costa, Margarida Borges, Rosa Encarnação, Horácio Firmino, Manuel Gonçalves-Pereira, Patrícia Lindeza, Filipa Sampaio, Isabel Santana, **Rita Sousa**, Ricardo Taipa, Ana Verdelho and Luís Silva-Miguel

— *The Impact of Non-Melanoma Skin Cancer in Portugal*
Filipa Sampaio, Luís Miguel, Raquel Ascenção, Miguel Correia, Osvaldo Correia, João Costa, Isabelle Hoorens, Lore Pil, João Maia Silva and Margarida Borges

16:40–17:10

Coffee Break

Claustros do Quelhas 6

17:10–18:10

Sessão Plenária III (PT)

Auditório Caixa Geral de Depósitos
Moderadora: Céu Mateus

— **Carlos Farinha Rodrigues**
ISEG Lisbon School of Economics & Management
Desigualdades Sociais em Portugal e os múltiplos efeitos da pandemia

18:10–18:40

Sessão de Encerramento (PT)

Auditório Caixa Geral de Depósitos

Com a presença de Sua Excelência o Secretário de Estado da Saúde, Diogo Serras Lopes.

19:40–21:00

Gravação do "Programa cujo nome estamos legalmente impedidos de dizer"

Salão Nobre

Emitido em diferido na SIC/SIC Notícias

Resumos Abstracts

Comunicações Orais Oral Presentations

Sessão 1 – COVID-19: better data for better decision making

A Cautionary Tale on Using Covid-19 Data for Machine Learning

Diogo Nogueira Leite[1], João Miguel Alves[1], Manuel Marques da Cruz[1] and Ricardo Cruz Correia[1]

[1] Faculty of Medicine, University of Porto.

INTRODUCTION: Good quality and real-time epidemiological **COVID-19** data are paramount to fight this pandemic through statistical and machine-learning based decision-making support mechanisms.

AIMS: Evaluate the resources available and used to gather **COVID-19** epidemiological data by Portuguese health authorities from the onset of the pandemic until December 2020. The analysis laid on two main topics: (a) work processes at the Public Health Unit (**PHU**) level and (b) registry forms for epidemiological reporting and control procedures. Recommendations on requirements to overcome problems related to data integration and interoperability in order to build robust decision-making support mechanisms will also be produced.

METHODS: For topic (a), we revised the Portuguese Directorate-General of Health (**DGS**) guidelines for data treatment. For topic (b), we analysed the forms used during first and second waves, while comparing them with **DGS** metadata provided to researchers.

RESULTS: On topic (a), we detected the use of two complementary and non-interoperable systems. Further, the workflow does not seem to promote data quality and facilitates the occurrence of communication problems between health professionals. On topic (b), we found 27 deleted questions, 6 new questions, 1 displaced question, and 1 text modification between the 2 form versions.

DISCUSSION: Both the workflow and data gathering methods are not the best suited for the generation of good quality data. They do not effectively support Public Health Professionals (**PHP**) nor provide the elements for posterior data analysis. The use of data by decision-making support mechanisms demands a careful planning of the data used to depict reality, and this condition is not met by the currently used forms.

Spatial and Temporal Analysis of COVID-19 in the Elderly living in Residential Care Homes in Portugal

Felipa de Mello-Sampayo[1]

[1] ISCTE Instituto Universitário de Lisboa

Analyzing the spread pattern of COVID-19 is fundamental in guiding the next steps toward overcoming the damaging effects on the elderly living in residential care homes. We describe the evolution of COVID-19 in residential care homes throughout the 278 municipalities of continental Portugal between March and December 2020. Spatial analysis used the Kernel density estimation (KDE), space-time statistic Scan, and geographic weighted regression (GWR) to detect and analyze clusters of infected elderly living in residential care homes (RCH). Between 3 March and 31 December 2020, the high-risk primary cluster was located in the regions of Bragança, Guarda, Vila Real, and Viseu, all in Northwest Portugal (relative risk = 3.67), between 30 September and 13 December 2020. The priority geographic areas for attention and intervention for elderly living in care homes are the regions in the Northeast of Portugal, and around the big cities, Lisbon and Porto, which had high risk clusters. The relative risk of infection was spatially not stationary and generally positively affected by both comorbidities and low-income. The regions with a population with high comorbidities and low income are priority for action in order to control COVID-19 in elderly living in RCH.

Time between COVID-10 vaccination doses: does it make a difference?

Catarina Silva[1], Hugo Anjos[2], Miguel Gouveia[3], Luís Graça[4], Paulo Jorge Nicola[5] and António Vaz Carneiro[5]

[1] Instituto de Saúde Baseado na Evidência, FMUL; Unidade de Epidemiologia, IMPSP, FMUL

[2] Unidade de Epidemiologia, IMPSP, FMUL

[3] Católica Lisbon School of Business and Economics

[4] Instituto de Medicina Molecular João Lobo Antunes

[5] ISBE, FMUL; Unidade de Epidemiologia, IMPSP, FMUL; Instituto de Saúde Ambiental, FMUL

OBJECTIVES: Different decisions regarding the interval between COVID-19 vaccination doses were taken during vaccination programs among different countries. Countries like Portugal, France or Germany extended time between doses, while others (e.g., Spain, Poland) did not. Also, timing between doses vary among countries for the same brand. Our main objective was to evaluate the impact of different time periods between vaccine doses on number of cases and deaths avoided versus real vaccination campaign and with a 'no vaccination' scenario in the first 4 months of vaccination in Portugal, in people 60+ years.

METHODS: We used weekly number of diagnosed cases and deaths due to COVID-19 by age group, and number of vaccination doses administered to the overall population

in Portugal between Jan 1 and Apr 30 from **WHO COVID-19** Detailed Surveillance Dashboard. We created an algorithm to simulate vaccination administration (1st and 2nd dose) according to different fixed time intervals between doses (4, 6, 8, 10, 12 and 14 weeks) and considering age in prioritizing vaccination. We considered that 20% of vaccines were distributed by criteria other than age (e.g., to high risk professional groups). For each simulation, we calculated the number of cases and deaths avoided when compared with a scenario without vaccination. For the scenario without vaccination, we used real observed cases/deaths without the expected vaccine effect. Vaccine efficacy was extracted from the literature and was specific for the time-window after administration (14-28 days after 1st dose; >28 days after 1st dose; 14-28 days after 2nd dose; >28 days after 2nd dose). Efficacy was considered equal across brands and age groups. We assumed that the time interval between doses was similar regarding the vaccine type, as data on infections, deaths and date of administration by vaccine type is not currently available.

RESULTS: For a scenario with 4-week interval between doses, estimates were 5,142 avoided cases and 1,338 avoided deaths (a 47% and 82% increase in avoided cases and deaths versus real vaccination campaign). Avoided cases increase slightly from 5,142 to 5,739 (+12%) in the scenario of 4-week versus 10-week interval; increasing this interval beyond 10 weeks seems to be of no added value regarding avoided cases (+5%, +10%, +12%, +12% and +12%, with 4w, 6w, 8w, 10w, 12w and 14w, respectively). Avoided deaths and years of life lost present the same trend, increasing from 1,338 to 1,488 (11%) avoided deaths and from 7,108 to 7,924 total years of life lost from the scenario of 4-week interval to an 8-week interval, respectively, and is similar for greater intervals (+6%, +11%, +11%, +11% and +11%, with 4w, 6w, 8w, 10w, 12w and 14w, respectively).

CONCLUSION: Our calculations suggest that an age-oriented vaccination with fixed intervals between doses result in gains regarding cases and deaths avoided, but up to a limit, with not particular loss of benefit for overextending the doses interval up to 14 weeks. On the other hand, increasing time between doses means that more people would initially get vaccinated with one dose, which represents the larger incremental protection for preventing death and infection, thus increasing the number of cases and deaths avoided. However, as more people are vaccinated and younger people initiate vaccination, this benefit seem to disappear. This suggests that an algorithm which considers age (and other individual risk factors), number of cases by age, available vaccines and time between doses may optimize the benefit from the vaccination campaign. Countries with less developed vaccination programs and less availability of vaccines may benefit from considering an increase the interval between doses up to 8-10 weeks in order to minimize the impact of this pandemic. Extending time between doses up to 14 weeks may be a valid strategy for controlling the infection without increasing mortality.

Sessão 2 – Formal and informal long-term care for diverse subpopulations: elderly, mentally-ill, and post acute health shock (Sessão Organizada)

Long-term care for the mentally ill: the impact of supported housing arrangements on survival, health care use and employment

Francisca Vargas Lopes[1], Pieter Bakx, Sam Harper[2], Bastian Ravesteijn[2] and Tom Van Ourti[2]

[1] Erasmus Medical Center

[2] Erasmus University Rotterdam

Severely mentally ill persons are one of the most vulnerable groups in society. In addition to their disorder, these individuals often face unemployment, poverty, dysfunctional family relationships and violence. Supported housing aims at providing a protected living environment and meaningful routine: individuals move to a house in the community with a certain level of support and supervision. While the number of supported housing places has been increasing in the last decades, these arrangements are frequently criticized for undermining individuals autonomy and being costly. This study is motivated by the lack of conclusive causal evidence on the impact of supported housing on health and social outcomes, which poses a limitation to conducting evidence-based policy in long-term mental health care.

We use a quasi-experimental research design to study the impact of supported housing eligibility on health and social outcomes. Based on the centralized assessment of supported housing applications in the Netherlands before 2015, we exploit the variation – that is unrelated to the characteristics of each supported housing application – between randomly assigned assessors on their leniency to grant eligibility to supported housing. Using assessors leniency as an instrumental variable (IV) we estimate intention-to-treat effects for individuals at the margin of supported housing and living independently, which regularly involves domiciliary support. We use administrative data on all individual applications to support housing between 2009 and 2013 and link these to individual-level records in municipal registries (2009- 2017), long-term care utilization and health care expenditures (2010-2014), personal income (2010-2017) and mortality (2011-2017).

Being granted supported housing eligibility increased the probability of moving into supported housing (38.6 pp; se 5.0) and decreased the likelihood of using home care (-13.4 pp, se 6.4) in the year after the application. Total health care expenditures in the next calendar year increased (20,017 euros, se 5,006), mostly due to costs associated with supported housing (11,883 euros, se 2,634) and specialist mental health care (7,697 euros, se 4,221). Being eligible for supported housing decreased the likelihood of getting into paid work (-7.0 pp, se 3.6) and the amount of income from work (-2,161 euros, se 722) in the next calendar year, as well as after four

calendar years. Mortality was reduced, both in the short and longer run, but the effect size was imprecisely estimated (1 year : -0.05 pp, se 1.2; 4 years: -2.1 pp, se 2.3). Taken together, our findings suggest that supported housing eligibility has a large impact on care use and labour outcomes of the marginal user.

Trajectories of long-term care utilization after impairing acute health shocks

Judite Gonçalves[1] and Luís Filipe[2]

[1] Nova School of Business and Economics

[2] Lancaster University

Health shocks like stroke and heart attack often cause long lasting impairments, pushing individuals into (need of) long-term support in their activities of daily living (**ADL**). This study relies on a large sample representative of the 50+ population in the **US** to explore (1) the impacts of health shocks on **ADL** limitations and, conditional on **ADL** limitations, (2) the impacts on long-term care utilization (nursing home care, formal/informal home care, and unmet need). We also explore potentially different impacts for subgroups of the population — e.g., with or without long-term care insurance, with or without sources of informal support at home such as spouses.

Data come from the Health and Retirement Study (**HRS**), a panel of older adults representative of the 50+ population in the **US**, ongoing since 1992 (14 waves until 2018). Health shocks include e.g., the first stroke or heart attack. We estimate a series of event studies, for different definitions of health shock, different outcomes, and different subgroups of the population. We control for individual fixed effects as well as time-variant confounders such as comorbidities. With an event study design, we are able to assess the plausibility of the health shock being exogeneous, as well as to observe trajectories of long-term care utilization over the years following the shock.

Preliminary results for stroke are as follows. First, there are 3,696 individuals in the dataset who report their first stroke in t0 and are also observed in t-1. Note that the stroke may have occurred any time during the 24-month window between the two waves. Those individuals are observed in up to all 14 available waves (nine waves on average), for a total of about 33,700 person-wave observations. We find that suffering the first stroke increases the likelihood of having limitations in the **ADL** in t0, compared to t-1, by 22 percentage points, on average. The likelihood of **ADL** limitations continues to increase over time, reaching +50 percentage points in t+9 compared to t-1. Note, however, that while the immediate impact is likely to be causal, the medium-to-long-term effect may be confounded by other factors.

We then take a closer look at individuals without **ADL** limitations in t-1 (before the first stroke) and with at least one limitation in t0 (after the stroke). There are 989 individuals that fulfil these criteria, for a total of more than 7,000 person-wave observations. Suffering a stroke increases the likelihoods of

living in a nursing home in t0, compared to t-1, by 18 percentage points, receiving informal ADL support at home by 42 percentage points, receiving formal ADL support at home by seven percentage points, and having ADL limitations but no support (i.e., unmet need) by 33 percentage points.

These preliminary results confirm that stroke has severe implications in terms of disability. In most cases, it is informal caregivers that provide the daily support needed by stroke survivors in the US. A significant portion of individuals do not receive the help they need. Note that with an estimated 610,000 new strokes occurring annually in the US, this is a common type of health shock. One policy implication is the importance of establishing mechanisms to follow individuals after they suffer health shocks and ensure that they get the support they need. Our results will also contribute to long-term care policy by identifying which groups of the population are particularly vulnerable and should be given special attention.

Patterns of informal support to European older adults during the COVID-19 pandemic. A closer look at the role of friends and neighbors

Judite Gonçalves[1] and France Weaver

[1] Nova School of Business and Economics

[2] Xavier University

The literature on informal support to older adults is focused on children and spouses, whom we know to be the main caregivers. However, non-relatives like friends and neighbors are also important sources of informal help that may have played an even greater role since the outbreak of the COVID-19 pandemic in early 2020. For example, governmental pandemic control measures are likely to have made access to formal/professional help more difficult, which in turn may have required additional support from informal caregivers. Non-relatives, in particular neighbors, may have stepped in because of their geographical proximity.

This study explores three main research questions. The first is Where did European older adults (50+) living in the community get their help from during the first months of the pandemic? The second question is How do the patterns of support to older adults during the first months of the pandemic compare with those during the months before the outbreak? The third question addresses the determinants of those (different) patterns, including individual-level factors and countries' pandemic control measures.

Data come from two Survey of Health, Aging, and Retirement in Europe (SHARE) waves: Wave 8 with people interviewed between Oct 2019 and Mar 2020 and the special Corona Survey with people interviewed between Jun and Sep 2020. For the third research question, we cross these data with information on countries' pandemic control measures over time, from the Oxford COVID-19 Government Response Tracker.

The data include more than 36,000 50+ individuals from 27 European countries +Israel interviewed in both waves (before and after the outbreak). In our sample, more than 15% of respondents that regularly used formal home care before the outbreak reported issues accessing the care they needed since the outbreak, because providers could not get to their homes. It was mainly children followed by non-relatives who stepped in. The proportion of people receiving help from children since the outbreak increased by fifteen percentage points compared to 2019. The increase was ten percentage points for those receiving help from non-relatives, and eight percentage points for individuals receiving help from other relatives. Regarding intensity, children and non-relative caregivers were helping more often than before the pandemic, whereas other relatives were helping less often, on average.

These preliminary results suggest that non-relative informal caregivers indeed played an important role during the pandemic. This has important implications both in the context of the pandemic and more generally. We need to recognize that non-relatives, who are possibly mainly neighbors during the pandemic, are an important source of informal support. Those caregivers need to be both aware of the necessary protective measures when caring for older individuals and supported (e.g., by being provided with protective equipment, mental health support). More generally, future policies and programs that promote aging-in-place should take into account the important role of non-relatives like friends and neighbors.

Sessão 3 – Health system: efficiency, sustainability and public-private mix

Should we adjust health expenditure for age structure on health systems efficiency? A worldwide analysis

João Vasco Santos[1], Filipa Santos Martins[2], Joana Pestana[3], Júlio Souza[4], Alberto Freitas[4] and Jon Cylus[5]

[1] Faculty of Medicine, University of Porto / CINTESIS / ARS Norte

[2] Centro Hospitalar de São João

[3] Nova School of Business and Economics

[4] Faculty of Medicine, University of Porto / CINTESIS

[5] European Observatory on Health Systems and Policies

BACKGROUND: Efficiency is one of the main dimensions of health systems' performance, with an increasing importance when considering financial crisis, technological innovation or the ageing population. Despite its potential impact on health systems' performance, population age is usually not taken into account in efficiency estimation models. Rather, it is mainly considered as an environmental variable to explain inefficiency among countries. Therefore, we aimed to assess the impact of adjusting health expenditure for population age on health system efficiency scores by estimating correlation, reliability and agreement.

METHODS: We performed a worldwide (188 countries) cross-sectional efficiency analysis using 2016 data. We used healthy life expectancy at birth as the single output. Inputs included only health expenditure per capita and age structure. We computed an ageing index for all countries based on the EU-28 age-related health expenditure weights. Age-adjusted health expenditure for each country was calculated by multiplying the index by the unadjusted health expenditure. Five models were considered, only varying the inputs: Model 1 – health expenditure (without age); Model 2 – age-adjusted health expenditure per capita; Model 3 – health expenditure, proportion of population 0-14 years-old, proportion of 15-64 years-old and proportion of 65+ years-old; Model 4 – health expenditure and proportions 5-year age groups; Model 5 – health expenditure and ageing index. A stochastic frontier analysis was applied to each model and correlation (Spearman's rank order), reliability (intra-class correlation coefficient, ICC) and disagreement (information-based measure of disagreement, IBMD) between pairs of models were evaluated. Bland and Altman plots were also computed.

RESULTS: Model 1 showed a median efficiency score of 0.950 (Q1=0.921; Q3=0.964) and model 2 showed a median of 0.948 (Q1=0.916; Q3=0.964). The correlation of efficiency scores ranged between 0.771 (models 4 and 5) and 0.989 (models 1 and 2). Reliability results, through the intra-class correlation coefficients ranged between 0.797 (models 2 and 4) and 0.993 (models 1 and 2). IBMD ranged from 0.007 (models 1 and 2) and 0.032 (models 2 and 4). Bland and Altman plots suggest a variability between models 1 and 2 of about 0.025, and a variability between models 1 and 5 of about 0.070.

CONCLUSION: There are important differences of efficiency scores when using different approaches to account for age. In fact, we showed that the variability of estimates scores between some of the models were higher than the scores' interquartile range itself. Thus, accounting for age structure in health systems' efficiency analysis should be considered due to the observed influence on efficiency estimates. However, the preferable approach is still a topic in discussion, with important differences between them.

Modeling Health spending financial sustainability

Eduardo Costa[1]

[1] Nova School of Business and Economics

OBJECTIVES: In most OECD countries, health spending has been increasing over the last decades, often surpassing GDP growth. Current challenges faced by health systems — including the Covid-19 pandemic — pose additional concerns regarding whether societies can sustain continuous health spending growth. Such problem is particularly relevant in the context of public health spending. In the absence of significant economic growth, the room for further increases in public health spending without constraining other public

spending is somewhat limited. On this paper I propose an exploratory analysis on the concept of financial sustainability of public health spending.

METHODS: I relate the sustainability concept with fiscal space of public finances and with the crowding-out of other public expenditures. I develop a static model where health contributes directly both to utility and output.

RESULTS: The model suggests that increases on public health spending are not necessarily undesirable from a public finances' standpoint: the crowding-out of non-health public expenditures depends on the tax rate and coverage level of public health spending.

CONCLUSIONS: Thus, economic growth is not a sufficient condition to achieve financial sustainability of health spending. Moreover, achieving financial sustainability by adjusting coverage levels might compromise ensuring the social sustainability of public health spending. Hence, this paper contributes to the debate on whether current increases of public health spending are desirable and sustainable.

The changing public-private pattern of the Portuguese health system over the last decade

Nuno Pereira[1] and Julian Perelman[1]
[1] Nova National School of Public Health

INTRODUCTION: The Portuguese health system has been characterized by a National Health Service (**SNS**), with the private sector providing supplementary care (e.g., better amenities and shorter waiting time), complementary care (e.g., oral care or physiotherapy), and duplicate care. Traditionally, the public service was the main health care provider and the State the main source of financing of health expenditures. Yet, the disinvestment in the public service, in particular since the Great Recession, coupled with management problems and increasing dissatisfaction of professionals and patients, may have changed this traditional pattern. The paper describes changes in the supply and demand public-private mix in the Portuguese health system.

METHODS: We relied on publicly available data from two sources, namely the National Statistics Institute (**INE**) and the National Health Interview Survey (**NHIS**). Data from **INE** were used to measure changes in the supply and use of public and private health services, for the 2012-2019 period. As data were only available at the national aggregate level, we only performed a descriptive statistics analysis. We then grouped the three last waves of the **NHIS** (2005-2019), and we modeled the probability of having private health insurance as function of the survey wave (2005/6, 2014, 2019), controlling for socioeconomic status (income and education), self-reported health, age, and sex. We used logistic regressions and tested interactions between waves and socioeconomic status, and between waves and self-reported health.

RESULTS: Over the 2012-2019 period, private hospitals increased by 1,534 beds, while public ones lost 1,276; meanwhile the private sector experienced an increase of 937 operating rooms while the public sector lost 153. The number of physicians increased by 4,810 in the private sector, for 2,586 in the public sector. The total number of consultations increased by 68.8% in the private sector and 9.8% in the public sector, while surgeries increased by 32.9% and 8.6%, respectively. Although the gap dramatically reduced between sectors, the percentage of beds (72.0% vs 28.0%), consultations (72.0% vs 28.0%), and surgeries (73.7% vs 26.3%) was still substantially higher in the public sector, in 2019. Private health expenditures increased by 27.7%, for a 20.2% increase in public health expenditures, so that 35.9% of health expenditures were privately financed in 2019, for 34.3% in 2012. Between 2005 and 2019, the percentage of people with private health insurance increased from 7.6% to 25.3%; adjusting for covariates, we observed a statistically significant increase of 14.9 percentage points. The increase did not differ significantly across persons with different self-reported health but was significantly higher among those in the highest income quintile (+18.3pp) compared to those in the lowest income quintile (+13.4pp). The uptake of private health insurance was significantly higher among persons with higher income, higher education, and better self-reported health.

CONCLUSION: Although the public sector remains the main healthcare provider and financer in Portugal, the weight of the private sector has substantially increased over the last decade. This changing pattern may indicate a change in the nature of the Portuguese health system, which calls for action in terms of regulation and financing of the private sector, in order to avoid breaches in the universality and equity principles.

Sessão 4 – COVID-19 restrictions and their impacts

Closing the net: How restrictive policies towards COVID-19 pandemic affect patient mobility and medication adherence?

Joana Gomes da Costa[1], Marisa Miraldo[2] and Nuno Sousa Pereira[1]

[1] Faculdade de Economia – Universidade do Porto

[2] Imperial College of London

In order to prevent the spread of **COVID-19** and the possibility of contagion, the Portuguese government has implemented pandemic mitigation strategies that defined stringency of measures classified in four legally defined contingency states — Alert, Contingency, Calamity and Emergency. These measures involve several restrictions on mobility of the population. We hypothesize that these mobility restrictions impacted individual behaviour with regards to medication for antidiabetic drugs, assessing two outcomes of interest: i) days of treatment over the frequency of visits to the pharmacy and ii) medication possession ratio (**MPR**)

on each visit to the pharmacy. To test this hypothesis, we exploit the variation on the timing of the implementation of the different measures across municipalities as well as the temporal and geographical variation of the intensity of the mobility restrictions imposed by each type of contingency state. We deploy differences in differences methodologies using a panel of patients' prescriptions and dispensing events with the universe of all prescriptions and dispensing in Portugal from January 2019 to December 2020 (N=10.755.096). The individual prescription data is matched with individual, physician, prescription drug, pharmacy and geographical characteristics enabling controlling for a broad range of cofounders and assessing the heterogeneity of the effects by age and gender. Results show that introducing more restrictive measures led a negative effect on the outcomes assessed.

Opening up to death – A DCE approach in Portugal

Luís Filipe[1], Eduardo Costa[2], Sara Valente de Almeida[2], Francisca Vargas Lopes[3], João Vasco Santos[4] and Joana Gomes da Costa[5]

[1] Lancaster University

[2] Nova School of Business and Economics

[3] Department of Public Health, Erasmus Medical Center

[4] MEDCIDS, Faculty of Medicine, University of Porto; CINTESIS; Public Health Unit, ACES Grande Porto VIII

[5] Faculdade de Economia — Universidade do Porto

The Covid-19 pandemic has disrupted our daily lives. The need to control the sanitary situation has led governments to implementing several restrictions with substantial social and financial impacts. To some extent, the degree to which these measures have been implemented reflects choices done by policymakers for the trade-off between saving lives and keeping some normality in the day-to-day life. In the context of these choices, it is important to understand the position of the population regarding such trade-off. This paper aims to understand how people prioritize their income and social restrictions, as well as society's level of education and poverty, relative to the immediate health effects of the pandemic. In particular, we are interested to estimate the level of sacrifice that individuals are willing to make in order to reduce the Covid-19 death burden. A Discrete Choice Experiment was used to estimate such trade-offs in the Portuguese population. The experiment had five attributes with three levels each. Attributes include the excess number of deaths associated with the pandemic, loss in household income, students with compromised learning, social restrictions, and population at risk of poverty. Two blocks were used with eight choice sets each. Over 2,500 answers were collected from January to March 2021. In our sample, the number of Covid-19 related deaths was the attribute that had a larger negative effect on the utility of the respondents, followed by poverty, income, education and social restrictions. Estimates suggest that individuals would be willing to sacrifice 20% of their income to save 47 lives per day during the first 6 months of 2021. For the same period, they would also accept 20% of school population to become educationally impaired to avoid 25 daily deaths; a strict lockdown to avoid

23 daily deaths; and 20% of the population to become poor to save 100 individuals, daily. Group heterogeneity analysis showed that, in our sample, women are more sensible to deaths than men in every domain studied. To save a live, they are willing to sacrifice more of every attribute. The gender gap becomes particularly relevant with respect to social restrictions. There are no significant differences in preferences by region, across age groups, by home office status or by education level. Nevertheless, people with children both below and above school age are less willing to accept social restrictions to save lives, comparing to people without children, with only older children or only younger children. The opposite happens to households in the 1100 to 1500 euros income group, which are more easily persuaded to abdicate of everyday life freedom to save lives than other income groups. Our results show that during the peak of the pandemic in Portugal (when this survey took place), individuals in this sample were willing to sacrifice substantial amounts of income, children education, everyday-life freedom and even people into poverty, to avoid the daily toll of Covid-19 deaths happening at that time. These findings suggest that there was support to the measures taken at that time, that included closing schools, a strict lockdown and reducing the economic activity, as long as these led to saving lives.

COVID-19 government response in 2020: analysis in the European Union

Vera Pinheiro[1] and Alberto Freitas[2]

[1] CINTESIS — Centre for Health Technology and Services Research, Porto, Portugal

[2] Department of Community Medicine, Information and Health Decision Sciences, Faculty of Medicine, University of Porto

OBJECTIVES: Following the global spread of **COVID-19**, a wide range of responses from governments has taken place worldwide, including in the European Union (**EU**). Common measures are bans on public gatherings, travel restrictions, school closings, emergency investments in healthcare, contact tracing and social welfare, among others. However, great heterogeneity has been observed regarding scope, timing and stringency level. Therefore, the aim of this study was to analyse government response measures in the **EU** and differences between member states, in 2020.

METHODS: **EU** government response measures were analysed through the Oxford **COVID-19** Government Response Tracker indices (Stringency Index, Containment and Health Index, Economic Support Index and Overall Government Response Index; all scored 1-100). Estimates were analysed for the **EU** and each member state, in 2020.

RESULTS: The Stringency, Overall Government Response and Containment and Health indices generally followed the **COVID-19** pandemic progression in 2020 (incidence peak in April-May, decrease in the summer, new increase in the fall and second peak in November-December), for the **EU** and all **EU** member states. However, the Economic Support Index showed different patterns. In the **EU**, the Stringency Index ranged from 1,85 to 96,3 (mean:53,76; **SD**:21,07), the highest mean in Cyprus and

the lowest in Finland. For the Overall Government Response Index, ranging from 1,67 to 83,78 (mean:52; SD:18,36), the highest mean was in Cyprus and the lowest in Estonia. The Containment and Health Index ranged from 1,92 to 84,29 (mean:50,30; SD:17,77), again with Cyprus showing the highest mean and Finland the lowest mean. Finally, the Economic Support Index ranged from 12,50 to 100 (mean:72,56; SD:20,36), with Cyprus having the highest mean, and Germany the lowest.

CONCLUSION: Wide variation in response measures was found across EU countries, in 2020. The Economic Support Index showed quite a different pattern compared to the other indices. Understanding these trends and patterns allows for mutual learning and better preparedness for future pandemics.

Qualidade de vida durante o primeiro confinamento COVID-19

Lara Ferreira[1], Luis Pereira[1], Maria da Fé Brás[2] and Kateryna Ilchuk[3]

[1] Universidade do Algarve/CEISUC/CinTurs

[2] Univerisidade do Algarve

[3] Centro Internacional sobre o Envelhecimento

INTRODUÇÃO: A pandemia COVID-19 espalhou-se rapidamente por todo o mundo, infetando milhões de pessoas e causando milhões de mortes. Principalmente numa fase inicial, quase todos os governos e autoridades de saúde apostaram na prevenção. Assim, entre março e abril de 2020, as autoridades da maioria dos países impuseram um confinamento domiciliário e impuseram medidas de contenção da atividade social em todo o país.

OBJETIVOS: Este estudo teve como objetivo avaliar a qualidade de vida relacionada com a saúde (QVRS) e os níveis de ansiedade da população Portuguesa durante o primeiro confinamento domiciliário. Os resultados foram comparados com a QVRS da população em geral portuguesa antes da pandemia COVID-19. Este trabalho também pretendeu determinar os fatores que podem influenciar a QVRS durante um confinamento domiciliário.

MÉTODOS: Durante o primeiro confinamento domiciliário, uma amostra da população Portuguesa (n = 904) preencheu um questionário online, composto pelo Generalized Anxiety Disorder Seven-item (GAD-7), pelo EQ-5D-5L e por outras questões de caracterização sociodemográfica, sentimentos, deveres e atividades realizadas durante o confinamento. A amostra foi ponderada para ser representativa da população Portuguesa em termos de género, idade e educação. A ansiedade e a QVRS foram analisadas através de estatística descritiva e inferencial. Foram ainda usados modelos lineares generalizados para identificar os fatores que explicam a QVRS durante o primeiro confinamento COVID-19.

RESULTADOS: Os resultados mostraram que os indivíduos em confinamento domiciliário reportaram maior ansiedade e menores níveis de QVRS e que pessoas

com mais ansiedade tendem a ter menor QVRS. As mulheres e os idosos apresentaram os maiores níveis de ansiedade e pior QVRS. A QVRS durante a quarentena pode ser explicada por diversas variáveis ligadas à ocupação durante o confinamento e às atitudes perante a pandemia, bem como por variáveis sociodemográficas.

CONCLUSÕES: Este estudo demonstra que a saúde mental dos indivíduos deve ser levada em consideração durante pandemias ou outras situações de emergência. A ansiedade e outros fatores, em conjunto com as consequências sociais e económicas da pandemia. podem ter um impacto significativo na diminuição da QVRS.

Sessão 5 – The economics of the hospital care workforce: determinants and policies affecting nurses' and doctors' retention (Sessão Organizada)

Stand by me: The impact of the Retention Support Programme on nursing staff retention in the English NHS

Melisa Sayli[1], Giuseppe Moscelli[2], Jo Blanden[2], Chris Bojke[3] and Marco Mello[1]

[1] University of Surrey, UK

[2] University of Surrey, UK; IZA

[3] University of Leeds, UK

BACKGROUND: Nursing staff are a major input for the delivery of hospital care in many healthcare systems. In the English NHS there are approximately 680 thousand professionally qualified clinical staff, with almost 3:1 ratio of nursing staff to doctors. While nursing staff is a significant component of the clinical workforce, English NHS has witnessed increasing leavers rates for nursing staff from 12.3% in 2012/13 to 15% in 2016/17. This has a direct impact on the organisation of work and, indirectly, on patient outcomes that has been highlighted in official policy documents.

OBJECTIVES: A key policy response was the launch in July 2017 of the Retention Direct Support Programme (RDSP) by NHS Improvement (NHSI), which is a governing body responsible in overseeing the NHS Trusts, providing leadership and support to wider NHS. This programme aimed to reduce turnover rates and to improve retention of nursing staff in Acute Trusts and clinical staff in Mental Health Hospital Trusts. The RDSP was rolled out in 5 cohorts at different times, and Trusts were allocated to cohorts based on their past turnover rates and trends. The programme required Hospital Trusts to come up with their own retention strategies in an action plan, which was agreed upon with NHSI. NSHI monitored each Trusts' progress in the 12 months following the start and provided targeted support where needed.

METHODS: We use Electronic Staff Records from 2015 to 2019, and exploit the differential timings of the programme start dates to evaluate the RDSP's effectiveness on nursing retention by implementing recent methodological advances in the difference-in-difference literature with staggered treatment adoption, i.e. Callaway and Sant'Anna (2020) and Sun and Abraham (2020) estimators.

RESULTS: Overall, we find that the programme has improved nursing retention by 0.76 percentage points (pp), i.e. it helped retaining on average 1,660 nurses and midwives who would have left their Trust otherwise, and also that the RDSP had an increasing effect in the 12 months after its launch. Trusts in Cohort 1, having the lowest average retention in the past 5 years, benefited the most from the programme with an average 0.90 pp increase in nurses' retention. Surprisingly, Cohort 4, which had the highest past retention among the treated cohorts, has experienced the second highest improvement in retention by 0.85 pp in 12 months. RDSP improved the retention of Trusts in Cohort 2, but we do not find any significant impact on Trusts allocated to Cohort 3.

CONCLUSIONS: Our findings suggest that non-monetary interventions in the form of support programmes can lead to improvements in hospital workforce retention in English NHS. The RDSP impact might be limited in alleviating the nursing workforce challenge in the long run, but programmes like the RDSP provide viable and sustainable ways to prevent the 'heating' of workforce pressures in publicly healthcare systems.

As long as you engage me: panel data evidence on the effect of staff engagement on workforce retention in the English NHS

Giuseppe Moscelli[1], Melisa Sayli[2] and Marco Mello[2]

[1] University of Surrey, UK; IZA

[2] University of Surrey, UK

BACKGROUND: Over the last decade, the English National Health Service (NHS) has been facing increasing demand pressures coupled with constrained resources, resulting into an ongoing hospital workforce retention crisis. Differently from other businesses or insurance-based healthcare systems, the English NHS works always close to full capacity, and thus high workforce turnovers can be detrimental, both for the staff working life and the care provided to patients. Indeed, the average retention of nurses (doctors) in the same hospital over a one year horizon is 84.68% (85.49 %), i.e. half of the nursing (medical) workforce in a given hospital is completely changed over 4.2 (4.4) years.

OBJECTIVES: It is often suggested that the lack of employee engagement may contribute to high turnover among the clinical workforce, although there is scant evidence to support this hypothesis in the existing literature. Through this study we aim to fill this gap: we investigate the relationship between clinical staff engagement

and their retention, by focusing on doctors and nurses working in English NHS Acute and Mental Health hospitals between 2009 and 2019. While doing so, we investigate also complementarities in clinical staff retention within the same hospital, e.g. how the retention of nurses affects the retention of senior doctors (and vice versa).

METHODS: We construct a panel of English NHS hospitals including rich information on measures of retention and engagement at staff group level (i.e. doctors, nurses) and controls for healthcare provider characteristics (e.g. number of rival hospitals within a fixed radius, workforce age profiles). The measure of workforce retention is the official definition used in the NHS, i.e. stability indices for nurses and doctors computed as the share of individual workers by staff group remaining in their position between two consecutive years. We estimate Blundell&Bond dynamic panel data models and unconditional quantile regression models (with hospital fixed effects) for the yearly hospital workforce retention as a function of NHS senior doctors' and nurses' staff engagement, own and complementary workers group retention in past years.

RESULTS: We find that an increase by a 1 standard deviation (SD) in nurses' engagement results in a 0.72pp increase in their retention (=19.2% of 1 SD of nurses' stability index) within a hospital, while senior doctors' retention is not affected by their own engagement level. However, occupational complementarities matter a lot for senior doctors: an increase by a 1 standard deviation (SD) in previous year within-hospital nurses' stability index results in a 0.50pp increase in doctors' retention (=10% of 1 SD of senior doctors' stability index). Also, the effects of own engagement and occupational complementarities are much more pronounced at lower quantiles of the unconditional workforce retention distribution.

CONCLUSIONS: A feasible strategy to improve the overall hospital workforce retention in hospital care systems like the NHS is focusing first on increasing the engagement of nurses, as the latter has a direct positive effect on their own retention and nurses' retention has positive spillover effects on senior doctors' retention.

Gone with the wind: the impact of the 2016 national contract reform on junior doctors' retention within the English NHS

Marco Mello[1], Giuseppe Moscelli[2], Melisa Sayli[1] and Ioannis Laliotis[3]

[1] University of Surrey, UK

[2] University of Surrey, UK; IZA

[3] City University of London, UK

BACKGROUND AND OBJECTIVES: The haemorrhage of healthcare workers has been posing a serious threat to the provision of hospital care in the English NHS during the last decade. Of particular importance is the loss of in-training Junior Doctors, as they are the future of the NHS medical workforce. In August 2016, the UK government imposed a new contract on NHS Junior Doctors, affecting

both their working conditions and their levels of pay. This contract involved an increase in the basic salary, but also more weekend working hours paid at the standard weekday rate. This resulted in a growing discontent among doctors in training, who considered these terms detrimental to both their economic return and their well-being. This study investigates the impact of the 2016 Junior Doctor Contract (**JDC**) on Junior Doctors' retention in the **NHS**, by means of a Difference-in-Difference (DiD) analysis with heterogeneous treatment intensity.

METHODS: We construct a monthly employee level panel by using **NHS** workforce administrative data (Electronic Staff Records (**ESR**)) from 2009 to 2019. The **ESR** data allow us to observe the employment history of Junior Doctors and whether they leave the **NHS** for longer than 6 months, which is our primary outcome of interest. Because the new contract was imposed to all Junior Doctors employed in the **NHS**, we examine the retention of trainee doctors as a function of their exposure to pre-reform pay variables later affected by the new contract. We define a continuous treatment intensity variable that quantifies the amount of unsocial work at Trust level that each Junior Doctor was exposed to until August 2016. This measure is based on the share of basic salary received by training peers (within the same hospital Trust and at the same career level) as remuneration for anti-social work. Intuitively, this approach identifies Junior Doctors that were more used to weekend working and therefore were reasonably more penalized by the new contractual terms.

RESULTS: We find that the 2016 **JDC** significantly reduced the retention of Junior Doctors who rotated across Trusts where unsocial work was more common. On average, a 10% increase in the ratio between the anti-social supplement pay and the basic salary is associated with a 0.13% increase in the monthly probability of leaving the **NHS** and with a 0.14 increase in the number of monthly employment absences. Furthermore, we show how specialties in which weekend working is ordinary (e.g. A&E, Gynaecology) experienced a greater loss of trainees compared to specialties in which much of the work takes place over a 5-day week (e.g. Psychiatry).

CONCLUSIONS: These findings highlight the relevance of working conditions for the progression in the medical career and the retention of healthcare workers. They are also important for designing future policy interventions and contractual agreements aimed at improving the retention of human capital in the English **NHS** and other publicly funded healthcare systems.

Sessão 6 – Medication Issues

Deprescribing for community-dwelling elderly: A systematic review of economic evaluations

Sónia Romano[1], Débora Figueira[2], Inês Teixeira[2] and Julian Perelman[3]

[1] Centre for Health Evaluation & Research; Escola Nacional de Saúde Pública (ENSP/UNL)

[2] Centre for Health Evaluation & Research (CEFAR/ANF)

[3] Escola Nacional de Saúde Pública (ENSP/UNL); Centro de Investigação em Saúde Pública

BACKGROUND AND OBJECTIVE: Multimorbidity among the elderly represents a serious challenge for health systems. Older people are often exposed to unnecessary or inappropriate medications. Deprescribing is a health professional supervised method to reduce or withdrawal medication that might be causing harm or might no longer be of benefit. Deprescribing interventions have shown positive outcomes, however the economic value of such interventions is uncertain. This study aims to identify and synthetize the economic evidence of deprescribing interventions among community-dwelling elderly.

METHODS: This review followed current guidance for conducting and reporting systematic reviews, including Centre for Reviews and Dissemination of the University of York and **PRISMA** 2020 statement recommendations. The population, intervention, comparator, outcome and study-design (**PICOS**) approach was used to guide the search strategy and evidence synthesis of single studies. Literature was systematically reviewed on the cost and effectiveness of deprescribing interventions in adults aged ≥65 years living in the community. **MEDLINE**, EconLit, Scopus, Web of Science, **CEA-TUFTS**, **CRD** York and Google Scholar databases were searched from inception to February 2021. Grey literature was also explored. Two researchers independently, screened the titles and abstracts, and subsequently the retrieved full-text articles according to inclusion and exclusion criteria. The primary outcome was the incremental cost-effectiveness ratio, converted into 2019 **USD** dollars. Studies' quality was appraised using the extended Consensus on Health Economics Criteria (**CHEC**-extended) checklist.

RESULTS: A total of 6,154 articles were identified, of which 89 were retrieved for full-text review, yielding 14 papers of 13 interventions. Most studies were conducted in Europe (n=9), followed by North America (n=3), South America (n=1), and China (n=1). Deprescribing interventions were classified as educational or as medication reviews, and the majority were delivered within a pharmacist-physician care collaboration. Settings included community pharmacies (n=6), primary care/ outpatient clinics (n=6), and patients' homes (n=1). Economic evaluations were conducted within a time horizon varying from 2 to 12 months. Costs comprised, among others, intervention, medication, primary care, outpatient and inpatient care. Incremental costs ranged from $-2526.74 to $3527.80. Benefits were mostly measured in **QALY**s. Additionally, **LYG**, prevented number of falls, reduction of health-

related complaints, number of **PIP** (potentially inappropriate prescribing) and **MAI** (medication appropriateness index) were also used. Cost-effectiveness ranged from dominant to an incremental cost-effectiveness ratio of $112,932 per **QALY**, a value that according to the country's **WHO** threshold is not cost-effective. Nine studies scored >80% (good) and two scored ≤50% (low) on critical quality appraisal.

DISCUSSION AND CONCLUSIONS: There are few full economic evaluation studies of deprescribing interventions focused on community-dwelling elderly. Although results varied across setting, time horizon, intervention, and population, most were cost-effective, in some cases even dominant, according to the **WHO** threshold. Most cost-effective interventions were rated with high quality. Deprescribing interventions are promising from an economic viewpoint, but more rigorous evaluations at a national and international level, should be developed in order to adopt cost-effective strategies in different settings and countries.

The Phollow cohort: real-world therapeutic adherence to oral anticoagulants in Portugal

Rodrigo Murteira[1], José Pedro Guerreiro[1], Maria Cary[1] and António Teixeira Rodrigues[1]
[1] CEFAR, INFOSAUDE

BACKGROUND AND OBJECTIVE: Therapeutic adherence is of utmost relevance to ensure the effectiveness of medicines and, consequently, the efficiency of investments, providing health gains both for the patient and for the national health system. Notwithstanding, evidence on the patterns of therapeutic adherence in Portugal is scarce. Phollow is a real-world evidence generator based on a cohort of users of community pharmacies. Through this cohort, it is possible to study and characterize patients undergoing treatment with certain drugs of interest. The primary objective of this study was to measure therapeutic adherence and study its determinants in in a real-world setting of patients taking oral anticoagulants (**OAC**s) at 1 year.

METHODS: This is a real-world, retrospective, multicenter, cohort study of adult patients taking **OAC**s originally identified in Portuguese community pharmacies. Patients were recruited to Phollow at the community pharmacies from 24th May to 7th June 2021, and medication data from patients that agreed to participate in the study was retrieved through the dispense software of community pharmacies. The Phollow database contains the data on all prescribed and dispensed medicines at the community pharmacies since the last 3 years prior the recruitment date. Additionally, sociodemographic and clinical characteristics were collected through a telephone-based questionnaire applied to patients after recruitment. Adherence was defined as the proportion of days covered (**PDC**) or the period in which patients had the treatment in their possession and was calculated according to the formula: Total number of prescription days covered for defined drug class of interest / Total number of days in the follow-up period.

Patients were considered adherent if a **PDC** of ≥ 0.8 was achieved. Adherence was calculated at 1-and 2-years. Logistic regression was run to assess variables associated with higher adherence (**PDC** of ≥ 0.8) at 1-year. Model included relevant sociodemographic (age, gender, educational level, employment status, income) and clinical variables (co-morbidities). Results are reported as odds ratios (**OR**).

RESULTS: Up to June 2021, we were able to analyse adherence data to **OAC**s for 50 patients. The median age of patients was 72 years (**IQR**, 65.0-77.0) and 66.0% were male. Overall, the mean adherence rate at 1-year was 68.6% and at 2-year was 77.1%. About 40.0% and 59.4% of patients were adherent after 1- and 2-year of treatments, respectively. No significant adherence predictors were found in the study.

DISCUSSION AND CONCLUSIONS: Suboptimal adherence to **OAC**s was common, however, mean adherence rate increased after 2 years compared to the first one. Only two out of five patients were adherent after 1 year exposed to **OAC** therapy and one-third after 2 years. In this preliminary analysis, the limited sample size decreased the model accuracy. To conclude, Phollow enhances the knowledge about medication use patterns and health outcomes of Portuguese population which are key to support health technologies assessment.

Pharmacoepidemiological study on the use of Growth Hormone therapy in Portuguese Paediatric Patients

Luís Silva Miguel[1], Francisco Lourenço[1], Luísa Prada[1], Bernardete Pinheiro[1], Rita Sousa[1], João Costa[1] and Margarida Borges[1]

[1] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa

OBJECTIVE: Adherence to growth hormone (**GH**) therapy has been reported suboptimal in a large proportion of paediatric patients, which can lead to suboptimal clinical outcomes. We aimed to characterize and to analyse adherence and treatment duration with **GH** therapy, through National Health Service (**NHS**) Hospital electronic prescription databases.

METHODS: This was a study based on data from electronic prescription databases of 9 **NHS** Hospitals, in the period from 2011 to 2020. We included patients under 18 years and with at least one dispensed prescription registry of **GH** therapy. For adherence and treatment duration analysis, we selected data from newly treated patients (index prescription registry date defined as the first dispensed prescription registry three months after the start of each Hospital database). Good adherence was defined as continuous measure of adherence (**CMA**) of ≥ 80% and sub-optimal adherence as **CMA** < 80%. Treatment duration was estimated using Kaplan-Meier survival curves.

RESULTS: Overall, 1.272 patients were included (male 62%). Average age at their first dispensed prescription registry was 10,5 years. Across newly medicated

patients (n=738), average treatment duration was 5 years (a minimum of 1 month on GH therapy and a maximum of approximately 9 years). 53% of the entire population presented a CMA of ≥ 80%. Those not achieving the 80% landmark also had a relatively high CMA, with the populational average achieving 79%. CMA increased over the years (CMA was 71% after 1 year of treatment, 79% after 3 years and 93% after 9 years). Kaplan Meier analysis curve showed that 11,3% of patients will remain on treatment for 9 years.

CONCLUSIONS: This study provided real-world adherence to GH therapy estimate in a Portuguese paediatric population. About half of the children presented a good adherence to treatment. Adherence increased with therapy duration, attaining 93% after 9 years of treatment.

High antidepressant therapy prescription, do psychologists help? — Evidence from Portugal

Joana Pestana[1] and Francisca Vargas Lopes[2]

[1] Nova School of Business and Economics

[2] Erasmus Medical Center

Depressive disorders are one of the leading causes of ill health and disability globally, and are commonly treated in primary health care (PHC). Two effective treatment options are available for family physicians treating adult patients with mild or moderate depression: pharmacological treatment with antidepressants and psychotherapy (e.g. behavioural, cognitive, psychodynamic). These options can be used as substitutes or in a complementary way. In Portugal, despite depression being the third most common disease in PHC, the implementation of psychology services in this setting has been slow. While the low supply pf psychotherapy might be one aspect impacting the treatment choices for depression in PHC, other aspects include the fact that family physicians work close to their maximum capacity and that Portugal has a 'strong tradition' in prescribing pharmacological treatment for depression and anxiety disorders. In 2011 the country had the highest overall utilization of antidepressants and anxiolytics, hypnotics, and sedatives, among 14 European countries. The objective of this study is to assess the variation in antidepressants´ prescription among family physicians in Portugal, and whether increasing availability of psychologists in PHC is associated with changes prescription, most likely by increasing the supply of psychotherapy. We link data on the prescription of antidepressants to patients with depression by all the portuguese family physicians in the national health system (2015 to 2018, N=5725) with information on the density of psychologists and specialized nurses in the local PHC shared services (N=55). First, we study the influence of local practices in the variation of physicians prescription behavior. We apply multilevel modelling, which explores the clustering of physicians in PHC practices which are part of larger local groups where psychologists are based (shared services unit). We then use linear panel data models to study the relationship between prescription and supply of psychotherapy

in the local group, adjusting for the patients and area conditions. Between 2015 and 2018, there were on average 3.6 psychologists and 1.2 specialized nurses per PHC shared services unit, corresponding to an average of 2 psychologists and 0.6 nurses per 100 000 patients. There is considerable geographical and temporal variation in the PHC mental health services coverage, as some areas had up to 7 psychologists and 3 nurses per 100 000 patients and others none. Overall, one in four adult patients with depression is prescribed antidepressant drug therapy by his physician. The intraclass correlation coefficients for the primary care practice level and the local group level (0.48 and 0.14, respectively) indicate that the risk-adjusted share of patients with antidepressant drug therapy is somewhat correlated within the local group but more similar within the same practice. Regarding the supply of mental health professionals, preliminary results show a modest negative association between the number of psychologists and mental health nurses and the share of patients taking antidepressants. The modest reduction in prescription associated with local mental health may be indicative of a limited number of family physicians being at the margin of substituting drug therapy with psychotherapy; but may also suggest that psychotherapy resources are not used or are used in a complementary way, either due to physician/patient preference or due to disease severity. Additionally, our descriptive results show considerable variation in the prescription of antidepressants by Portugueses family physicians and overall low numbers of psychologists and specialized mental health nurses available in PHC. These findings have important implications in the context of the high prevalence of psychiatric disorders in Portugal, which is likely to have increased with the recent COVID-19 pandemic.

Sessão 7 – COVID-19 and the health system

Learning and congestion in the treatment of COVID-19: the first year of the Portuguese NHS

Pedro Pita Barros[1]

[1] Nova School of Business and Economics

OBJECTIVES: The COVID-19 pandemic stressed health systems. Health systems had to absorb and learn from the shock. The first wave started in March 2020 and it was a completely new situation. Later waves, after the Summer and at the start of 2021, may have benefit from the learning meanwhile occurred. Still, the second and particularly the third wave of COVID-19 have been quite stronger, in their pressure on health systems, than the first one. We address here the impact on mortality from COVID-19, trying to untangle learning effects over time (mean that better outcomes should be expected for the same conditions) from higher pressure on the health system (leading to lower outcomes due to congestion in health services).

METHODS: Using (anonymized) microdata from the Portuguese National Health Service, determinants of mortality were identified through a probit model. The

relevant factors included individual characteristics (such as age and comorbidities). In addition, we consider the pressure faced by the health system at the moment of symptoms, measured by number of patients in ICU (moving average over a week ending in the first day of symptoms). To allow for a more general characterization of health system pressure, discrete periods of time, corresponding to each of the waves, and the to peaks of pressure (defined in two different ways, ICU beds occupied above 245 country-wide, one the Government "red lines" during the pandemic management, and ICU beds occupied above 500, which is half of the peak registered in the data).

RESULTS: The results on co-morbidities, age and gender, produce the expected
RESULTS: More interesting are the results of the (average) effects during the three waves. The first wave, when no prior knowledge existed, was the one with worst outcomes (in the sense of higher probability of death), followed by the third and second waves respectively. Mortality outside the waves time periods was the lowest. The effects were more pronounced for older patients. This points out to existence of learning effects (performance difference between the probability of death in wave 1 and no-wave periods), but also to congestion costs taking place during waves 2 and wave 3 that almost compensated the learning effects. High pressure periods were associated with higher probability of death, holding individuals characteristics constant. The analysis was carried out at the aggregate level, and it will certainly be valuable to understand how each institution performed during this period, in particular hospitals. Note that our data includes all patients from COVID-19, meaning that both patients followed at primary care units and patients hospitalized are included.

CONCLUSIONS: Learning effects on treatment of COVID-19 existed throughout 2020 and 2021. Still, during the high-pressure peaks of waves 2 and 3, these learning effects were almost completely offset by the congestion costs on the health system.

Necessidades de cuidados de saúde não satisfeitas na primeira vaga da pandemia, em Portugal

Carlota Quintal[1], Óscar Lourenço[1], Luis Moura Ramos[1] and Micaela Antunes[1]
[1] Universidade de Coimbra, FEUC, CeBER

OBJETIVOS: Durante a pandemia por COVID-19 foram cancelados inúmeros cuidados de saúde planeados e os próprios utentes deixaram de comparecer às suas marcações, sobretudo por receio de serem infetados. Este contexto revelou-se particularmente propício ao surgimento de necessidades de cuidados de saúde não satisfeitas (NNS), com a agravante das medidas de mitigação da pandemia afetarem desproporcionalmente grupos já vulneráveis a NNS. Dada a ligação já estabelecida entre NNS e a consequente deterioração do estado de saúde dos indivíduos, torna-se pertinente fazer uma avaliação do que aconteceu durante a pandemia. Os objetivos deste trabalho são analisar a prevalência e a distribuição das NNS em Portugal no primeiro semestre de 2020.

MÉTODOS: Os dados provêm do Survey of Health, Ageing and Retirement in Europe (**SHARE COVID-19**). Foram inquiridos 1 118 portugueses com 50 ou mais anos, entre 11 de junho e 10 de agosto de 2020, sobre **NNS**. Os motivos podiam ser: i) receio de ser infetado (**NNS**-Receio); ii) cancelamento por parte do médico/serviços de saúde; iii) solicitação de consulta não atendida. Para cada uma das **NNS** identificadas, os indivíduos foram inquiridos acerca do tipo de cuidado médico cuja necessidade não foi satisfeita. Estimamos a prevalência de **NNS**, global e em função de variáveis diversas que refletem o nível socioeconómico dos indivíduos e o seu estado de saúde. Para analisar a distribuição das **NNS** recorremos aos índices de concentração.

RESULTADOS: Em Portugal a prevalência das **NNS** em termos globais foi de aproximadamente 60% (a média dos 27 países incluídos no **SHARE COVID-19** foi 33%). O motivo mais frequente para **NNS** foi a desmarcação de consultas e tratamentos por parte dos médicos ou dos serviços de saúde. Em cada uma das categorias de **NNS** estudadas, os valores mais elevados dizem respeito às consultas de medicina geral e familiar, seguido das consultas de outras especialidades hospitalares, incluindo dentistas. A diferente prevalência entre homens e mulheres não é estatisticamente significativa exceto no caso de **NNS**-Receio, onde a prevalência é maior nas mulheres. A análise por classes etárias não revela diferenças significativas. As **NNS** são mais elevadas no tercil de rendimento mais baixo, não havendo diferenças por nível de escolaridade (as **NNS**-Receio são, contudo, mais altas para ensino secundário e rendimento mais alto). As **NNS** são também mais altas em indivíduos com pior estado de saúde autoavaliado e com multimorbilidade. Os índices de concentração obtidos para **NNS**-Receio são positivos, indiciando a sua concentração nos indivíduos de maior rendimento/nível escolaridade e melhor estado de saúde. No caso de cancelamentos, não há evidência de desigualdades por nível de escolaridade, mas os resultados sugerem a concentração destas **NNS** nos indivíduos de mais baixo rendimento e pior estado de saúde. Por fim, no caso de solicitação de cuidados de saúde não atendida, os índices são todos negativos e significativos (concentração das **NNS** nos indivíduos com condições mais desfavoráveis).

CONCLUSÕES: A pandemia trouxe níveis de **NNS** sem precedentes por toda a Europa. Portugal apresenta habitualmente níveis de **NNS** superiores à média europeia, mas não com a magnitude encontrada neste estudo. Além do impacto direto e imediato que a pandemia teve na morbilidade e mortalidade da população, a quebra da atividade assistencial dos serviços de saúde poderá vir a causar graves consequências na saúde dos indivíduos. Um outro efeito indireto da pandemia sobre **NNS** poderá emergir do agravamento das desigualdades sociais, penalizando aqueles grupos da população que por norma já estão mais expostos a **NNS**. É deste modo crucial dar atenção no futuro próximo a quem descontinuou os seus contactos com os serviços de saúde, nomeadamente doentes crónicos, e no geral aos utentes de baixo estatuto socioeconómico.

Impact of transferring the dispensing of hospital-only medicines to community pharmacies during COVID-19 pandemic: A single-arm, before-and-after study

Rodrigo Murteira[1], Sónia Romano[2], Inês Teixeira[2], Heloísa Galante[2], Carolina Bulhosa[2], Sérgio Sousa[2] and António Teixeira Rodrigues[2]

[1] CEFAR, INFOSAUDE

[2] Centro de Estudos e Avaliação em Saúde (CEFAR), Infosaúde, Associação Nacional das Farmácias

OBJECTIVES: Ensuring the continuing of care is an imperative need. Throughout **COVID-19** outbreak, the Portuguese Government released directives to be possible for patients to receive their hospital-only medicines in community pharmacies. This initiative was a nation-wide response to the pandemic, promoting the safety of the patients and containment of disease transmission, along with the continuing of care. This study aimed to measure the value generated by the community pharmacy when dispensing hospital-only medicines.

METHODS: A single-arm, before-and-after study with 3-month follow-up, was carried out in Portugal, enrolling a randomly selected sample of patients/caregivers with at least one dispensation of a hospital-only medicine through the community pharmacy. Data was collected from May 15th to October 10th, 2020, through structured questionnaires applied by telephone interview at baseline and 3-month follow-up. Main outcomes were access to medicines, therapeutic adherence (**MAT**-7), health-related quality-of-life (**EQ**-5D-3L), satisfaction with the service, travel and waiting time, absenteeism, and related costs to patients. Costs of transportation and absenteeism were estimated considered the national transportation tariffs and the average wage for men and women. Extrapolation of total costs was conducted for patients who had received at least one hospital-only medicine in the community pharmacy by the end of the study period.

RESULTS: A total of 603 patients/caregivers accepted to participate in the study. The mean age was 55 years old (**SD**=16) and 50.6% were male. The most prevalent therapeutic areas included **HIV** (25.2%), and Oncology (20.6%). Transferring the local of dispense was associated with an increase in the mean score of adherence to therapy ($p<0.05$). There were no statistically significant changes in the mean **EQ**-5D-3L score. Concerning patient experience measures, participants reported an increase of satisfaction levels with the dispensing service at the community pharmacy, when compared to hospital pharmacy. This increase was statistically significant in all the evaluated domains – pharmacist's availability, opening hours, waiting time, privacy conditions and overall experience. Regarding access, there was a reduction in absenteeism, with 27.6% of respondents reporting missing at least half a day from work to get their medication at the hospital, compared with 0.4% at the community pharmacy. On average, the estimated time gained with the community pharmacy service was 115.1 minutes per visit compared to hospital. Annual savings estimated from travel expenses (€237.6) and absenteeism reduction (€67.4) account for total 271.6€/patient. About 4.2 million euros of savings were estimated for the 15,441

patients who received their hospital-only medicines in the community pharmacy through this initiative. Overall, 91% of participants prefer to continue to have access to their medication at the community pharmacy, in post-pandemic scenario.

CONCLUSIONS: Changing the dispense setting to the community pharmacies seems to promote better access, health outcomes, and a better experience for patients. Moreover, it ensures the persistence of treatments, promotes savings for patients and society, and reduces the burden of health care services, representing a crucial public health measure. This study suggests the importance to consider the overall gains generated by community pharmacies, with proper articulation with the reference hospitals.

Sessão 8 – Acute Care I

What to expect when you're expecting? Probit analysis of childbirth in Portugal

Ana Ditter[1]

[1] Nova School of Business and Economics

OBJECTIVE: Evaluate caesarean section (CS) probabilities in response to reduction policies.
SETTING: Births occurring in Portugal (2007 & 2019).
METHODS: Probit model analysis of delivery mode, including diagnostics and hospital characteristics.

RESULTS: Overall reduction in CS and CS probability. Higher probabilities but greater reduction amongst planned, hypertensive, pre-term, diabetic mothers (descending order). No significant difference in policy response in multiple gestation, obese, post-term, and different age mothers. University status decreases slightly the probability of CS. High & low caseload hospitals have greater variability in CS utilisation.

CONCLUSIONS: Excessive use varies between diagnostic groups, reductions in CS utilisation is not uniform. Whilst the provision (or not) of healthcare is one matter, the ethical, medically advisable, or efficient provision of healthcare is another. The purpose of outcomes-based healthcare is to quantify the benefits of procedures, in order to justify their use or address any misuse. The rate of caesarean sections (herby defined as CS) is often discussed as a quality issue in healthcare. In 1985 the (WHO 1985) stated that "there is no justification for any region to have a caesarean rate higher than 10-15%.". In 2015, WHO research suggested that as CS rates increase up to a threshold of 10% there is a decrease in infant mortality, any increase beyond this threshold does not decrease infant mortality (WHO 2015). From a purely economic perspective, overuse of healthcare procedures is a direct threat to health care quality and a form of technical and allocative inefficiency (Akazili

et al. 2008). Portugal, hovering around 30%, has one of the highest rates of **CS** in Europe (Declercq et al. 2011). Incentives and strategies to decrease its use have been implemented both on a national (Ayres-De-Campos et al. 2015) and more targeted level (Gonçalves et al. 2014). The steady increase in **CS** rates was reversed after 2009 (Ayres-De-Campos et al. 2015), however whilst progress has been made, rates are still much higher than most of our European counterparts and well beyond the aforementioned **WHO** 10-15% threshold (Euro-Peristat Project 2018). This research looks at the evolution of **CS** in Portuguese hospitals between 2007 and 2019. We answer the following research question: What to expect when you're expecting? — has the quality of practice (measured via **CS** usage) improved over time, taking into account the changing profile of risk factors (age, maternal & obstetric) and hospital characteristics. We attempt to see where there is a response to policy and where more can be done. This project utilizes data from the Portuguese Administração Central do Sistema de Saúde (**ACSS**) and employs a probit specification of the binary response model estimated via **MLE** with Python. Our analysis finds a decrease in **CS** usage in Portuguese hospitals that cannot be attributed solely to changes in the age profile of mothers or the prevalence of investigated clinical risk factors. Our models conclude that the reduction can be attributed to successful healthcare practice & policy changes, and that the magnitude varied between women with or without various risk factors and attending different hospitals. Against our expectations, the trend in **CS** probability was near equivalent amongst women of different ages, showing treatment practises in older or younger women responded to policy changes equally. Our literature review identifies maternal, obstetric and hospital characteristics that are reported to affect **CS**. We investigate **CS** usage over time, taking into account the aforementioned factors, using descriptive statistics and probability changes via probit models with marginal effects. Our discussion finds an overall decrease in the probability of delivering via **CS**, with some risk factors having higher probabilities but seeing greater decreases over the time studied.

Master surgery scheduling in operating rooms: comparing static and flexible approaches

Mariana Oliveira[1], Filippo Visintin[2], Daniel Santos[3] and Inês Marques[3]

[1] Instituto Superior Técnico (Universidade de Lisboa)

[2] University of Florence

[3] Instituto Superior Técnico (Universidade de Lisboa)

OBJECTIVES: As operating rooms represent the center of costs and revenues of a hospital, managers are forced to increase efficiency of their management processes. Generally, operating room planning and scheduling involves three levels of sequential decisions at the strategic, tactical and operational levels. To comply with waiting time targets and avoid negative consequences to patients, available operating room time must be carefully assigned to different surgical specialties. An optimal allocation allows hospitals to properly deal with surgical demand and improve utilization of capacity. Thus, this research

aimed at proposing an original framework to generate dynamic master surgery schedules in long planning horizons with the following OBJECTIVES: coping with fluctuations in surgical demand by assigning more operating room time to specialties with longer waiting lists, allowing better management of master surgery schedules disruptions and personal agendas of surgical staff, and assessing impact of the proposed framework on waiting list performance.

METHODS: Operating room planning literature overlooks flexibility issues, demand dynamics and assessment of impact of models. This work proposes a combination of optimization and simulation approaches to generate master surgery schedules by dealing with strategic and tactical decisions of operating rooms. Waiting lists, expected surgery duration and staff availability information are used as input for the optimization model, which produces an optimal master surgery schedule. The obtained scheduled is then used as an input for the simulation model, which forecasts demand patterns and assesses the impact of allowing some flexibility and following dynamic demands in the optimization model on waiting time, tardiness and throughput. Based on this framework, we compare three different scenarios: static long-term, flexible long-term and flexible rolling horizon. A static long-term approach corresponds to a fixed weekly cyclic schedule over the course of one year, while the flexible long-term solution allows weekly changes in the schedule to cope with variability in demand and staff availability. Finally, the flexible rolling horizon approach generates master surgery schedules within a 1-week planning horizon.

RESULTS: The models were implemented to the operating rooms of Hospital Espírito Santo de Évora. Comparing the static and flexible long-term approaches, we concluded that allowing weekly and monthly changes in the master surgery schedules leads to a reduction of waiting time and tardiness. Moreover, despite the reduced complexity and increased stability for workers, the static approach results in lower throughput. The flexible long-term approach implies higher workload variability; however, it allows the assignment of more operating room time to specialties with longer waiting lists. By comparing long-term and rolling horizon flexible approaches, we concluded that the rolling horizon approach can improve throughput, waiting time and tardiness. Our study also showed that, for higher levels of uncertainty, the results of all approaches tend to deteriorate, namely the advantage of the flexible long-term solution over the static one. Furthermore, we also compared our results with real data from the collaborating hospital and determined that any of the three proposed approaches outperform the real waiting list performance indicators.

CONCLUSIONS: Flexible approaches to generate master surgery schedules are able to assign more operating room time to the surgical specialties with higher demand, balancing the waiting lists and promoting equity in access for elective patients. Future work can include cost modelling.

Transplantes renais intervivos e falecidos no Brasil: uma análise a partir de vetores autoregressivos

Tallys Kalynka Feldens[1], Paulo de Andrade Jacinto[1] and Victor Rodrigues de Oliveira[1]

[1] UFPR — Universidade Federal do Paraná

OBJETIVOS: A fila de espera por um transplante renal no Brasil pode chegar a três anos e meio. Na tentativa de não precisar aguardar um longo tempo, muitos pacientes se submetem à doação de paciente vivo que, pela lei brasileira, é possível com a doação de um parente até 4º grau. Contudo, há incentivos e desincentivos a esse tipo de doação. A literatura internacional identificou que existe uma relação de interdependência entre ambas as doações ao longo do tempo. Para o Brasil, não há evidências empíricas mostrando de forma explícita essa relação de substituição entre doadores vivos e falecidos com a lista de espera renal. Ao considerar que o país possui o maior sistema público e gratuito de transplantes no mundo, se faz necessário ter evidências a respeito dessa relação entre os diferentes tipos de doadores. A partir dessas considerações, o objetivo deste trabalho é explorar a relação entre doadores vivos e doadores falecidos para o caso brasileiro, procurando verificar se o efeito observado na literatura internacional também se apresenta para o Brasil.

MÉTODOS: A dinâmica interdependente entre as séries de tempo de doação de órgãos é potencialmente endógena. Por isso, são utilizados dados da Associação Brasileira de Transplantes de Órgãos (**ABTO**) para o período de 2012 a 2019; bem como o modelo de Vetores Autoregressivos (**VAR**) para estimar funções de impulso-resposta, utilizando a abordagem clássica de Lutkepohl (2005) e Enders (2015). Adicionalmente, realiza-se uma estimativa através de projeções locais. Esta estimativa emprega técnicas não paramétricas e o estimador não é restringido pela suposição de invertibilidade, o que permite que o procedimento seja calculado quando a representação de vetores de média móvel não existe. Com isso é possível capturar a dinâmica nas séries de tempo de doações de doadores vivos, falecidos e na lista de espera.

RESULTADOS: Foi encontrado um efeito substituição entre doadores vivos e falecidos, em que a presença de um choque aumentando os doadores falecidos pode estar associado a uma diminuição de curto prazo de até 8% nos doadores vivos. Choques na forma de aumentos na lista de espera estão relacionados a aumentos súbitos de doadores renais vivos, na faixa de 5,7%, por mais ou menos um trimestre. Estes aumentos em lista de espera também estão ligados a aumento da oferta de doadores falecidos, alcançando 3,3% em um semestre. Por fim, choques exógenos de aumento de doadores falecidos causam aumentos na lista de espera de até 3,6% nos primeiros seis meses pós-choque.

CONCLUSÕES: No caso específico da doação de órgãos, nossos resultados estão alinhados aos achados da literatura internacional (Howard, 2011; Beard et al., 2012; Fernandez et al., 2013; Dickert-Conlin et al., 2019). Acreditamos que este efeito substituição seja explicado por alguns fatores. Primeiramente, a doação de pacientes vivos, mesmo que mais barata em termos de custos cirúrgicos e mais custo efetiva em

termos de sobrevivência do receptor, não é isenta de custos pessoais para o doador. O doador vivo enfrenta riscos durante a cirurgia, um período de recuperação pós-cirúrgico, e cuidados frequentes com a saúde a partir deste momento. Tais custos atuam como desestímulo à doação intervivos, que, por esta razão, podem ser vistas como segunda melhor opção, atrás da doação cadavérica. Assim, a cada choque de oferta de rins de pacientes falecidos, podemos esperar que alguns doadores vivos deixarão de doar. Reconhecer que após cada choque existe uma contínua mudança de incentivos aos envolvidos no processo é essencial para desenhar e promover políticas públicas de doação e transplante de órgãos. Assim, entender o processo de doação e transplante de órgãos vai além de simplesmente analisar qual forma de doação é mais barata ou mais custo efetiva. Analisar este tema é entender como todo o sistema responde, e considerar que ao estimular uma forma de doação, os efeitos atuam inegavelmente sobre as demais variáveis ao longo do tempo.

Is Faster Better? Treatment delay and patient's outcome in hip fracture surgery

Francesca Cassanelli[1]

[1] University of Bologna

OBJECTIVE: In the health care sector, providing timely treatment is particularly valuable. Based on patient conditions, waiting in queue to be treated may be dangerous for health, beyond annoying. In this situation, the role of physicians is of primary importance for prioritizing more severe patients over those who can wait longer. This study seeks to identify the effect of in-hospital Length To Treatment (**LTT**) on health outcomes for patients with a diagnosis of hip fracture. According to the medical literature, treating patients within two days from hospital admission significantly reduces mortality. Weekly fluctuations in the availability of resources, such as levels of medical staff or the number of functioning operating theaters, affect **LTT**. Failing to account for these variables causes **LTT** to be endogenous. However, the problem of endogeneity of patient delay has been largely neglected.

METHODS: An instrumental variable approach is exploited, to solve the endogeneity issue. The time of admission – the day of the week – is used as an instrument for **LTT**.

RESULTS: Under the exogeneity assumption, **LTT** is found to have a positive and significant impact on mortality. However, findings indicate that when endogeneity is accounted for, the effect of length to treatment on mortality is not statistically significant. Findings are robust to several different specifications.

CONCLUSIONS: Evidence may be explained by the fact that even though patients admitted on Friday or Saturday have on average longer **LTT**, patients who are delayed the most are those who can wait longer, suggesting an effective prioritization scheme implemented by surgeons.

Sessão 9 – Healthcare Costs I

The cost-analysis of digitizing the care process in a nursing home: a pilot study

Francisco von Hafe[1], Salomé Azevedo[1] and Ana Rita Londral[1]
[1] Value for Health CoLAB, NOVA Medical School, Lisbon, Portugal

OBJECTIVES: To minimize the risk of COVID-19 contamination, many population groups isolated at nursing homes have limited access to symptoms monitoring and healthcare. This intervention consisted of developing and implementing a digital health solution for an elderly population at higher risk for COVID-19 infection, in isolation, to monitor their health status. This study compares the costs for the nursing home (the care provider) in implementing the digital health solution with costs of standard care and provides initial insights into the cost for the healthcare provider of using a digital health solution.

METHODS: Intervention. The digital health solution consists of a telecare service that allows remote monitoring of elderly residents. It includes a set of devices: a sphygmomanometer, thermometer, glucose meter, and oximeter for measuring, among others, vital signs. As well as a tablet to access a platform (app) for managing the user's daily health and well-being, and assessing their level of satisfaction, experience, and use of the service. Setting and study design. This study was conducted during one month in a nursing home located in Cascais, Portugal. We used the Time-Driven Activity-Based Costing (TDABC) methodology to compare the costs of the care pathway when using the digital health solution or when providing the standard care. Ten residents were selected by the nursing home director to participate in the study. Data before-and-after the study was used to compare the costs of the intervention with those of standard care. TDABC implementation. The implementation of the TDABC method was based on the seven-step framework proposed by Kaplan and Anderson. First, we developed the process map of the patient pathway for standard care and the care using the digital health solution, both including the allocation of the resources used. Due to COVID-19 restrictions, it was not possible to directly observe the patient pathway so, we conducted virtual meetings with the nursing home director to design them. Second, we obtained the time estimates for each process. For the standard care pathway, the nursing home director provided the duration of each operation. For the digitized one, we also used time information from the app. Third, we estimated the costs of supplying human resources, equipment, consumables, and space resources. The cost information was provided by the nursing home director. The costs of the telecare devices and service were provided by their suppliers. Then, we estimated the capacity of each resource and calculated their capacity cost rate (€/min). Finally, we computed the total cost of each patient pathway.

RESULTS: In the cost analysis that we are still conducting, we expect to observe the total pathway cost to increase, as the telecare service includes a new set of devices. In addition, we also expect some activities to last longer when compared with the same activity conducted when providing standard care. Hence, resources must devote more time to the patient pathway, contributing to a cost increase. We predict that in both standard care or when using the digital health solution, the most expensive resource will be the employees, as is stated in the literature. Overall, we expect the digital intervention to be more costly and time-consuming than the standard care one when using the nursing home cost perspective.

CONCLUSIONS: According to the literature, **TDABC** can be used to identify high-cost/high-variability processes that can be targeted for process improvement. Focusing on the standard care results of this study, when combined with outcomes, can be used by the nursing home management staff to reallocate resources in the care pathway, reduce unused resources capacity, and increase efficiency. Regarding the telecare service, the combination of the results of this cost analysis with relevant outcomes can be used to decide on whether the telecare service should be implemented in the nursing home or not.

A criação de um standard de mensuração da Consulta de Enfermagem Hospitalar – Estudo de caso no Centro Hospitalar Oeste, EPE

Sónia Penas[1] and Sandra Oliveira[2]

[1] Centro Hospitalar Oeste, EPE

[2] Depart. Ciências Sociais Organiz., Inst. Politécnico de Santarém; Centro Estudos e Invest. em Saúde, Univ. de Coimbra

OBJETIVOS: O estudo visa numa primeira etapa definir um standard de mensuração dos cuidados de enfermagem prestados no âmbito de quatro consultas de enfermagem do Centro Hospitalar do Oeste – Unidade de Caldas da Rainha, tendo como suporte a metodologia Time-Driven Activity-Based Costing (**TDABC**), para numa segunda fase alavancar o desenvolvimento de um processo de avaliação da perceção do utente sobre os resultados obtidos e a respetiva criação de valor.

MÉTODOS: Para a concretização dos objetivos identificados foram selecionadas 4 consultas de enfermagem: médico-cirúrgica/tratamentos, de ortopedia/tratamentos, de estomaterapia e de imuno-alergologia. O processo de recolha de dados ocorreu entre o dia 4 fevereiro e 2 junho de 2021, tendo sido observadas 93 consultas. Este valor foi determinado através de uma proporcionalidade entre o número de consultas efetuadas e o número de observações por especialidade. A execução do processo de enfermagem consiste, de forma resumida, numa avaliação de situação clínica, definição de diagnósticos, intervenção e avaliação, tendo como base atividades autónomas. Para a conceção do standard de mensuração utilizou-se a metodologia **TDABC** definida por Kaplan & Porter (2011). Para o efeito procedeu-se:

1)à definição da cadeia de valor de cada uma das consultas, 2)análise dos processos (recursos humanos e materiais), 3)conceção de grelhas de observação para os procedimentos realizados e respetiva mensuração dos tempos necessários para a sua concretização, 4)criação dos fluxogramas com a informação recolhida, 5)cálculo do tempo efetivo de trabalho do enfermeiro assim como o dos seus honorários.

RESULTADOS: O processo desenvolvido, até agora, possibilitou uma análise profunda sobre as várias dimensões das consultas de enfermagem, tendo sido particularmente interessante a concretização das cadeias de valor de cada consulta e a criação de fluxogramas de procedimentos. Foi criado um desenho de cadeia de valor com 4 etapas: avaliação/diagnóstico; intervenção/recuperação; capacitação e alta, onde a particularidade de cada consulta se evidencia nas atividades definidas para os diferentes estágios. Os fluxogramas são particularizados à consulta em causa permitindo a compreensão sobre o modo como são realizadas, traduzindo através dos diversos procedimentos, as cadeias de valor e a mensuração temporal dos mesmos. A concretização desta metodologia proporcionou a determinação do custo/minuto para os procedimentos de enfermagem nas diversas consultas em análise tendo-se este cifrado em 0,31€/min. Contudo, o custo do trabalho desenvolvido pelo enfermeiro é variável de acordo com os procedimentos executados e o tempo utilizado em cada consulta. Do levantamento efetuado verificou-se que a Consulta de Enfermagem de Estomaterapia tem o valor mais elevado de custo com 13,67€ (duração média de 44:06 min) e a Consulta de Enfermagem Ortopedia/tratamentos o valor mais reduzido com 6,69€ (duração média de 21:35min). A diferença entre os valores encontra justificação na unicidade do utente. Para o efeito verificou-se que a consulta de estomaterapia tem grande enfoque nos processos de ensino e instrução, estando reunido nesta situação grande parte do tempo despendido. Por outro lado, a consulta de ortopedia/tratamento tem o seu foco no desenvolvimento de processos tratamento. Num contraponto direto verifica-se que o tempo necessário para o ensino e instrução é substancialmente superior ao utilizado na execução de um tratamento.

CONCLUSÕES: Este estudo permitiu o desenvolvimento de um conjunto de processos de apreciação das consultas de enfermagem hospitalar, o que se traduz na criação de um standard de mensuração para cada uma das consultas em análise. A materialização desta etapa constitui-se, ainda, como a génese do processo de determinação da criação de valor sobre o trabalho desenvolvido neste contexto, assim como fonte de sensibilização para a instauração de uma cultura de gestão baseada na criação de valor.

Health care costs associated with Developmental Coordination Disorder in children: a longitudinal register-based cost comparison study

Tengiz Samkharadze[1], Isak Persson[1], Kine Johansen[1], Jonas Lundkvist[1], Richard Ssegonja[1] and Filipa Sampaio[1]

[1] Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden

OBJECTIVES: Developmental Coordination Disorder (**DCD**) is a lifelong motor skills disorder that affects 5-6% of school-age children. **DCD** occurs when a delay in the development of motor skills or difficulty coordinating movements, results in a child being unable to perform common, everyday tasks. In 30-70% of cases, **DCD** persists into adulthood. Very little has been done on the socioeconomic impact of **DCD**. This study investigated the additional health care costs related to **DCD**, over a period of 25 years, from a health care perspective.

METHODS: This study was based on a cohort of neonatal intensive care recipients, followed since the late 1980s. 185 individuals were assessed for the presence of **DCD** at age 6.5 years and were included in the study. 46 of these had **DCD** and were compared with 139 with motor deficit/delay or typical development. Data on health care use were retrieved from the Swedish National Patient and Drug Prescription Registries. Costs were estimated using a) a mixed costing approach based on Diagnosis Related Group weights and mean costs from the Swedish cost per patient database (**CPP**), and b) a single costing approach, using only mean costs from the **CPP**. Additionally, the impact of **DCD** on cumulative mean health care costs was assessed with generalized linear models (**GLM**). Models were adjusted for sex, gestational age, total number of diagnosis considered to increase risk for motor problems during the first year of life and number of health care days during the first year of life.

RESULTS: Cumulative health care costs did not differ between the groups. In the mixed costing approach, cumulative mean total health care costs for the **DCD**-group were 16,410 **EUR** and for no-**DCD** group, 14,681 **EUR**. Incremental mean total health care costs were 1,728 **EUR** (p=0.68) for the unadjusted model and 431 **EUR** (p=0.50) for the adjusted model. In the single costing approach, cumulative mean total health care costs were 15,240 **EUR** for the **DCD**-group and 14,716 **EUR** for the no-**DCD** group. Incremental mean total health care costs were 525 **EUR** (p =0.88) for the unadjusted model and 364 **EUR** (p=0.66) for the adjusted model. 95% **CI**s reflected high uncertainty in estimates.

CONCLUSION: Individuals with **DCD** are more costly to the healthcare system compared with individuals without **DCD**, although there was no statistical significance to support this finding. Although there could be a true non-existing difference in cost, a few limitations could be behind this finding, including the small sample size, the lack of other resources such as primary health care data, and the fact that this was a high-risk population. Further studies are needed to explore the impact of **DCD** on health care costs.

Patient Preferences and Willingness-to-Accept a Collaborative Care Intervention Model in Hypertension and Hyperlipidemia Management between Pharmacies and Primary Care in Portugal: A Discrete Choice Experiment Alongside a Trial (USFarmácia)

Suzete Costa[1], José Pedro Guerreiro[2], Inês Teixeira[2], Dennis Helling[3], Céu Mateus[4] and João Pereira[1]

[1] Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa

[2] Centro de Estudos e Avaliação em Saúde (CEFAR), Infosaúde, Associação Nacional das Farmácias

[3] Skaggs School of Pharmacy and Pharmaceutical Sciences, University of Colorado

[4] Lancaster University Division of Health Research

OBJECTIVES: 1) To explore variation in patient preferences and estimate willingness-to-accept (**WTA**) annual cost to the National Health Service (**NHS**) for attributes of a collaborative intervention between pharmacies and primary care using a Discrete Choice Experiment (**DCE**); 2) to incorporate **DCE** into an economic evaluation using cost-benefit analysis (**CBA**).

METHODS: We used five attributes: waiting time to get medical appointment, model of pharmacy intervention, integration with primary care, chance of stroke in 5 years, and annual cost to the **NHS**. We used an experimental orthogonal fractional factorial design. Data analysis used conditional logit.

RESULTS: Waiting time to get medical appointment on the same day (urgent) and within 15 days (non-urgent) was the most important attribute, followed by 30-minute pharmacy intervention in private office every 6 months for point-of-care measurements and medication review, and full integration with primary care. The cost attribute was not significant. Intervention patients were willing to accept **NHS** annual cost of €877 for their preferred scenario. The annual net benefit per patient is €788.20 and represents the monetary value of patients' welfare surplus for this model.

CONCLUSIONS: This study enables the understanding of strength of preferences and trade-offs between attributes and provides welfare estimates, despite uncertainty. It further attempts to incorporate **DCE** into an economic evaluation using trial costs previously estimated. Finally, it offers a mechanism for patients to participate in decision-making and seeks to capture other benefits not captured in **CEA** or **CUA**. These findings may contribute to future **DCE** studies of pharmacy interventions with the potential for reimbursement, and in improving collaborative interventions with primary care for uncontrolled or at-risk chronic disease patients.

Sessão 10 – COVID-19: pharmaceutical and non-pharmaceutical interventions

Did we do it right? The Comparative Effectiveness of COVID-19 vaccines across age groups

Miguel Gouveia[1], Catarina Silva[2], Paulo Jorge Morais Zamith Nicola[3], Maria João Aleixo[4], Rute Sousa[4] and Helena Canhão[4]

[1] CLSBE

[2] Instituto de Saúde Baseado na Evidência, FMUL; Unidade de Epidemiologia, IMPSP, FMUL

[3] Epidemiology Unit, Institute for Public Health and Preventive Medicine, University of Lisbon Medical School

[4] Comprehensive Health Research Center, EpiDoc Unit, CEDOC, NOVA Medical School, UNL Hospital Garcia da Orta, Almada

OBJECTIVE: COVID-19 cumulative mortality rates increase with age. However, the expected years of life saved by preventing a death are lower in older people. Despite these opposing forces the general practice of Covid-19 vaccination programs across the world was to award priority to old-age groups. We evaluate if that priority setting was justified by examining the Quality Adjusted Life Years (QALY) saved by vaccinating people of different ages.

METHODS AND DATA: The paper calculates the present expected value of the QALY saved by vaccinating people from different sex and age groups in Portugal. The approach is inspired by Briggs et al (2021) and relies on data publicly available. We started by computing the cumulative population incidence rates of Covid-19 for sex and age groups following the data released by the Health Directorate General (DGS) for the first year of the pandemic and population data from the National Statistical Institute (INE). Life expectancies for sex and age groups are computed from the 2017-2019 Mortality tables from INE. We used QALY by age from the EQ-5D-3L Portuguese population norms (Ferreira et al, 2014) to estimate the discounted QALY loss for each Covid-19 attributed death. Since deaths from Covid-19 occur at higher rates in patients with previous conditions, both QALY and life expectancies were adjusted to take the above average morbidity into account. Another adjustment is that some of the population infected with Covid-19 would have died from other causes in the absence of the disease. We use the life tables to estimate these expected mortalities by sex and age groups. This allows us to arrive at the net effects of Covid-19 on mortality, and years of life and QALY losses due to Covid-19 mortality. Non-lethal outcomes are considered by using the DGS data and Spanish hospitalization data (the data available in Portugal reports hospitalized patients per day but is silent on the number of Covid-19 general and ICU admissions). We also use results from the literature on QALY losses from analogous health problems.

RESULTS: Putting all these components together we estimate the expected discounted QALY gain from vaccinating people of different sex and age groups. The average proportions of non-lethal QALY losses are 9,5% for males and 14,5%

for females. This proportion is much higher for young groups but decreases fast with age. Each 1,000 vaccinations of people aged 45 save on average 1,6 **QALY**, a result that can be used as a reference. The gains increase with age: vaccinating a person aged 85 generates 19 times more **QALY**s than the reference case but vaccinating a person aged 25 only generates 57% of the same reference gains.

CONCLUSIONS: The health gains obtained by vaccinating older populations are much larger than those obtained by vaccinating younger groups. The results are mostly driven by mortality since morbidity gains are relatively small and not as unequaled distributed across ages. The analysis also provides evidence and modelling that can inform general public policies about vaccination priority based on effectiveness. From a comparative effectiveness point of view the bottom line is that the priorities defined for Covid-19 vaccination by age were right!

REFERENCE: Briggs **AH**, Goldstein **DA**, Kirwin E, Meacock R, Pandya A, Vanness **DJ**, Wisløff T. Estimating (quality-adjusted) life-year losses associated with deaths: With application to **COVID-19**.

COVID-19 non-pharmaceutical intervention compliance in Portugal

João Vasco Santos[1], Joana Gomes da Costa[2], Eduardo Costa[3], Sara Almeida[3], Joana Cima[4] and Pedro Pita-Barros[3]

[1] Faculty of Medicine, University of Porto / CINTESIS / ARS Norte

[2] Faculdade de Economia — Universidade do Porto

[3] Nova School of Business and Economics

[4] Centre for Research in Economics and Management, University of Minho

BACKGROUND: The **COVID-19** pandemic led to necessary and similar responses internationally, including non-pharmaceutical interventions (**NPI**). Before the vaccine rollout, **NPI** were the main available tools to tackle the pandemic. These include physical distancing, frequent hand washing, use of face mask, respiratory hygiene and use of contact tracing apps. The main goal of this study was to describe the factors associated to **COVID-19 NPI** compliance.

METHODS: We performed an online panel survey distributed between 28th October 2020 and 11th January 2021. Each of the self-reported **NPI** measures' compliance was considered as the outcome. Sociodemographic, respondent concerns, agreement with the **NPI** measures, among other characteristics, were studied through logistic regressions.

RESULTS: We obtained a total of 1263 responses, with high levels of **NPI** compliance except for the contact tracing app. Those characteristics with highest compliance were female sex and age. There were differences in compliance across the different regions and a gradient between agreement and compliance.

CONCLUSIONS: Pandemic management and communication plans should be designed using results of such analyses and surveys. Policy measures to increase NPI compliance can be specifically tailored according to population characteristics.

Running away from The Jab: Politics influence on Covid-19 Vaccine Hesitancy in Brazil

Marco Antonio Catussi Paschoalotto[1], Eduardo Polena Pacheco Araújo Costa[1], Sara Valente de Almeida[1], Joana Cima[2], Joana Gomes da Costa[3], João Vasco Santos[4], Pedro Pita Barros[1], Claudia Souza Passador[5] and João Luiz Passador[5]

[1] Nova School of Business and Economics

[2] Centre for Research in Economics and Management, University of Minho

[3] Faculdade de Economia — Universidade do Porto

[4] Faculty of Medicine, University of Porto / CINTESIS / ARS Norte

[5] University of São Paulo

OBJECTIVES: This paper aims to understand the factors associated with vaccine hesitancy in Brazil. Using a nationwide online survey, we analyse the role of sociodemographic conditions, political factors, organizational confidence, and non-pharmaceutical interventions compliance with the population willingness to be vaccinated.

METHODS: An online survey was distributed from November 25th, 2020, to January 11th, 2021, through different social networks (Facebook, Instagram, WhatsApp, and e-mail groups) over universities, magazines, scientific associations, and social profiles, aiming to collect a diversified base of answers from all Brazilian regions and different social sectors. The sample is composed of 1,623 valid responses, collected from almost all Brazilian states and States' Capitals. Beyond sociodemographic conditions, we also have collected information regarding political factors, organizational confidence, non-pharmaceutical interventions agreement, vaccines side effects perception, and vaccine hesitancy. A set of descriptive statistics was performed to understand the association between some of the key variables. Afterwards, logistic regressions models are used to model vaccine hesitancy.

RESULTS: The descriptive statistics have shown: 1) Perceptions and trust on institutions seem to be related with both agreement and compliance with NPI; 2) As expected, one can also observe a direct relationship between the level of agreement with NPI and the uptake of such measures; 3)The uptake of sanitary measures has drivers other than the agreement with measures (social factors, education and age); 4) The proportion of individuals willing to be vaccinated is higher within the group which reports always to use a mask; 5) individuals more concerned are willing to be vaccinated and display higher compliance with sanitary measures; 6) a strong relation between schooling levels and vaccine hesitancy is also observed; 7) an inverse relationship between government perception and willingness to be vaccinated; 8) Right-wing individuals – usually

more supportive of the current government — display higher levels of vaccine hesitancy than left-wing individuals. Later, the logistics regressions have shown: 1) We find a positive impact associated with male gender for the first specification that loses significance once we control for the opinion and compliance variables in the second equation; 2) a negative and statistically significant association between fearing the vaccine secondary effects and willingness to take; 3) an association between participants that identify themselves as left-oriented and willingness to take the vaccine; 4) Evaluating the government performance as "very bad" increases the probability of agreeing to take the vaccine; 5) the NPI compliance index, is associated with a positive effect on the vaccine willingness.

CONCLUSIONS: The willingness to be vaccinated is strongly influenced by the political positioning, federal government performance perception, vaccine´s side effects and compliance on non-pharmaceutical interventions. We find a strong association between vaccine hesitancy and right-wing political positioning. Additionally, negative federal government performance perception reduces vaccine hesitancy. These results suggest that current vaccine distrust from the Brazilian president, contributes to the increase in vaccine hesitancy, among his voting base. Conversely, individuals who oppose the current government tend to display a higher willingness to be vaccinated.

Sessão 11 — Child and adolescent health

Can intersectoral interventions reduce substance use in adolescence? Evidence from a randomized controlled multicentre study

Sara Valente de Almeida[1], Rafael Correa[2] and Judite Gonçalves[1]

[1] Nova School of Business and Economics

[2] EERP — University of São Paulo; FMH — University of Lisbon

BACKGROUND: We measure the impact of an intersectoral intervention entitled "Caiu na rede", designed to tackle substance use among adolescents in Brazil. The intervention consisted in a multicentre Randomized Controlled Trial study that was implemented between 2017 and 2019 in a tri-border region with students from Brazil, Paraguay, and Argentina. The complete sample was composed by 880 adolescents aged between 14 to 17 years old, enrolled across 23 different institutions dedicated to developing and deliver extra-curricular activities for young adults after school.

METHOD: The intervention consisted in joining 5 professionals (teachers and social workers) from each institution to work together with a group of randomly selected students (440 in 2017) to develop a set of activities related to health education, rapid health diagnosis, prevention, and risk behaviours and the attainment of the sustainable development goals. The activities that resulted from this joint exercise were then delivered as part of the institution's agenda

to adolescents both in the treatment and control group. We use difference-in-differences models measure the impact of the intervention in alcohol, tobacco, and cannabis consumption. We also measure the impact of participating in the activities developed during the intervention, which can indicate a change in the level and quality of the institution's activities after the intervention, i.e., after involving the participants themselves in the activities design process.

RESULTS: An adolescent in the treatment group is 8 pp ($p<0.001$) less likely to consume tobacco and cannabis and 13pp ($p<0.001$) less likely to consume alcohol at least one day in the last month. While the intervention did not have an impact on frequent consumption, participating in the activities (complete sample) was associated with lower probability of frequent consumption. Adolescents showed a higher consumption of alcohol in the last 30 days compared to consumption of other substances. The frequency of alcohol and cannabis use increases with age and Brazilian participants are less likely to have consumed cannabis or tobacco. One day more in the group average consumption leads to a 3 pp ($p<0.001$) increase in the individual alcohol and tobacco consumption (peer effect).

CONCLUSION: This study shows the relevant and successful impact of an intersectoral intervention to tackle substance use among adolescents. It sheds light on the relevance of getting participants involved in the design of activities for themselves in a very intercultural region. We believe this type of activities can be a key instrument in decreasing substance use in a very crucial stage of life.

Estresse Materno e Desenvolvimento Infantil

Flavia Chein[1], Igor Procópio[1] and Cristine Pinto[2]

[1] Federal University of Juiz de Fora

[2] Insper

OBJETIVOS: O objetivo deste artigo é investigar como os efeitos de um choque negativo durante a gestação e se os mesmos se manifestam de forma diferente em meninos e meninas ao longo do ciclo de vida. É importante acompanhar um grupo de crianças ao longo do tempo, pois os maiores impactos encontrados em meninos no momento do nascimento, em comparação com as meninas, podem levar a uma falsa percepção de que as meninas são menos vulneráveis a eventos adversos ocorridos durante a gestação. Entender o impacto do ambiente em que a gestação ocorre no desenvolvimento dos filhos e as diferenças desse processo entre meninos e meninas, contribui para a formulação de políticas de combate a pobreza e desigualdades. Existe um tradeoff entre viabilidade e vulnerabilidade na programação fetal em relação a meninos e meninas.

BASE DE DADOS E MÉTODOS: Este artigo analisa o impacto do estresse materno durante a gestação sobre o desenvolvimento infantil, buscando isolar o efeito direto. Investiga-se o impacto sobre as principais medidas de nascimento, sobre

o desenvolvimento socio emocional, cognitivo e psicomotor e sobre a saúde física e mental das crianças. Para definir a exposição ao estresse utiliza-se um evento exógeno capaz de induzir o estresse nas gestantes. Em 27 de fevereiro de 2010, ocorreu no Chile, um dos terremotos mais fortes já registrados na história mundial. Compara-se um grupo de crianças que estavam no útero no momento do terremoto com um grupo que tinha de um dia a nove meses de idade. Utiliza-se uma rica base de dados longitudinal produzida pela Pesquisa da Primeira Infância (**ELPI** na sigla original) realizada no Chile. Esta base permite acompanhar uma amostra de crianças representativa de todo o território chileno, com avaliações de desenvolvimento em dois períodos do tempo, além das medidas de nascimento. A pesquisa acompanha crianças nascidas desde 2006 até 2017.

RESULTADOS: O primeiros resultados se referem ao impacto nas medidas de nascimento, peso ao nascer, tamanho ao nascer, tempo de gestação em semanas, relação peso ao nascer por tempo de gestação e relação tamanho ao nascer por tempo de gestação. As medidas de nascimento são o resultado mais estudado na literatura de efeito do estresse materno. Os resultados encontrados corroboram evidências anteriores de que o estresse materno durante a gestão, principalmente nos dois primeiros trimestres, é um fator de risco para o pleno desenvolvimento do feto. Importante enfatizar que os efeitos encontrados são mais fortes para os meninos, comparativamente às meninas. Os meninos que estavam no segundo trimestre de formação fetal no momento do terremoto nasceram em média com 194 gramas a menos, enquanto os que estavam no primeiro trimestre o efeito foi de redução de 167 gramas. Em relação ao tamanho ao nascer, os dois primeiros trimestres novamente aparecem como sendo os mais sensíveis, sendo que para essa medida o primeiro trimestre apresentou um efeito maior, com os meninos nascendo quase 1 centímetro menores. O segundo conjunto de resultados se refere ao efeito do estresse materno ao longo do ciclo de vida, nesse caso, os efeitos, em especial ao que se refere às habilidades socio emocionais, parecem ser maiores para as meninas, ou seja, problemas comportamentais e relacionados à saúde mental.

CONCLUSÕES: O presente trabalho discute a dependência de gênero nos efeitos de um choque negativo durante a gestação, especificamente do estresse materno. A discussão se insere na literatura sobre origens das desigualdades, com ênfase na desigualdade de gênero. Ressalta-se a importância de analisar choques na gestação considerando o efeito desigual em meninos e meninas, pois além da importância de entender as diferentes trajetórias do impacto ao longo do ciclo de vida, desconsiderar a dependência de gênero pode fazer com que efeitos não sejam detectados quando analisados ambos os sexos de forma agregada.

Do time constraints affect single-parent households' diet quality?

Ricardo Alves[1] and Julian Perelman[1]

[1] Escola Nacional de Saúde Pública, UNL

INTRODUCTION: Time spent in food preparation can reduce the overall cost of meals and increase the nutritional value of the food consumed. Hence, time and budget constraints may affect single-parent households' diet quality. We aim to analyze how household size and composition could limit the household ability to follow a Mediterranean Diet (**MD**).

METHODS: We used cross-sectional data from the Portuguese National Health Interview Surveys of 2014 and 2019 (n= 26,464). Adherence to **MD** was assessed using an adapted version of the **KIDMED** index. Linear regression models were used to evaluate the association between different household size and composition and the adherence to the **MD**. We also stratified the analysis by labour status.

RESULTS: Men living alone and men raising children alone consistently showed a significantly lower **MD** adherence than other household composition (3.90 vs 3.57; 3.90 vs 3.77 mean **MD** score, $p<0.05$ respectively). A lower score was obtained for employed single women and employed single mothers. These results held when adjusting for socioeconomic indicators.

CONCLUSIONS: A healthy diet is less adopted among single men with or without children, and among single women with or without children when employed. This may indicate that living and working arrangements are key determinants of diet patterns, questioning the support to more isolated households, regardless of their socio-economic condition.

Sessão 12 – Quality and Performance

Do non-urgent emergency visits affect hospital productivity? An analysis of Portuguese NHS hospitals, 2015-2020

João Fachada[1] and Julian Perelman[2]

[1] Nova School of Business and Economics

[2] Escola Nacional de Saúde Pública, UNL

INTRODUCTION: The use of emergency departments for mild conditions, which could be treated in primary care, has been a constant challenge for the Portuguese **NHS**. It has been viewed as a source of waste, given the inappropriate allocation of high-cost techniques and skilled teams that may be required to treat severe acute situations, either urgent or elective. This study measures the relationship between the rate of non-urgent emergency visits and hospital productivity.

METHODS: We used data from the Transparency Platform of the **NHS**, which includes uniformized monthly data on several indicators of the **NHS**, regarding access, production, and efficiency. Data were retrieved for the 2015-2020 period, for all **NHS** hospitals with an emergency department (n=38). We calculated a

productivity index as the ratio of elective consultations and surgeries, and urgent emergency visits, on (i) the number of professionals; (ii) the number of physicians; and (iii) the total number of worked hours by all professionals. The non-urgent emergency consultations were defined as those classified as "white", "blue" or "green" in the Manchester triage system. We modeled the productivity as function of the ratio of non-urgent emergency visits, using generalized linear models with hospital random effects. We also modeled the average waiting time for surgeries and consultations, and the proportion of persons treated withing the maximum waiting time guarantee (**MWTG**), as function of the same explanatory variable. We controlled for the hospital status, regional effects, and the hospital number of beds.

RESULTS: We observed a positive statistically significant link between non-urgent emergency visits and productivity, for all productivity indicators. Furthermore, the non-urgent emergency visits showed to be linked to lower average waiting times, but to a lower proportion of persons treated within the **MWTG**. Results remained consistent when removing the year 2020, possibly marked by a **COVID-19** effect.

DISCUSSION: Our study shows that treating non-urgent cases in emergency departments has a positive spillover effect on hospital productivity related to elective care and urgent cases. We may hypothesize that a strong burden of mild emergency care leads to a hospital re-organization of patients' pathways that improve efficiency, or that the reduction of available time leads to a pressure on professionals' activity that promotes efficiency in general.

Heterogeneity of primary health care performance in Portugal: a multilevel analysis

Joana Pestana[1], Julio Souza[2], Andreia Pinto[2] and João Vasco Santos[2],[3]

[1] Nova School of Business and Economics

[2] MEDCIDS – Faculty of Medicine, University of Porto; CINTESIS — Centre for Health Technology and Services Research

[2] MEDCIDS – Faculty of Medicine, University of Porto; CINTESIS — Centre for Health Technology and Services Research

[3] ARS Norte

INTRODUCTION: Several countries have implemented local and regional primary care organizations as an approach to providing external support to primary health care units (**PHC**). These organizations aim at improving health planning through local commissioning, providing shared services, and supporting resource allocation and best practices diffusion. Their impact on **PHCC** performance is not well understood. This study aimed at assessing the influence of the two hierarchical levels implemented in Portugal –local clusters (**ACES**) and regional authorities (**ARS**) – on the performance variability of **PHC** units. Marked variability in performance exists between centers, undermining the overall quality, equity, and efficient use of resources. Moreover, **PHC** units

are often evaluated through the variability of their indicators adjusted for the patient's characteristics, which do not distinguish the variability attributable to the providers from that associated with the institutions that support them.

METHODS: The outcome of this study was the performance variation at each practice which was measured through key performance indicators following the Donabedian model "Structure-Process-Results" and indicators of physician-induced expenses and utilization. Administrative data from the public **PHCC** was used, including an exhaustive set of indicators, workforce, and patient population characteristics merged with regional socio-economic data. Hierarchical models were used to address the clustering of **PHC** units in the local and regional administrations and to isolate unexplained performance variation. We used multilevel regression analysis at three levels: practices (n=851), **ACES** (n=55), and **ARS** (n=5) adjusted for the patient and center characteristics and calculated the percentage of variance attributable to each level.

RESULTS: Most of the variation was attributed to the practice level after adjusting for the characteristics of the patients and health centers, though a not negligible group-level heterogeneity lies between regional authorities (**ARS**) (17%) and between local clusters (**ACES**) (12%). The proportion of the variation attributed to the **ARS** is superior to that attributed to the **ACES** in 66 out of the 102 indicators monitored nationally. The variance decomposition for the subsample of **PHCC** organized as family health units (**FHU**) (team-based practices with tiered pay-for-performance) revealed that the proportion of unexplained variation at the local level is lower in **FHU** (8%) than in non-**FHU** centers (16%). Among the indicators used in the commissioning process, the proportion of variance attributable to local and regional levels is substantially lower than by the other monitored indicators.

DISCUSSION: The monitored indicators distinguish effectively between **PHC** units individual performance because most of the variance is interpractice variation. Nevertheless, the contribution of the local and regional organizations to the variability of measured indicators should be taken into consideration when evaluating and planning **PHCC** quality improvements. Further analysis is necessary to detail the way the **ACES** and **ARS** are shaping the activities of **PHCC** (e.g., network effects, services provided, managerial style, and culture).

A avaliação da performance nos Cuidados de Saúde Primários

Leonor Amaral[1],[2], André Roque[1], Diana Sobreira[2], Eliana Nave[2], Inês Rua[1], Pedro Ruivo[1], Sofia Rodrigues[2] and Teresa Amaral[1]

[1] USF Santa Joana

[2] Faculdade de Ciências Sociais e Humanas da Universidade da Beira Interior

INTRODUÇÃO E OBJETIVOS: A gestão da qualidade nas instituições de saúde, através da avaliação da performance, tem por objetivo identificar as necessidades de formação

e as melhores estratégias para promover uma maior motivação dos colaboradores e melhorar as trocas de informação. A performance é vista, não como um objetivo em si mesmo, mas como o meio pelo qual se delimita o caminho a percorrer para atingir um fim. Com a realização deste trabalho, pretendeu-se fazer uma revisão bibliográfica sobre a avaliação da performance nos cuidados de saúde, em particular nos Cuidados de Saúde Primários (**CSP**) em Portugal, abordando a constituição das Unidades de Saúde Familiar (**USF**) e o desenvolvimento do processo de contratualização.

METODOLOGIA: Foi realizada uma pesquisa bibliográfica em bases de dados científicas e em documentos de entidades oficiais. A pesquisa foi efetuada em maio de 2021, utilizando como palavras-chave: avaliação da performance, reforma nos **CSP** e contratualização nos **CSP**.

RESULTADOS: Na literatura encontram-se descritos diversos instrumentos usados para a avaliação da performance na saúde, tais como o Tableau de Bord, Performance Prism e Balanced Scorecard. Em Portugal, com a reforma dos **CSP**, foi introduzido um novo processo que tem tido um papel determinante para a melhoria da performance e da gestão dos resultados em saúde: o processo de contratualização. A criação das **USF** e a implementação deste modelo de contratualização, através do recurso a novos instrumentos como o Bilhete de Identidade dos **CSP**, foram consideradas etapas essenciais na mudança do paradigma dos **CSP**, levando a uma maior responsabilização, com vista à obtenção de melhores resultados em saúde. Definiram-se objetivos que são contratualizados, tendo por base o estabelecimento de metas de performance e de qualidade a atingir, fixando-se o nível de financiamento a atribuir e o nível de autonomia e responsabilidade das partes envolvidas. Tratando-se de um processo de negociação entre níveis diferentes de organização, a contratualização nos **CSP** operacionaliza-se em dois processos interligados, mas interdependentes: a contratualização interna, entre Unidade Funcional e Agrupamento de Centros de Saúde (**AC**eS) e externa, entre **AC**eS e Administração Regional de Saúde.

DISCUSSÃO: A avaliação da performance do sistema de saúde tornou-se uma das principais questões políticas de saúde que requer um conjunto de indicadores mensuráveis e de confiança. A contratualização com os **CSP** é hoje uma cultura implementada em Portugal, constituindo-se como uma ferramenta assumida pelos profissionais que desempenham a sua atividade neste nível de cuidados, representando um compromisso social em prol do cidadão, das famílias e das comunidades. Estas mudanças trouxeram grandes benefícios para as populações, em termos de ganhos em saúde, e para os profissionais, em termos de satisfação profissional. Contudo, no ano 2020, ao analisarem-se os resultados dos indicadores, deve ter-se em consideração as limitações que ocorreram na avaliação dos mesmos por causa da pandemia **COVID-19**, facto que levou a mudanças drásticas no dia-a-dia de todas as unidades funcionais e que gerou algumas incertezas no processo de contratualização.

Quality provision in hospital markets with demand inertia: The role of patient expectations

Luis Sá[1]

[1] University of Minho

OBJECTIVES: Switching costs and persistent patient preferences generate demand inertia and link current and future choices of hospital. If the choices patients make are intertemporally linked, then they will be affected by whether patients anticipate the future and the degree of sophistication of their foresight — what we refer to as 'patient expectations'. In this paper, we analyse a hospital market where switching costs and persistent horizontal preferences generate demand inertia and investigate how different types of patient expectations affect quality provision by two competing hospitals.

METHODS: In a spatial model of hospital competition with demand inertia, we consider three types of expectations. Myopic patients choose a hospital based on current variables alone; forward-looking but I patients consider the future, but assume that quality remains constant; forward-looking and rational patients foresee the evolution of quality. Our modelling for rational expectations allows for the alternative interpretation of incorrect beliefs about the evolution of quality. We consider profit-maximising hospitals and both cost substitutability and complementarity between quality and output. We rank quality provision according to the type of expectations and explore policy implications; namely, the effect of policies aimed at facilitating switching, the optimal uniform and hospital-specific price regulation, and a policy package comprising both.

RESULTS: We show that quality provision is higher under I than myopic expectations, while quality under rational expectations may be highest or lowest. The optimal uniform price is set accordingly. Lower switching costs lead to lower quality unless patients are rational and cost substitutability between output and quality is sufficiently strong. When a combined policy intervention is considered, the optimal uniform price and switching costs are in general 'policy substitutes'. Finally, our results also suggest that optimal hospital-specific pricing generally entails offering the high-volume hospital a higher price under cost substitutability.

CONCLUSIONS: When demand is symmetrically distributed, our ranking of quality provision according to expectations is also a ranking of patients' health gains, suggesting that rationality may hurt patients. Policies to reduce switching costs are generally counterproductive, but if they are to be enacted, they should optimally be accompanied by a higher prospective price.

Sessão 13 – Economic Evaluation

Cost-effectiveness and cost-utility of the first collaborative care intervention in hypertension and hyperlipidemia management between pharmacies and primary care in Portugal alongside a trial (USFarmácia)

Suzete Costa[1], José Pedro Guerreiro[2], Inês Teixeira[2], Dennis Helling[3], João Pereira[1] and Céu Mateus[4]

[1] Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa

[2] Centro de Estudos e Avaliação em Saúde (CEFAR), Infosaúde, Associação Nacional das Farmácias

[3] University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences

[4] Lancaster University Division of Health Research

OBJECTIVES: The aim of this "proof-of-concept" study was to experiment cost-effectiveness and cost-utility analyses of a collaborative care intervention in hypertension and hyperlipidemia management between pharmacies and primary care in Portugal versus usual (fragmented) care alongside a trial.

METHODS: Data sources included: primary care clinical software; pharmacy dispensing software; patient telephone surveys; and published literature. Target population was adult patients on hypertension and/or lipid-lowering medication. This was a 6-month trial. The perspective was limited societal. The study intervention consisted of hypertension and/or hyperlipidemia management within a collaborative care framework between intervention pharmacies and primary care according to pre-defined integrated care pathways in the form of decision algorithms for hypertension and hyperlipidemia pre-agreed with primary care physicians and integrated in the pharmacy dispensing software. We collected patient-level data on resource use to estimate trial costs. We used self-reported BP and quality-of-life outcomes to derive QALYs. Incremental cost-effectiveness ratios and incremental cost-utility ratios were estimated.

RESULTS: The intervention was not shown to have reasonable levels of cost-effectiveness or cost-utility when compared to usual care, although there is a high level of uncertainty expressed in wide confidence intervals. The probability for the intervention to be cost-effective at the threshold €20,000 per quality-adjusted life-year is below 40% and below 20% at the threshold €500 per mmHg decrease. The average-case scenario in sensitivity analysis increases the probability to 55% (threshold €500 per mmHg decrease).

CONCLUSIONS: Taking into account the many limitations of this trial reported in effectiveness study and the amount of evidence establishing effectiveness, cost-effectiveness and cost-utility for similar interventions, our findings are not generalizable for community pharmacy and primary

care in Portugal. Further trials are required that can apply the technology-driven collaborative care using the lessons learnt from this experience.

Public health benefit of switching to high dose quadrivalent vaccine for influenza seasonal vaccination in Portuguese elderly population.

Margarida Borges[1], Ricardo Lopes[1], Hélène Bricout[2], Margarida Martins[2], Caroline de Courville[2] and Luís Silva Miguel[1]

[1] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa

[2] Sanofi Pasteur

OBJECTIVE: To assess resource clinical impact and consumption savings associated to influenza vaccination of the Portuguese elderly population with a high dose quadrivalent influenza vaccine (**HD-QIV**) vs. a standard dose quadrivalent influenza vaccine (**SD-QIV**).

METHODS: A decision tree model, with a one-year time horizon, was used to compare the disease burden of influenza in adults aged 65 years or older vaccinated with **HD-QIV** vs. **SD-QIV**. The decision tree allows to predict influenza cases, influenza-related general practitioner (**GP**) visits, emergency room (**ER**) visits, hospitalizations, influenza-related deaths. The attack rate of influenza associated to each vaccination strategy is based on that of an unvaccinated cohort, the coverage rate, and the efficacy of each vaccine. The probability of an **ER** or **GP** visit conditional on developing influenza was based on Portuguese data. Two definitions were used for hospitalization data: influenza related hospitalizations and cardiorespiratory hospitalizations (possibly attributable to influenza). All demographic, epidemiological, and economic inputs were based on Portuguese data. Relative efficacy of **HD-QIV** vs. **SD-QIV** was assumed to be like the 24,5% relative efficacy of high dose trivalent influenza vaccine vs. standard dose trivalent influenza vaccine observed in **FIM**12 randomized clinical trial.

RESULTS: In Portugal, switching from **SD-QIV** to **HD-QIV** in adults over 65 years, assuming a coverage rate of 65%, would allow a reduction of 13,461 influenza cases (12%), with 378 fewer deaths (12%). It also allows a reduction of 1,229 **GP** appointments and 532 **ER** visits. Concerning hospitalizations, influenza-related ones are reduced by 121 (10%), while those related to respiratory and cardiorespiratory complications are decreased by 5,112 (14%) and 8,755 (11%), respectively.

CONCLUSIONS: A switch to **HD-QIV** seasonal vaccination in the elderly Portuguese population would contribute to reach public health objectives, reducing excess mortality and the consumption of healthcare resources.

Custos e sobrevivência para o tratamento da estenose aórtica severa em doentes com alto risco cirúrgico: a TAVI em Portugal sob perspetiva

Rui Campante Teles[1], Fernando Genovez Avelar[2] and Joana Alves[2]

[1] Hospital de Santa Cruz, Lisboa, Portugal

[2] Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa

OBJETIVOS: Os problemas cardíacos originados degenerescência das válvulas cardíacas constituem um grande desafio em termos de saúde pública. Em particular, a estenose aórtica grave, constitui com uma das doenças valvulares com elevada prevalência nos países desenvolvidos, o que resulta numa forte mobilização de recursos de saúde. De entre os tratamentos disponíveis para esta condição, foi considerado como o gold-standard a cirurgia de substituição da válvula aórtica. No entanto, durante muito tempo, esta não era uma alternativa para doentes de alto risco cirúrgico, pelo que o aparecimento da técnica de substituição da válvula aórtica transcateter (**TAVI**) constituiu um tratamento inovador. Assim sendo, e atendendo ao problema de afetação de recursos e de sustentabilidade do Serviço Nacional de Saúde (**SNS**), o objetivo deste estudo é analisar a longo prazo os custos hospitalares e a sobrevivência dos doentes submetidos a **TAVI** em comparação com o tratamento alternativo terapêutico (**MM**) num hospital português, de 2008 a 2020.

MÉTODOS: Este é um estudo quantitativo analítico de base populacional, observacional do tipo coorte, longitudinal, retrospetivo e unicêntrico. Foram incluídos doentes consecutivos com estenose aórtica grave e sintomática com indicação potencial para intervenção valvular. Os grupos de tratamento e controlo foram comparados, usando testes estatísticos não paramétricos, em termos de características demográficas (idade, sexo, peso, altura), parâmetros clínicos (**NYHA**, Euro**SCORE**), comorbilidades e fatores de risco. Os custos foram obtidos a partir do registo do consumo de recursos, em termos da intervenção, utilização medicamentos, meios complementares de diagnóstico e terapêutica, consultas médicas, hospitalizações e sessões de reabilitação, ao longo do tempo por ambos os grupos. Todos os recursos foram valorizados através da tabela de preços praticados pelo **SNS**, em consonância com a perspetiva de análise. A sobrevivência registada ao longo do tempo, em ambas os grupos, permitiu a elaboração da Curva de Kaplan-Meier e da Razão de Risco (**HR**).

RESULTADOS: Foram acompanhados 21 doentes em **TAVI** e 24 doentes em **MM**, obtendo uma média de idade de 84 anos e 81 anos, com predominância de mulheres em ambos os grupos. Quanto ao indicador **NYHA**, era superior no grupo em tratamento, 76% apresentavam classificação **III** e **IV**, contra 61% no comparador. As diferenças encontradas não apresentaram, contudo, relevância estatística. No que diz respeito aos custos totais, a **TAVI** apresentou um valor € 26.000 acima do seu comparador. Quanto à sobrevivência, a curva de Kaplan-Meier demonstrou diferença significativa para a **TAVI**, com uma mediana de 55 meses para **TAVI** e 14 meses para **MM** e um **HR** de 2,011 (1,093 – 2,07) (p=0,021 para o teste LogRank).

CONCLUSÕES: Apesar dos custos acrescidos com a TAVI face ao MM, há uma sobrevivência também maior. Esta intervenção está relacionada com um aumento considerável da esperança de vida, logo a partir do primeiro ano de seguimento.

Measuring the value of solidarity on health needs: the impact of a financial assistance program (ABEM)

Miguel Gouveia[1], Margarida Borges[2], João Costa[2], Francisco Lourenço[2], Francesca Fiorentino[2], António Teixeira Rodrigues[3], Inês Teixeira[3], José Pedro Guerreiro[3], Patrícia Caetano[3] and António Vaz Carneiro[4]

[1] Catolica Lisbon School of Business and Economics (CEA)

[2] Center for Evidence-Based Medicine (CEMBE), Faculdade de Medicina, Universidade de Lisboa

[3] Centre for Health Evaluation & Research (CEFAR), National Association of Pharmacies

[4] Institute for Preventive Medicine and Public Health, Environmental Health Institute, ISBE, Cochrane Portugal

OBJECTIVES: The abem program was launched in May 2016. It provides assistance to vulnerable groups, by making prescription medicines free for underprivileged households, in community pharmacies in Portugal, where out-of-pocket payments are still comparatively high. In Portugal 25.1% of the population was at risk of poverty or social exclusion, in 2016, above the EU average of 23.5%. Minors are the most affected age group, and significant deprivations exist, especially among the long-term unemployed, migrants, ethnic minorities, and poor people living in rural areas. Data from 2019 reveals that, despite an improvement, 21.6% of the population was still at risk of poverty or social exclusion. This study characterizes the population targeted by the abem program, the financial support provided, and the medicines involved. Additionally, it assesses the impact of the program on poverty and on the incidence of catastrophic health expenditures.

METHODS: A longitudinal study was carried out with analysis of several program databases (from the beginning of the program in May/2016 to September/2018) covering the beneficiaries' cohorts, medicines dispensed, referencing social entities and solidarity pharmacies. For the evaluation of the poverty impact of the abem program, Microdata from the Portuguese Household Budget Survey (2015/2016) was also used, and three standard indicators were calculated (poverty rate, poverty intensity index and poverty severity index) as well as the incidence of catastrophic health expenditure situations avoided by the program. The software used were Microsoft Access Database ®, Microsoft Excel 2016 ® and SAS Enterprise Guide® v7.1.

RESULTS: In its first 29 months, the abem program supported 3,252 households, with 6,305 beneficiaries: 56.8% female, mean age of 51 (SD 25) years, and with the most prevalent age group being 65 years or older (34.7%). 60.0% of the beneficiaries used the program to obtain medicines during the study period, and the age groups 41-64 and 65 years or older had the highest percentage of use. The total number of medicines dispensed was 127,510 packages (mainly nervous

system and cardiovascular system) with a total cost of 1.5 million euros, with a 26.9% co-payment by the program (an average from 16.23€ to 20.62€ per user/month). Abem program included 95 referral institutions and 528 community pharmacies, all spread across the country. The program achieved a substantial reduction in poverty intensity (3.4%) and severity (5.6%) and avoided, on average, that 7.5% of the users suffered from catastrophic health expenditures in medicines. Additionally, 0.3% of the beneficiaries in 2018 were spared from immiserating situations, defined as those where the households' disposable income cannot even cover food expenses due to their out-of-pocket payments.

CONCLUSIONS: There has been a continuous increase in the number of beneficiaries, enabling access to medicines especially for the vulnerable elderly, and a sizeable impact in mitigating the consequences of out-of-pocket payments in the target population. This support constitutes a solidary reinforcement of social and inclusion policies in Portugal, taking advantage of the active role of the pharmacists' network in reducing health deprivations. Considering the current context of the Covid-19 pandemic and its economic and social impact, the support for accessing essential goods, such as medicines, becomes more urgent. Furthermore, it is extremely important to continue research, exploring the health gains generated by the abem program as well as by other initiatives for a more inclusive society.

Sessão 14 – Inequalities I

Equal (non)utilisation in breast and cervical cancer screening in Portugal? Analysing target versus non-target groups

Micaela Antunes[1] and Carlota Quintal[1]

[1] University of Coimbra, CeBER

OBJECTIVES: Screening women at average risk for breast and cervical cancers is highly effective to prevent cancer related deaths. There are guidelines regarding age and frequency of screening – for mammography, screening women aged 50–69 years every two years; for pap smear test, screening women aged 20-69 years every 3 years. Need is simply defined by age and inequalities in use within these groups are deemed inequitable as they represent a violation of horizontal equity. Hitherto, inequality analyses have focused only on target groups. However, there have been increasing concerns with overscreening (which might arise from screening more frequently than recommended or screening women outside the recommended age range). Overscreening is a waste of resources, but it can also cause harm to women. Assuming that within the target group the most favourable outcome is to have undergone screening, while within the non-target group the most favourable outcome is to be unscreened, our objectives are to analyse determinants of screening in both target and non-target groups for breast and cervical cancers, in Portugal.

METHODS: We focus on Portugal, using data from the second wave of the European Health Interview Survey (2013-2015). The sample contains a total of 8,637 (9,232) observations regarding target and non-target groups for mammography (pap smear test). Adjacent age classes are dropped from the analysis for including a diversity of combinations between age and screening intervals that do not allow a clear allocation to a specific group. We use socioeconomic variables – such as income and education – and self-assessed health variables, to evaluate their marginal impacts over the probability of screening (within and out of target group), for each screening exam, following a logistic regression using STATA 15.1.

RESULTS: For mammography, income positively affects screening within target group and non-target group (in the case of women above the upper age limit). Within the target group, the probability of screening decreases as the level of education increases, while the opposite occurs in women below the lower age limit (not significant in older women). Screening is more likely among women living in densely populated areas, within both target group and non-target group (regarding older women). In terms of the pap smear test, the effect of income is not statistically significant in target group, while it positively impacts on screening among women above upper age limit. On the contrary, the effect of education on the probability of screening is positive for target group and not significant for non-target group. Living in densely populated area increases probability of screening in all groups but the magnitude of the effect is particularly larger in target group.

CONCLUSIONS: From the perspective of horizontal equity in utilization, our results suggest the violation of the principle of equal utilization for equal need as screening should not be affected by characteristics other than age. This conclusion applies to both target and non-target groups. In some cases, the same factor, such as income, works for and against the better off, in mammography, and densely populated areas, in both exams. Higher income and living in metropolitan areas, representing perhaps greater access to screening, lead to higher utilization both when it is recommended and when it is not. In the case of pap smear test, a higher level of education always works in favour of the better off, increasing use when it is recommended and at least not affecting it when it is not.

Gender and socioeconomic differences in depressive symptoms and related perception of mental healthcare needs: a latent-class analysis

Luis Roxo[1] and Julian Perelman[1]

[1] NOVA National School of Public Health, Universidade NOVA de Lisboa

BACKGROUND: Women are more likely than men to use mental health services use (MHS) when depressed. Gendered presentations of depressive symptoms may contribute to explain this gender gap. This study aims

to identify depressive symptoms profiles among men and women and to understand their relationship with perception of MHS need.

METHODS: We used data from the 6th Portuguese National Health Survey, with 3,807 participants fulfilling criteria for mild, moderate or severe depression (scoring 5 or more in Personal Health Questionnaire-8). We used latent-class analysis to identify classes of depressive symptoms (using 8 symptoms from PHQ), separately for men and women. We characterize each latent class by educational level and income quintile. Afterwards, we characterized self-reported depression and perception of need (self-report of needing mental health care, for instance, by a psychologist, psychotherapist or a psychiatrist, over the previous year), by latent class. Weights were used to adjust for non-response.

RESULTS: Latent classes identified among men were “Mood and somatic symptoms” (50.6%), “Severe depression” (32.9%), and “Somatic symptoms” (16.5%). Severe depression was more common among those low-educated (31.4%), and within the first (38.9%) or second income quintile (44.2%). A combination of mood and somatic symptoms was more present among those with secondary education (66.4%), and less among participants with low education (50%) and within the two poorest quintile income (46.1% and 43.7%). Somatic symptoms were more frequent among those in the highest income quintile (22%). Both self-reported depression and perception of need were lower among those with more prominent somatic symptoms (2.8% and 8.1%), and higher for those with severe depression (50.9% and 42.4%). Among women, latent classes were “Mood and somatic symptoms with low self-esteem” (47.8%), “Severe depression” (26.9%), and “Somatic symptoms” (25.3%). Mood and somatic symptoms with self-esteem struggles were more common among those low-educated (51.9%), while somatic symptoms were more present among those with secondary education (28.9%). Severe depression was more common among those within the highest income quintile (34.4%). Depression was self-reported by 57.8% of those with severe depression and 22.5% of those with more prominent somatic symptoms. Less than half (43%) of those with severe depression reported need of MHS, compared to 25.5% of those with mood, somatic and self-esteem struggles and 11.2% with somatic symptoms.

CONCLUSIONS: Presentation of depression seems different between men and women and across socioeconomic groups. Less than half severely depressed men and women recognized the need for MHS. The need perception is generally low, even in case of severe depression, while gendered symptom profiles may impact MHS help-seeking behaviours.

Designing and testing the IMPACT HTA socio-technical framework to assist HTA agencies in the multicriteria evaluation of new medicines on a common basis

Monica Oliveira[1], Teresa Cipriano Rodrigues[1], Liliana Freitas[1], Ana Vieira[1], Klára Dimitrovová[1], João Bana E Costa[1], Aris Angelis[2], Panos Kanavos[3] and Carlos Bana E Costa[1]

[1] CEG-IST, Universidade de Lisboa

[2] London School of Hygiene and Tropical Medicine

[3] London School of Economics and Political Science

When evaluating medicines, Health Technology Assessment (HTA) committees consider multiple value dimensions, variable quantity and quality of evidence, as well as make use of their qualitative knowledge regarding medicines' impacts; and at the top level, HTA agencies face the challenges of promoting consistency in medicines evaluations across committees and of finding a balance in the involvement of HTA stakeholders and experts in evaluations. In this study we describe the development and testing of the IMPACT HTA socio-technical framework to assist HTA agencies in valuing medicines in multiple dimensions across diseases on a common basis. Technically, the framework combines MACBETH with concepts of the swing weighting matrix so that a common value frame is set by the HTA agency for groups of therapeutic indications, and committees evaluate medicines on a structured basis and departing from the value set defined by the agency. Socially, the framework is developed through a collaborative modelling approach in which key HTA stakeholders and members of evaluation committees are involved in a sequence of Delphi and decision conferencing processes so as to develop both the value frame for each therapeutic indication, and MACBETH value models for specific medicines' evaluations. Results from testing the HTA framework in case studies developed in two HTA agencies from Belgium and Sweden are presented, and feedback and insights from participants about the framework are provided.

Sessão 15 – Health-related behaviors: diet, obesity, drug use, and organ donations

European mature adults and elderly are moving closer to the Mediterranean diet – a longitudinal study, 2013-2019

Ricardo Alves[1] and Julian Perelman[1]

[1] NOVA National School of Public Health, Universidade NOVA de Lisboa

BACKGROUND: The decreasing adherence in Mediterranean Diet during the last decades has been attributed to social, cultural and economic factors. However, recent efforts to improve dietary habits and the economic improvement might be

reversing this trend. We analyze the changes in Mediterranean Diet adherence between 2013 and 2019 among a sample of European mature adults and the elderly.

METHODS: Using data from the Survey of Health, Ageing and Retirement in Europe (SHARE) for adults over 50 years old, we designed a longitudinal cohort study with a sample of participants from waves 5 (2013) and 8 (2019/20). Logistic regressions were used to model the consumption of Mediterranean Diet adherence as a function of the year. We then stratified the analyses by education, age and for transitions in economic status, employment, and self-perceived health.

RESULTS: There was in 2019/20 a significant increase in the Mediterranean Diet adherence (10.8 v. 14.3%, OR=1.377, P<0.01). The rise was mainly related to the decrease of meat and fish (38.4 v. 30.5%, OR=0,703, P<0.01) and growth of legumes and eggs intake (36.3 v. 41.8%, OR=1.260 P<0.01). The results were consistent in all European regions and most sociodemographic groups. Younger people with higher income and education had a greater rise in adherence.

CONCLUSIONS: Our analysis shows a generalized growth in adherence to the Mediterranean Diet across most socioeconomic subpopulations and countries in Europe, suggesting a shift to healthier diet patterns. The more noticeable increase among affluent, educated, and healthy respondents, may further entrench dietary and health inequalities.

The links between obesity, economic growth, globalisation, urbanisation, and poverty in Latin America and Caribbean countries

Matheus da Costa Koengkan[1], José Alberto Fuinhas[2], Aida Isabel Tavares[3] and Nuno Silva[2]

[1] DEGEIT, Universidade de Aveiro

[2] FEUC e CeBER, Universidade de Coimbra

[3] CEISUC, Universidade de Coimbra

INTRODUCTION: Obesity is considered a pandemic in Latin America and Caribbean countries. The prevalence of obesity in these countries began to increase rapidly from the 1980s, after the structural change of the economies and societies. This increase in the prevalence of obesity can be framed within the nutritional transition approach.

OBJECTIVE: This work is focused on the determinants of obesity and the links that take place between these determinants and obesity. The main determinants considered are globalisation, urbanisation, poverty, and economic growth. It is expected to find a reinforcing effect between these determinants and obesity, and so it is expected to find evidence of the nutritional transition undergoing in Latin America and Caribbean countries.

METHODS: This analysis uses data collected for 23 Latin America and Caribbean countries, for the period 1990- 2016, and it estimates a PVAR regression and causality links between the different variables. It estimates bidirectional causality relations between obesity and the other determinant variables. RESULTS: Results confirm that an increase in the prevalence of obesity is related to the increase of urbanization, globalization and decrease in poverty and it is also inter-related with economic growth.

CONCLUSION: From a public health perspective, the web of causality links implies that public interventions need to account for secondary or domino effects. So, for instance, it may not be enough to minimize urban poverty to control the increase of obesity in a country because other factors will be pushing up obesity levels. But any intervention on poverty has effects on other factors such as economic growth and urbanization, which will affect the growing levels of obesity. From a development perspective, this work has shown that economic growth has a negative effect and negative externalities such as the increase in obesity which translates to more health expenditures in the future and lower levels of productivity. In this way, development policies need to account for this type of negative effect so that society fully collects the benefits from economic growth.

Policy does matter! A cross-country study on the impact of drug policy on prevalence rates

Ricardo Goncalves[1], Ana Lourenço[1] and Hélia Marreiros[2]

[1] Catolica Porto Business School

[2] NIPE, Universidade do Minho

Understanding the effect of national drug policies on social indicators is a central question for policymakers. Assessing this effect in the long run requires an evaluation of social indicators before and after drug policy changes. However, this is a complex issue, as changes in drug policies may have an impact in more than one indicator. Moreover, drug policies typically involve different dimensions of the drug problem, such as consumption, possession, traffic, harm reduction, treatment and prevention. Notwithstanding, studies on the impact of drug policies changes are not uncommon. While there are several quantitative cross-state (within a country, but across states or regions) and cross-country studies that evaluate alcohol consumption and its policies, studies looking at drug use and its relationship with drug policies are relatively scarcer (see Ritter et al., 2016). The research question guiding our work is therefore the following: for seven countries under analysis (Australia, Canada, France, Italy, Netherlands, Portugal and the UK), in the period 1996-2016, what is the impact of each dimension of drug policy (consumption, possession, traffic, harm reduction, treatment and prevention) on prevalence rates for the overall population and 15-24 years old of (i) cannabis, (ii) cocaine and (iii) ecstasy? To answer our research question, we use an econometric approach. In particular, we implement a random-effects regression model which allows us to capture the

impact of unobserved variables in each country's prevalence rates. Our results are interesting and intriguing. In the case of cannabis, both for the overall population as well as for 15-24 years old, we find that drug policy changes in the direction of a less criminally-oriented approach towards consumption and possession contribute to a decrease in prevalence rates. This result is not consistent with previous literature (Simons-Morton et al., 2010; Shi et al., 2015; Kotlaja and Carson, 2018; Grucza, 2008; and Stevens, 2019). We also find that a less criminally-oriented approach towards the traffic of cannabis is associated with increases in prevalence rates. We further find that a more health-oriented approach towards harm reduction and treatment (in this case, only for the overall population) also leads to a reduction in prevalence rates. Our results for cocaine suggest that drug policy changes in the direction of a less criminally-oriented approach towards consumption decrease prevalence rates, but the opposite is true for possession. In what concerns possession, our results for cocaine are in stark contrast to those obtained for cannabis and suggest differential impacts on prevalence rates for (otherwise similar in nature) drug policy changes. In addition, our results contradict those of Vuolo (2013). In addition, we also find that (similarly to cannabis) increased harm reduction efforts induce reductions in prevalence rates – a result which is in line with that of Vuolo (2013). Unlike cannabis, however, we find no effect of increased treatment efforts on cocaine prevalence rates. Finally, in what concerns ecstasy, we did not find evidence of a relationship between a country's drug policy dimensions and the ecstasy prevalence rates. Overall, the most interesting contribution of this analysis is the finding of a more intricate relationship between the different dimensions of drug policy and prevalence rates. Our findings suggest that drug-specific policies – or more generally different policies for cannabis as opposed to hard drugs – are likely to be more successful on reducing prevalence rates. In a similar vein, our results point towards the drug policy dimensions that countries should pay more attention to if they intend to pursue an objective of reducing prevalence rates.

A mídia contribui para aumentar a conscientização pela doação de órgãos?

Tallys Kalynka Feldens[1] and Paulo de Andrade Jacinto[1]

[1] UFPR — Universidade Federal do Paraná

OBJETIVOS: O Brasil é o segundo maior transplantador de órgãos sólidos do mundo, apenas atrás dos **EUA**. No entanto, as taxas de doação ainda são baixas. Assim, em um contexto de consentimento informado; regularmente são veiculadas intervenções midiáticas para persuadir a população pelo aceite familiar. Este artigo analisa como as intervenções midiáticas na forma de campanhas publicitárias, novelas e notícias pela doação de órgãos possuem capacidade de elevar o nível de doação e reduzir a escassez de órgãos no Brasil.

MÉTODOS: Nós obtivemos dados da Associação Brasileira de Transplantes de Órgãos (**ABTO**), Ministério da Saúde (**MS**), Instituto Brasileiro de Geografia e

Estatística (IBGE), Globoplay e outras fontes de mídia para construir um painel de dados trimestrais de 2009 a 2019 por estado. Foram criadas variáveis dummy específicas para cada formato de intervenção: campanhas publicitárias do governo, telenovelas da indústria do entretenimento, e notícias sobre doação de órgãos que tiveram grande veiculação midiática. Também, criamos variáveis que representam os possíveis efeitos conjuntos de combinações destas intervenções. Então, foram utilizadas técnicas de regressão linear para painel de efeitos fixos; com variáveis de oferta do sistema de saúde e dados demográficos para verificar o efeito das variáveis de mídia nas doações de órgãos durante este período.

RESULTADOS: Os resultados indicam que intervenções midiáticas podem aumentar as doações de órgãos no Brasil. Para o período estudado, identificamos que o coeficiente de intervenções midiáticas é significante e positivo para telenovelas (95% C.I 0.156-0.164), mas não significante individualmente para notícias e para as campanhas do governo. A atuação conjunta de telenovelas e notícias é a que alcança o maior coeficiente de impacto na nossa estimação (99% C.I 0.198-0.208). Também identificamos que as notificações de morte encefálica representam um grande impacto na doação (99% C.I 0.113-0.117), bem como o capital físico, representado pela variável leitos de transplante (95% C.I 0.153-0.161). Empiricamente, o efeito das telenovelas na doação se equipara a aparelhar o sistema de saúde com mais leitos de transplantes e aumento das notificações.

CONCLUSÕES: Observamos que as intervenções midiáticas na forma de telenovelas e notícias afetam positivamente o número de doações de órgãos. Nossos resultados suportam as estimativas e as associações encontradas por outros pesquisadores no que diz respeito ao efeito da mídia de massa na doação de órgãos (Matesanz, 2002; Movius et al., 2007; Morgan et al., 2009; Bae et al., 2011; Jiang et al., 2019), mas se diferencia daqueles que encontraram efeitos para as campanhas publicitárias em si (Feeley e Moon, 2009). É interessante perceber que o poder da mídia de massa é quase tão forte quanto o capital físico; representado pela variável de leitos de transplante. Este resultado ressalta o grande potencial de conscientização que esta mídia representa. Tais efeitos benéficos são importantes aliados em uma população que consome tanta mídia televisiva, e deve ser aproveitado com este intuito de forma responsável e consciente. As campanhas devem ser repensadas, de forma que reflitam os efeitos positivos que as telenovelas têm conseguido nos últimos anos. Estudos futuros devem mostrar se tais efeitos podem ser encontrados em outros países, especialmente naqueles em que este formato de entretenimento seja tão popular quanto no Brasil.

Sessão 16 – COVID-19 impacts on health and wellbeing

Será que vai ficar tudo bem? – Impactos da COVID-19 na saúde e bem-estar dos cidadãos Portugueses

Lara Ferreira[1 2 3], Luís Pereira[1 2 3] and Pedro Ferreira[2 3]

[1] Universidade do Algarve

[2] CEISUC, Universidade de Coimbra

[3] CinTurs

A pandemia **COVID-19** tem vindo a colocar pressão na sociedade e nos sistemas de saúde em todo o mundo. Praticamente todos os países têm aplicado medidas de controlo da pandemia, que envolvem, entre outras coisas, medidas de distanciamento, confinamento e, consequentemente, o fecho mais ou menos prolongado da maioria das atividades económicas e das fronteiras. Embora necessárias, estas medidas têm tido contribuído para uma séria recessão económica com consequências ao nível do bem-estar (B-E), da satisfação com a vida, da qualidade de vida relacionada com a saúde (**QVRS**) e da saúde mental. O objetivo deste trabalho é estudar o impacto do **COVID-19** na **QVRS** e no B-E dos cidadãos portugueses. Pretende-se (i) caracterizar a **QVRS** e o B-E durante a pandemia **COVID-19**; (ii) compará-los com a população portuguesa pré-**COVID-19**; e (iii) identificar os determinantes sociais que podem afetar esses resultados durante a pandemia **COVID-19**. São utilizados dados de um estudo, Health & Well-Being **COVID-19** (H&W-B **COVID**), que recolheu dados sobre **QVRS**, B-E, satisfação com a vida, impactos económicos e sobre a situação laboral, acesso a cuidados de saúde, saúde mental e física, entre outros. Foram usadas as versões portuguesas do **EQ**-5D-5L, do Personal Wellbeing Index (**PWI**), do Satisfaction with Life Scale (**SWLS**), de alguns itens da **SHARE** Corona Survey, entre outras. O inquérito foi realizado por telefone a uma amostra aleatória representativa de 1.255 inquiridos da população adulta portuguesa, estratificada por género, idade e região. Os dados foram recolhidos entre 24 de março e 20 de abril de 2021, ou seja, durante o final do segundo confinamento nacional. Para estimar o impacto do **COVID-19** na saúde e no B-E dos cidadãos, comparámos os dados H&W-B **COVID** com dados de estudos anteriores, onde medimos a **QVRS** pré-**COVID** da população portuguesa [8], e a **QVRS** durante o primeiro confinamento nacional. A análise dos dados baseou-se em estatística descritiva e inferencial para descrever a amostra e examinar as perceções dos entrevistados sobre os impactos da **COVID-19** na sua **QVRS**, B-E, satisfação com a vida, situação económica e laboral, saúde mental, realização de atividades sociais e acesso a cuidados de saúde. Foi usada estatística inferencial para perceber se existem diferenças entre grupos e em que grupos a pandemia teve maior impacto. As estimativas do **EQ**-5D-5L foram comparadas com as normas da população e com os resultados do primeiro confinamento. Foram usados modelos de regressão linear para investigar quais os fatores que explicam a **QVRS**, o B-E e a satisfação com a vida durante a pandemia. Essa etapa incluiu a investigação das relações entre um conjunto de variáveis económicas, de saúde e sociais, bem como variáveis sociodemográficas e

os índices **EQ**-5D-5L, **PWI** e **SWLS**. Os resultados mostram que os cidadãos portugueses consideram a sua saúde pior do que antes da pandemia. O acesso aos serviços de saúde foi muito afetado com o cancelamento ou adiamento de cirurgias ou consultas médicas. Os idosos foram os mais afetados. A maioria ficou mais nervosa, ansiosa ou tensa; triste ou deprimida. A realização de atividades sociais foi também altamente afetada pela pandemia. A estabilidade económica dos cidadãos portugueses enfraqueceu durante a pandemia da **COVID-19**. Mais de dois terços dos cidadãos portugueses sofreram uma redução no salário ou no volume de negócios devido à pandemia do **COVID-19**. No entanto, a pandemia de **COVID-19** afetou mais jovens adultos de 18 a 34 anos em termos de trabalho e situação econômica. Em termos gerais, os cidadãos estão ligeiramente satisfeitos com a vida e relatam um B-E moderado. Este estudo permitiu conhecer o impacto da pandemia sobre a saúde e o B-E dos cidadãos portugueses e perceber quais os fatores que maior impacto tiveram na **QVRS**, B-E e satisfação com a vida. Estes resultados podem ser usados para estabelecer políticas sociais e de saúde que visem minimizar os impactos negativos da pandemia.

The Incidence of Serious Covid-19 Risks Across the Socioeconomic Status Distribution

Miguel Gouveia[1] and Maria Teresa Figueiroa[1]

[1] Catolica Lisbon School of Business and Economics

OBJECTIVE: The effects of the Covid-19 pandemic on the economy have been large. The 2020 fall in real **GDP** relative to 2019 has been estimated at 7.7% in Portugal. Not only has aggregate output suffered but the economic burden of Covid-19 has fallen disproportionately on segments of the population with below-average socioeconomic status. A related but fundamentally different question is how the burden of the disease itself is distributed across socioeconomic status (**SES**) levels. It is well known that the burden of disease, in general, affects more intensely groups with lower levels of income and education but so far there has been scant evidence on the distributional burden of Covid-19. From an ex-post perspective, we will have to wait for the collection of detailed household data, but it is possible to get an ex-ante analysis going by studying the distribution of characteristics that put people at higher risk from Covid-19. The aim of this work is to characterize the distribution of the population's segments at a higher risk of suffering severely from Covid-19, according to **SES**.

METHODS AND DATA: This paper uses data from the 2014 National Health Survey to estimate concentration curves (**CC**) and Concentration Indices (**CI**) for the distribution of severe Covid-19 risk in the Portuguese population. The major steps taken along the way were: Definition of the population at serious Covid-19 risk. The paper follows Adams et al (2020) criteria as adapted to the Portuguese context by Laires and Nunes (2020). Overcoming the problems with **SES** data in the 2014 **NHS**. The **NHS** only reports income quintiles, a very coarse measure of **SES**. To overcome that limitation we used Multiple Correspondence Analysis (**MCA**), an analogue technique to Principal Components Analysis for the case of categorical variables.

The methodology is used to create a summary index variable that is able to estimate and quantify each individual's SES. The process uses data available in the 2014 NHS on income quintiles, education, place of residence, and deprivation occurrence to estimate a finely distributed SES variable. Standard errors and confidence intervals for concentration indices were obtained by bootstrapping. In an effort to provide context, the distributional estimates obtained for serious Covid-19 risk are compared with similar measures, obtained using the same methodology, for Diabetes, Chronic Obstructive Pulmonary Disease, Cardiovascular Problems, Hypertension and Stroke.

RESULTS: The paper presents Figures with the Lorenz curve for the SES and the CC for severe Covid-19 risk as well as the CCs for the set of the other health problems mentioned. The Gini for the distribution of the SES variable was estimated as 0.326 (SE .002). This is quite similar to the estimates available from other microdata sources with good income information for Portugal. The estimate of the CI for serious Covid-19 risk is — 0.160 (SE .008). The CIs for other health problems are as follows: Cardiovascular problems -0.312 (SE .024), Hypertension -0.191 (SE .011), Stroke -0.269 (SE .044), Diabetes -0.236 (SE .017), and COPD -0.231 (.027).

CONCLUSIONS: All CIs are negative, showing that the prevalence of the diseases studied, and the incidence of severe Covid-19 risk all fall disproportionately on people with lower SES. The level of inequity in the distribution of Covid-19 risk is lower but in the range of the estimates for the other health problems analyzed.

Estado de saúde mental nos 50+ portugueses depois e antes da pandemia: uma caracterização quantitativa

Óscar Lourenço[1] and Silvia Sousa[2]

[1] Universidade de Coimbra, Faculdade de Economia, CeBER

[2] Universidade do Minho, NIPE

OBJETIVOS: O surgimento e rápida progressão da COVID-19 teve fortes efeitos em várias dimensões da nossa vida social e económica. Um domínio da saúde em que a COVID-19 deixou a sua indelével marca foi na saúde mental, em que mediadores tais como o desemprego, pobreza, stress relacionado com o trabalho, isolamento social, o reduzido acessos a cuidados de saúde, entre outros, desempenharam um papel importante. O objetivo desta apresentação é caracterizar quantitativamente a saúde mental dos Portugueses 50+ durante a pandemia, estabelecendo uma comparação com uma baseline de 2015.

MÉTODOS: Os dados provêm do Survey of Health, Ageing and Retirement in Europe. Usamos dados da onda 6 (2015) e da onda 8 SHARE COVID-19. Foram inquiridos 1 118 portugueses com 50 ou mais anos, entre 11 de junho e 10 de agosto de 2020, na onda COVID 19 e 1 674 na onda 6, em 2015. A medição do estado de saúde mental é auto-avaliado e faz-se recorrendo à questão "No último mês, sentiu-se triste ou deprimido(a)?", designada por DEP. Estimamos a

prevalência de **DEP**, global e em função de variáveis diversas que refletem o nível socioeconómico dos indivíduos e o seu estado de saúde. Todas as estimativas foram ponderadas utilizando os ponderadores cedidos na base de dados **SHARE**.

RESULTADOS: Cerca de 39% dos portugueses indicaram ter-se sentido tristes ou deprimidos durante a pandemia, enquanto que no mesmo período apenas 28,2% dos europeus o indicaram. Por outro lado, a prevalência de depressão entre os portugueses, em 2015, foi de 55,8%, e no mesmo período, a prevalência de depressão entre os europeus foi de 44,1%. De notar ainda que em 2017 a prevalência de depressão na Europa de 42,7%, não havendo dados para Portugal neste período. Os dados evidenciam assim que a prevalência de depressão diminuiu no período da pandemia, quer em Portugal quer na Europa. Na amostra referente a Portugal, os dados revelam que a depressão tem muito maior expressão entre as mulheres (Fem: 55%; Masc 19%), entre os indivíduos que têm 2+ doenças crónicas (2+ doenças crónicas 45,5%; -2 doenças crónicas 25%) e entre os indivíduos que pertencem aos quintis de rendimento intermédios (Q1: 26%; Q2:57%; Q3:43%; Q4:23%). Relativamente à prevalência de depressão na Europa por sexo, estado de saúde e rendimento, os dados revelam que a depressão tem também maior expressão entre as mulheres (Fem: 35%; Masc 20%), entre os indivíduos que têm 2+ doenças crónicas (2+ doenças crónicas 34%; -2 doenças crónicas 21%). Contudo, relativamente ao rendimento, são os indivíduos dos primeiros dois quintis de rendimento que apresentam uma maior prevalência de depressão (Q1: 32,3%; Q2:32,7%; Q3:26,9%; Q4:21,7%).

CONCLUSÕES: A análise do impacto da pandemia na saúde mental, baseado em inquéritos, suscita a necessidade de se ter em conta vários aspetos, inclusivamente, aspetos associados à própria implementação dos inquéritos. O facto de os resultados sugerirem que após o espoletar da pandemia os indivíduos se sentem menos deprimidos, um resultado, à partida, não expectável, poderá ser explicado pelo timing em que os inquéritos foram realizados, i.e., após o desconfinamento generalizado, em pleno verão, período de algum otimismo generalizado. Os resultados obtidos suscitam a necessidade de um maior refinamento da análise, por forma a distinguir diferentes grupos na amostra, assim como no sentido procurar corroborar a explicação proposta.

Estimating the health impact of the first 4 months of COVID-19 vaccination in Portugal

Catarina Silva[1 2], Hugo Anjos[2], Miguel Gouveia[3], Luís Graça[4], Paulo Jorge Nicola[1 2 5] and António Vaz Carneiro[1 2 5]

[1] Instituto de Saúde Baseado na Evidência, FMUL

[2] Unidade de Epidemiologia, IMPSP, FMUL

[3] Catolica Lisbon School of Business and Economics

[4] Instituto de Medicina Molecular João Lobo Antunes

[5] Instituto de Saúde Ambiental, FMUL

OBJECTIVES: The impact of the COVID-19 vaccination campaign at the population level remains unknown for many of the countries including Portugal. Our main objective was to quantify a crude health impact of COVID-19 vaccine in Portugal by estimating potential infections, deaths, years of life lost (YLL) and discounted quality-adjusted life years (QALYs) averted in the first 4 months of vaccination in persons over 60+ years.

METHODS: We used COVID-19 weekly epidemiological data (number of infections and deaths) for Portugal between Jan 1 and Apr 30, 2021 stratified by three age groups (60-69, 70-79 and 80+ years) available at the WHO Detailed Surveillance Dashboard. Number of weekly administered vaccines (1st and 2nd doses) for the same period were extracted from the European Centre for Disease Prevention and Control Dashboard by age group. Life expectancy by age group was taken from INE. QALY by age taken from the EQ-5D-3L Portuguese population norms were used to estimate the discounted QALY loss for each Covid-19 attributed death. The impact of COVID-19 vaccination was determined by comparing weekly observed health events with observed events subtracted by the expected vaccine effect (scenario of no vaccination) according to literature. We assumed that full vaccination schemes required two doses and identical efficacy among vaccines brands and age groups. Efficacy was specific of the time-window after vaccination (14-28 days after 1st dose; >28 days after 1st dose; 14-28 days after 2nd dose; >28 days after 2nd dose). All calculations were by week and stratified by age. YLL estimates are presented undiscounted.

RESULTS: At end of April, full vaccination coverage was 88% at 80 years+ (1st dose 95%), 23% at 70-79 years (1st dose 88%) and 4% at 60-69 years (1st dose 59%), resulting in 31% at 60+ years (1st dose 77%). Vaccination rate was not linear over time, overall and within age groups. Besides, in the +80 years group, 25% of the 1st dose vaccinations had a delay which would not be observed given a strict age-based vaccination criterion. This delay was particularly high (around 50%) during January. Median time between vaccination doses was 5 weeks for all age group but longer periods were observed for younger people and in more recent administrations. In all age groups, time between vaccination doses was not constant during the study period (4-6 weeks interval). We estimated that vaccination may have averted 3499 infections, 735 deaths, 4078 YLL and 1601 QALY: a 5% and 9% reduction in infections (71635 observed, 75134 expected) and deaths (7470 observed, 8205 expected) compared with no vaccination. This impact (97%) is explained mainly by the vaccination effect in the age group of 80+ years. Strict age-based criterion using available vaccines would be expected to prevent 6234 infections (+78%) and 1919 deaths (+169%) in +60 years of age. If it were feasible to have people vaccinated at a constant rate, having the same final number of 60+ people vaccinated at the end of the period, 7089 (+102%) cases and 1254 (+70,6%) deaths would have been avoided.

CONCLUSION: These results provide initial insights about the potential impact of COVID-19 vaccination in Portugal in people +60 years during the first vaccination phase. Moreover, the impact of some of the decisions taken in the vaccination campaign were compared with alternative scenarios. Differences may be underestimated as the effect of preventing the infection of future cases/deaths is not

taken into account (as with dynamic modeling) and that vaccines were prioritized to high-risk subgroups (e.g. comorbidities, elderly homes) or those working with these groups. These crude estimates should be validated as vaccination data become more available, and refined using modelling techniques. We conclude that, besides production factors, redistribution factors may have major impacts on effect of COVID-19 vaccination, particularly during high disease incidence.

Sessão 17 – Innovation

No ordinary leaders – Evidence from Female-headed households in Palestine Refugee Camps

Sara Valente de Almeida[1], Pedro Pita Barros[1] and Hala Ghattas[2]

[1] NOVA School of Business and Economics

[2] American University of Beirut

Subject to stigmatization in a community characterized by strong traditional gender roles, female household leaders in Palestine Refugee Camps find themselves with more barriers to provide the basic needs to their families than most. We explore the potential differences in terms healthcare expenses between male and female-headed households (FHH) in Palestine Refugee camps in Lebanon and make a first approach to assess mental health issues associated with being a female head of household (HoH) in this context. Between 2010 and 2015 social support for FHH was strengthened, thus we also address potential improvements on FHH living standards through time. This study produces a deep understanding on the different types of households and of female-headed households, in particular. Data are from AUB Socioeconomic Surveys from 2010 and 2015 with household and individual level information. We perform a cross section analysis using a Two-Part Model (probit and glm) and Propensity Score Matching to understand correlations between household composition and spending decisions, and a probit model to study mental health issues associated with being a female HoH. We also deepen the study on income elasticity to potentially disentangle stigma/preferences effects. Results show that expenditure in healthcare as a percentage of total spending is 1.4** pp higher for FHH in 2010 and 2.2*** pp in 2015 . This difference is higher in families headed by widows or single women. Most mental health indicators are worse for female HoH and the effect is driven by HoH who are widows. Between 2010 and 2015, female HoH positive feelings indicators show small improvements over time. We highlight the need to continue providing financial support to these families, but that a more intersectoral approach should be considered in order to protect these families from severe inter-generational psychological damage.

Innovation Diffusion and Physician Networks: Keyhole Surgery for Cancer in the English NHS

Marisa Miraldo[1]

[1] Imperial College London

We examine the effect of a clinician mobility network on medical innovation using a rich matched patient-clinician data set covering all relevant clinicians during the period of innovation (2000-2014). We propose and implement a new identification strategy for endogenous peer-effects which exploits settings in which there are two peer types, only one of which exerts a contextual effect. In our context, these are intra-hospital and inter-hospital peers. Our panel data and the dynamic network arising from clinician mobility allow us to separate unobserved clinician heterogeneity from peer and network effects. We also build on standard peer-effects models for panel data by adding an effect of cumulative peer behaviour, and consider peer and network effects stemming from influential clinicians ('key players'), whose identities we recover using the high-dimensional instrumental variables estimator of Gautier and Rose (2019). We find positive peer-effects and network effects through the number of peers, proximity to pioneers of the technique and proximity to key players. We conduct counterfactual analysis, and suggest policies based around increasing early take-up and connectivity, showing that targeting young, well connected clinicians with high early take-up can lead to large increases in aggregate take-up. Our findings suggest that clinician networks can be leveraged for policy. We estimate that carefully targeted early intervention on just one clinician in 2001 could have increased average take-up in 2014 by around 17%. Since only one clinician need be trained, this represents a cost-effective means of improving take-up. A more ambitious (and likely more costly) policy to foster links between high and low take-up clinicians could have increased take-up by 23%.

The determinants of early adoption and diffusion of biosimilars: a longitudinal analysis of Portuguese NHS hospitals

Julian Perelman[1], Filipa Duarte-Ramos[2], António Melo Gouveia[3], Luis Pinheiro[4], Francisco Ramos[1] and Céu Mateus[5]

[1] Nova National School of Public Health

[2] Faculdade de Farmácia, Universidade de Lisboa

[3] IPO de Lisboa

[4] Centro Hospitalar Universitário de Lisboa Norte

[5] University of Lancaster

INTRODUCTION: Promoting competition in off-patent markets may contribute to health systems' efficiency, through increasing penetration of biosimilars. Biologic drugs represented, in 2018, 30% of drug expenditures in Europe. Among these, 16 molecules representing 21% of total spending had a biosimilar available in 2018. Biosimilars are highly similar to existing biological drugs and are approved with

the “same high standards of quality, safety and efficacy”. Most of the literature has examined the role of policies in explaining the biosimilar uptake, through cross-country analyses, but few studies have addressed within-country discrepancies. This study evaluates the determinants of biosimilars’ adoption and diffusion in the Portuguese NHS (SNS), focusing on public hospital characteristics.

METHODS: We used publicly accessible data from the “Transparency Platform of the NHS”, which provides monthly information, by hospital, on the consumption of biologic and biosimilar drugs. We used data for the 2015-2021 (March) period. We restricted our sample to adalimumab, etanercept, infliximab, rituximab, and trastuzumab. Our sample included information for these 5 molecules over 75 months, for 39 SNS hospitals (N=9,290). In a first dimension, we included as explanatory variable the academic vs non-academic hospital status, the total monthly consumption of biological drugs, and each hospital case mix index. In a second dimension, we included the total number of ongoing randomized clinical trials (RCT) over the complete period, as proxy of the hospital relationship to the pharmaceutical industry commercializing reference medicines. We also included the share of each pharmaceutical firm commercializing branded drugs in each hospital expenditures, as a proxy of the firm portfolio in the hospital, from the platform of public contracts. We also considered, in the analysis of the biosimilar quota, the time since the biosimilar was launched. Survival regressions were performed on the time to adoption. We then modeled the quota of biosimilar consumption using generalized estimated equations with random hospital effects.

RESULTS: A longer delay of biosimilar adoption was observed for rituximab and infliximab, which however experienced a greater biosimilar quota by December 2020; although their uptake was quicker, the lowest quotas were observed for etanercept and adalimumab. Academic hospitals were characterized by a quicker uptake of adalimumab and infliximab biosimilars but lower quotas for all drugs. Except for infliximab, a higher consumption of biologics was related to a lower ratio of biosimilar uptake. More RCTs were linked to a greater biosimilar ratio and a quicker uptake except for rituximab; a greater share of originator portfolio was linked to quicker uptake and higher ratio except for adalimumab.

DISCUSSION: There are substantial differences in the uptake and ratio of biosimilars, across drugs and hospitals. If all hospitals would behave like those with the higher biosimilar ratio, potential savings would reach 13.9 million euros per year, only for the five drugs we evaluated (i.e., 1% of total hospital drug expenditures for the year 2020). The longer the time since approval, the higher was the biosimilar uptake; yet half SNS hospitals took more than 2.5 years to adopt etanercept biosimilar, 3.5 years for rituximab biosimilar, and almost two years for trastuzumab biosimilar. Academic and high-consuming hospitals are not characterized by a higher and shorter uptake of biosimilars; hence, contrary to expectations, more informed practitioners, and those in hospitals where biosimilars would most contribute to savings, may not be those more aware of biosimilars’ potential. Also, a stronger link with originator firms does not hinder the biosimilar

uptake, and even promotes it. Thus, involvement in scientific activities and interest in innovative drugs is not incompatible with efficiency in prescription.

Sessão 18 – Primary and integrated community-based care

What explains primary health care coverage? Monitoring family physician coverage variation in Portugal

Marco Paschoalotto[1], Joana Pestana[1], Eduardo Costa[1] and Pedro Pita Barros[1]
[1] NOVA School of Business and Economics

OBJECTIVES: This study analyses how the family physician (**FP**) coverage has beavered in Portugal since 2009. We observe the demographic evolution coupled with the variation in the number of physicians and on the population enrolled with a physician in each local area. In doing so, we monitor if and how the patient's variation influenced the family´s physician's distributions.

METHODS: First, to understand the variation of **FP**'s coverage over time (from 2009 to 2019) at the national level, we decomposed the volume of patients not enrolled with a physician, disentangling the variation into three effects: from changes in the number of residents, changes in the number of doctors, and/or changes in list size. Second, we analyse this variation regionally using choropleth maps over five administrative regions (**ARS**); local clusters of primary health care unis **ACES** (74 in 2009 and 55 from 2013 onwards) and municipalities (278).

RESULTS: The results can be divided mainly into 3 sections. First, looking into the **FP**'s variations coverage over time, we have found: 1) Over this period there was a considerable reduction in the number of patients without **FP** (from 1.8 M to 0.9 M). Such reduction is explained above all by a substantial reduction in demand, which in turn could be explained by demographic shifts and administrative write-off of records (that occurred during the adjustment program); 2) the evolution of the number of primary care doctors also contributed, though to a lesser degree, to the changes in the number of patients without a physician assigned; 3) the slight increase in the number of patients per doctor resulted on an only marginal reduction in the number of patients without a physician. Second, looking at regional differences, we can observe: 1) The most pressured areas in 2009 were the metropolitan areas of Lisbon, Porto, and the region of Algarve. Interior areas, as well as those regions under **ARS** Centre, presented an almost full coverage; 2) the majority of the local clusters (**ACES**) in the suburban area of Porto have managed to reverse the situation until 2019; 3) The "problem" persists in the **ARS** Lisbon and Tejo Valey; 4) Small improvements in the **ARS** Algarve, but not evenly distributed across the region; 5) There is a degradation in some **ACES** in **ARS** Centro, though on average it is still on the highest quartile. 6) The "less attractive" interior areas in **ARS** Alentejo (except Evora) and **ARS**

Centro have had a deterioration; 7) Regarding local area homogeneity, we observe very homogenous **ACES**, while others are very heterogeneous, in which average results are driven by certain municipalities. Third, we gather the health policies implemented during the study period that could have an impact on the **FP** coverage.

CONCLUSIONS: Primary health care is at the heart of the health service policy in Portugal and guaranteeing full population coverage has been on the political agenda for more than two decades. Residents have been free to choose a family physician if there is a place available on the list of any physicians in their region. Despite all political efforts, enrolment with **FP** is still severely constrained by physician shortages and excess demand, resulting in many patients not being able to register with a **FP**.

Design, challenges, and effectiveness of the first collaborative care intervention in hypertension and hyperlipidemia management between pharmacies and primary care in Portugal: a multicenter quasi-experimental controlled trial (USFarmácia)

Suzete Costa[1], José Luís Biscaia[2], Maria Rute Horta[3], Sónia Romano[4], José Pedro Guerreiro[4], Peter Heudtlass[4], Maria Cary[4], Mariana Romão[4], António Teixeira Rodrigues[4], Ana Miranda[5], Ana Paula Martins[6], Ana Sofia Bento[2], João Pereira[1], Céu Mateus[7] and Dennis Helling[8]

[1] Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa

[2] USF S. Julião da Figueira, Agrupamento dos Centros de Saúde (ACeS) do Baixo Mondego

[3] Centro de Informação do Medicamento e Intervenções em Saúde (CEDIME), Infosaúde, Associação Nacional das Farmácias

[4] Centro de Estudos e Avaliação em Saúde (CEFAR), Infosaúde, Associação Nacional das Farmácias

[5] Registo Oncológico Nacional (RON), Instituto Português de Oncologia de Lisboa Francisco Gentil

[6] Faculdade de Farmácia da Universidade de Lisboa

[7] Division of Health Research, Lancaster University

[8] Skaggs School of Pharmacy and Pharmaceutical Sciences, University of Colorado

OBJECTIVES: The aim of this study was to assess the effectiveness of a collaborative care intervention in hypertension and/or hyperlipidemia management between pharmacies and primary care family health units (**USF**s).

METHODS: This was the first **IT**-driven multicenter, pragmatic, quasi-experimental controlled trial of hypertension and/or hyperlipidemia collaborative management between community pharmacies and **USF**s using panel data. Patients of selected **USF**s aged 18 years and above on medication for hypertension and/or hyperlipidemia were recruited by pharmacists. The intervention comprised: integrated care pathways as decision algorithms pre-agreed with **USF** physicians and inserted into the pharmacy dispensing software; technology-driven exchange of information

between the two settings; and interprofessional meetings (Quality Circles) versus usual care. The primary outcomes were blood pressure, total cholesterol, and proportion of controlled patients at 6 months. Changes in outcomes between baseline and 6-months used difference-in-differences estimators in a GLM. In addition, we also explored the use of controlled interrupted time series — a design often used for the evaluation of public health interventions occurring in real-world settings where randomization is not possible — for blood pressure.

RESULTS: A total 203 patients entered the study and 108 patients completed 6-month data collection of primary outcomes. We were not able to observe differences in the effect of intervention vs control.

CONCLUSIONS: This collaborative trial was not able to establish effectiveness versus usual care possibly due to the many limitations, including recruitment and primary care technology communication issues. However, this study was the first in Portugal with innovative features and paved the way for future improved trials. Improvements in technology communication between settings are required to enable future collaborative care intervention trials between pharmacies and primary care towards integrated patient units and Value-Based Health Care. Trial Registration: Current Controlled Trials (ISRCTN): ISRCTN13410498, retrospectively registered on 12 December 2018: https://www.isrctn.com/ISRCTN13410498

Remote patient monitoring: A scoping review of models and initiatives from an integrated care perspective

Rafael Miranda[1 2], Mónica Oliveira[1], Paulo Nicola[3], Filipa Baptista[2] and Isabel Albuquerque[4]

[1] CEG-IST, Instituto Superior Técnico, Universidade de Lisboa

[2] Enterprise Services, Siemens Healthineers Portugal

[3] Instituto de Medicina Preventiva e Saúde Pública, Faculdade de Medicina, Universidade de Lisboa

[4] Comprehensive Health Research Center (CHRC), Universidade NOVA de Lisboa

BACKGROUND: Remote patient monitoring (RPM) has been identified as one of the main trends in healthcare provision for over a decade. However, the COVID-19 pandemic triggered the urgency for the rapid development of these solutions, overcoming barriers to implementation that existed in the past. As such initiatives often lack planning, there are still gaps in the delivery of RPM in an integrated and coordinated manner, better responding to the needs of both patients and providers.

OBJECTIVE: This study aims to examine the existing theoretical models and real-life initiatives for the implementation of RPM integrated care delivery, focusing on the identification of the structural components and elements of integrated care present across studies.

METHODS: A scoping review was conducted in PubMed, Scopus and Web of Science on literature published since 2010, leveraging a search strategy that combines terms relative to (a) theoretical models and initiatives; (b) **RPM**; and (c) care integration. The **SELFIE** framework for integrated care was applied to allow a holistic identification of integrated care elements on included studies.

PRELIMINARY RESULTS: From 411 records identified, a total of 25 reports were included after screening – 7 theoretical models and 18 real-life initiatives. 18 structural elements of integrated care implementation of **RPM** were identified among theoretical models, defining a structure for assessing real-life initiatives. 14 out of 18 studies referred to, at least, 10 structural elements, being patient education and self-monitoring promotion, multidisciplinary core workforce, information and communication technologies (**ICT**s) and telemonitoring devices, and health indicators measurement unanimously present elements among real-life initiative studies.

CONCLUSIONS: Although **RPM** integrated care delivery is still a little explored theme in the literature, this scoping review allowed us to identify the structural elements for the development of such solutions, contributing with evidence to inform healthcare providers in developing approaches that better respond to the needs and preferences of the actors involved. Future research may focus on assessing the relationship between the completeness of intervention design and its clinical, economic and social overall impacts.

The impact of the economic crisis on primary care utilization, expenses, and quality: The case of Portugal

Joana Pestana[1] and Pedro Barros[1]
[1] NOVA School of Business and Economics

The European debt crisis that unraveled in 2009 produced adverse social and health effects in several countries, including Portugal. The recession also affected the financial capacity to respond due to the austerity measures. Prior literature supports the direct impact of the crisis on the population health and public spending on the health care system, but few studies assess the impact on the quality of services provided and on the capacity of the services to adapt to the adverse conditions. We study whether the changing socio-economic conditions impacted primary health care utilization, quality of care delivered, and the average expenses. We also study whether there are heterogeneous effects across the distinct practice organizational models. We exploit an administrative database from the Portuguese public primary care practices (N=1082) over 9 years (2010-2018) that includes a rich set of primary care indicators taken from Donabedian structural dimensions, patient, and practice characteristics, and link it with municipal socio-economic data. We use using linear and dynamic panel models to identify the effect of decreasing unemployment on primary care services outcomes. The outcomes included the utilization of services, physician-initiated expenses, and

the quality of care provided measured in several clinal areas (cancer screening, family planning, maternal health, infant health, and management of patients with chronic conditions). Preliminary results show that despite the austerity measures imposed during the adjustment program, primary care utilization was not affected by the increasing unemployment rate. We found a weak or no association between the local socio-economic conditions and the measured quality of the primary care units, suggesting a high level of resilience of the practices to cope with the crisis. Nevertheless, certain preventive activities, such as cancer screening for elderly patients and follow-up of patients with diabetes and hypertension, are those that are significantly affected by the adverse socio-economic conditions which may lead to a deterioration in the population health conditions. These results can shed some light on the relevant consequences that can follow from the Covid pandemic disaster.

Sessão 19 – Burden of Illness I

Custo e carga da atrofia muscular espinhal em Portugal

Luís Silva Miguel[1], Teresa Coelho[2], Teresa Moreno[3], Luís Negrão[4], Joana Ribeiro[4], Manuela Santos[5], Miguel Oliveira Santos[6], José Pedro Vieira[7], Edgar Pinheiro[1], Rita Guerreiro[1], João Costa[8] and Margarida Borges[1]

[1] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa

[2] Unidade Clínica de Paramiloidose, Centro Hospitalar do Porto

[3] Unidade de Neuropediatria, Centro Hospitalar Universitário Lisboa Norte

[4] Serviço de Neurologia, Centro Hospitalar e Universitário de Coimbra

[5] Serviço de Neuropediatria, Centro Hospitalar do Porto

[6] Departamento de Neurociências e Saúde Mental, Centro Hospitalar Universitário Lisboa Norte

[7] Serviço de Neurologia, Hospital Dona Estefânia (Centro Hospitalar e Universitário de Lisboa Central)

[8] Laboratório de Farmacologia Clínica e Terapêutica, Faculdade de Medicina, Universidade de Lisboa

INTRODUÇÃO: A atrofia muscular espinhal (**AME**) é uma doença genética heterogénea, habitualmente caracterizada por 3 fenótipos principais (tipo I, II e III) com diferentes graus de gravidade. Apesar de rara, é a principal causa de mortalidade infantil por doença monogénica. Neste estudo pretendemos estimar os custos e a carga da **AME** em Portugal Continental, no ano de 2019.

MATERIAL E MÉTODOS: A estimação dos custos e da carga associados à **AME** foi realizada para os três fenótipos, na ótica da prevalência. A carga da doença foi medida pelos anos de vida ajustados pela incapacidade (**DALY** disability-adjusted life years). Os custos foram estimados adotando a perspetiva global da sociedade, e incluíram os consumos de recursos e os custos indiretos (perdas de produtividade dos doentes). As principais fontes de informação foram a Base de Dados de Morbilidade

Hospitalar, os contratos programa, dados de consumo e preço de medicamentos, e a opinião de um painel de 7 Peritos (4 neuropediatras e 3 neurologistas).

RESULTADOS E DISCUSSÃO: A prevalência da **AME** foi estimada em 147 doentes (18 tipo I, 46 tipo **II** e 83 tipo **III**). Atribuíram-se 6 óbitos à **AME** que geraram 345 anos de vida perdidos por morte prematura, 75% imputáveis à **AME** tipo **II** e **III**. Estima se que se tenham perdido 403 **DALY** (86% por mortalidade prematura; 14% por incapacidade). Em termos individuais, a carga é significativa (perda de 2,7 **DALY**/doente; 5,4 **DALY**/doente tipo I e 2,4 **DALY**/doente tipo **II**/**III**). Os custos médicos totalizaram 16,6 milhões € (15,0 milhões € custos diretos; 1,6 milhões € custos indiretos). Os custos de produtividade estimaram-se em 194 mil €. Os custos totais foram de 16,8 milhões €, representando um custo anual médio por doente de 114 mil € (395 mil € tipo I; 93 mil € tipo **II**; 65 mil € tipo **III**).

CONCLUSÃO: A **AME** tem um relevante impacto socioeconómico, não obstante a baixa prevalência, nomeadamente ao nível da pessoa e família/cuidadores, documentando a necessidade do envolvimento de todos (doentes, família/cuidadores, profissionais de saúde e decisores políticos) na definição de políticas de saúde nacionais sobre a abordagem da **AME**.

Chronic Pain and Health Related Quality of Life – Results from a Primary Care Setting

Miguel Gouveia[1], Rita Tinoco and Filipe Antunes

[1] CLSBE

[2] Grunenthal

[3] Physical and Rehabilitation Medicine Department and Chronic Pain Unit, Hospital de Braga

OBJECTIVE: The aim of this paper is to characterize the health-related quality of life (**HRQ**oL) in a population diagnosed with chronic pain followed in primary care and to compare the results with the corresponding values for the general population after adjusting for differences in the age and sex distribution.

METHODS AND DATA: Data from the #ChronicPainCare study is used, including socio-demographic and clinical information. Health-related quality of life data was collected using the **EQ**-5D-3L. Chronic pain is defined as pain that lasts for more than three months or previous existence of a chronic pain diagnostic even if treatment currently makes patients asymptomatic. Data was collected from clinical files and interviews with patients. The study includes 578 patients from 57 primary care sites. Patients were recruited between September 2017 and November 2018.

RESULTS: The sample is older and has more females than the general Portuguese population: N=578, % Female=73.2, Age Mean=63.1, Age Median=63.4. The distribution by age is as follows 18-29: 1.04%; 30-49: 14.01%; 50-69: 50.87$ and 70+:34.08. The distribution by completed years of schooling of the participants is

1-4: 52.1%, 5-9: 25.6%; 10-12: 12.6%; >12: 2.5%; no information reported: 3.5%. Comparing the sample results with the Portuguese population norms (after the appropriate age and sex adjustments) we find that EQ-5D-3L scores are significantly lower in all five dimensions, not just ("Pain and Discomfort"), with the largest differences in "Self-care" and "Usual Activities". Probit regressions explore the determinants of reporting the existence of problems (levels 2 or 3 of the EQ-5D-3L) in each of the dimensions, controlling for a set of socio-economic and behavior variables. Having "Pain or Discomfort" is significantly associated with having "Mobility" or "Anxiety/Depression" problems. The average QoL in the chronic pain sample is 0.40 whereas the general adjusted population score, with the same age and gender distribution, would have a QoL of 0.67. The differences in QoL are statistically significant for almost all age and gender population subgroups. A Tobit regression explaining the EQ-5D-3L scores in the chronic pain sample shows that years of schooling and being male have a significant effect improving QoL. Another result is that" time since diagnosis" of chronic pain has a significant negative effect on the QoL. Variables that did not have a statistically significant role include age, the type of pain (nociceptive vs. neuropathic vs. mixed), the body mass index, alcohol consumption and the time expected for resolution of the problem with pain.

CONCLUSIONS: The occurrence of problems in all EQ-5D-3L dimensions is more frequent and the EQ-5D-3L scores are lower in the #ChronicPainCare sample when compared to the (adjusted) population norms. The EQ-5D-3L scores increase with education, for males, and decrease for smokers and with the duration of the chronic pain. The negative impact of duration is surprising. Instead of finding the most common result in the literature, that there is an "adaptation" effect decreasing the impact on QoL of health problems over time, we find an "exacerbation" effect. This suggests that chronic pain has a depletion cumulative effect on QoL that should be studied further.

The Phollow cohort: quality of life of patients using antidiabetic or oral anticoagulants agents in Portugal

Rodrigo Murteira[1], José Pedro Guerreiro[1], Maria Cary[1] and António Teixeira Rodrigues[1]

[1] CEFAR, INFOSAUDE

BACKGROUND AND OBJECTIVE: Phollow is a real-world evidence generator based on a cohort of users of community pharmacies. Through this cohort, it is possible to study and characterize patients undergoing treatment with certain drugs of interest. The primary objective of this study was to access the quality of life (QoL) in a real-world setting of patients using antidiabetics or oral anticoagulants (OACs) in Portugal.

METHODS: This is a real-world, multicenter, cross-sectional study of adult patients taking OACs or antidiabetics originally identified in Portuguese community pharmacies. Patients were recruited to Phollow at the community

pharmacies from 24th May to 7th June 2021, and medication data from patients that agreed to participate in the study was retrieved through the dispense software of community pharmacies. The Phollow database contains the data on all prescribed and dispensed medicines at the community pharmacies since the last 3 years prior the recruitment date. Additionally, sociodemographic, clinical characteristics and patient reported outcomes (EQ-5D-5L) were collected through a telephone-based questionnaire applied to patients, after recruitment. Generalized linear models were conducted to assess variables that could affect QoL in patients using OACs and in patients using antidiabetics. Models included relevant sociodemographic (age, gender, educational level, employment status, household size, income) and clinical variables (co-morbidities).

RESULTS: Up to June 2021, a total of 137 patients were analysed: 50 using OACs, and 87 antidiabetics. Antidiabetic patients were slightly younger (median age 67 vs 72 years) and most of the patients were male. The mean EQ-5D-5L index score was 0.86 in both groups. Considering the diabetic patients, multivariate analysis suggests that being a male, employed and having a higher income are associated with a higher likelihood of better QoL score. Similarly, gender and household size are associated with QoL score in OACs users.

DISCUSSION AND CONCLUSIONS: Our findings suggest that QoL in the study population was high. This study depicts some potential predictors of QoL, however, limited sample size affects the internal validity and the generalization of results. To conclude, Phollow enhances the knowledge about medication use patterns and health outcomes of Portuguese population which are key to support health technologies assessment.

The Landscape of Non-Melanoma Skin Cancer in Portugal

Raquel Ascenção[1], João Maia Silva[2], Paula Borralho[2], Miguel Correia[3], Osvaldo Correia[4], João Costa[5], Tiago Machado[6], Beatrice Mainoli[6], Filipa Sampaio[6], Luís Silva Miguel[6] and Margarida Borges[6]

[1] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal

[2] Hospital CUF Descobertas, Lisboa

[3] Clínica Privada, Lisboa

[4] Centro de Dermatologia Epidermis, Instituto CUF, Porto

[5] Laboratório de Farmacologia Clínica e Terapêutica, Faculdade de Medicina, Universidade de Lisboa

[6] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa

OBJECTIVES: Non-melanoma skin cancer (NMSC) includes several types of skin cancer, with the most common types of tumors being basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). This study aims to describe the landscape of NMSC in Portugal, based on real world data from both the public and private sectors.

METHODS: Microdata from the administrative Diagnosis-Related Group database were used to describe BCC and SCC patients discharged from the National Health Service (NHS) hospitals in mainland Portugal (in-patient and selected outpatient admissions). Histopathological data from the private health care unit Hospital CUF-Descobertas were used to gather information regarding the number of tumors per patient.

RESULTS: The analysis using public hospitals episodes' statistics revealed that, in 2018, the number of discharged patients with BCC was 8,152 and with SCC was 2,631. The majority of these patients were males (53.8%). Patients with SCC were, on average, older than patients with BCC (79.6 vs. 74.3 years). The face was the most common location for both types of cancer. The analysis based on data from Hospital da CUF-Descobertas revealed that, between 2009 and 2019, 1,145 patients with at least one SCC tumor underwent surgery, with an average of 1.3 tumors per patient. Among these patients, 129 had synchronous tumors (11.3%), whereas 88 patients (7.7%) had metachronous tumors. 6,949 patients, with at least one BCC tumor, were identified, with an average of 1.4 tumors per patient. Among these patients, 1,116 patients had synchronous tumors (11.3%), whereas 902 patients had metachronous tumors (13.0%).

CONCLUSION: The estimation of the number of patients versus the number of tumors may have an impact in the epidemiology of NMSC. Despite being common, there is still a gap in the epidemiological description of NMSC tumors.

Sessão 20 – Novel methodologies and data

Can multicriteria decision analysis assist hospital-based HTA of medical devices? Results from three case studies developed in Portuguese hospitals.

Edgar Mascarenhas[1], Susana Afonso[1], Beatriz Coelho[1], Carla Pereira[2], Hugo Quintino[3], Teresa Bandeira[4], Ricardo Fernandes[5] and Mónica Oliveira[1]

[1] Centre for Management Studies of Instituto Superior Técnico, Universidade de Lisboa, Portugal

[2] Hospital do Espírito Santo de Évora, Portugal.

[3] Hospital do Espírito Santo de Évora, Portugal.

[4] Department of Pediatrics, Hospital de Santa Maria, Centro Hospitalar Lisboa Norte, Portugal

[5] Laboratory of Clinical Pharmacology and Therapeutics, Faculty of Medicine, Universidade de Lisboa, Portugal

Hospitals have become the main entry point for many innovative and often costly medical devices, with hospital decision-makers facing increasing pressures in a context of increasing demands for high-quality care and budget constraints. An a priori sound, timely and context-specific evaluation process is therefore needed to ensure that only value-for-money technologies are invested in. Multiple Criteria Decision Analysis (MCDA) has been increasingly explored to support

Health Technology Assessment (HTA) decisions, and arguments in favour of MCDA include the potential to simultaneously capture relevant value dimensions — such as equity considerations or organizational impacts — and the ability to consider health stakeholder preferences and value judgements in an explicit manner. However, few studies have been applied to medical devices, and much less within the hospital context. This study aims to reflect upon the experience of designing and implementing socio-technical approaches combining participatory processes and the MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique) multicriteria value measurement method to evaluate distinct medical devices within three case studies. One case study built a multicriteria model to evaluate emerging biomarkers used for the diagnosis of HER2+ breast cancer at Hospital Espírito Santo de Évora; another assessed strategies concerning different next-generation sequencing gene panels for the diagnosis of advanced solid tumours at Instituto Português de Oncologia de Lisboa; a last one built an evaluation model for assessing pediatric non-invasive ventilation devices at Centro Hospitalar Lisboa Norte. Results show: the usefulness of MCDA to build actionable tools to be used routinely at the hospital level; the relevance of some evaluation dimensions in specific evaluation contexts; the high level of stakeholder participation and commitment in the model building phase; and need to design specific socio-technical approaches – fit for the context – to implement MCDA processes. Future research includes the development of novel web-based technologies to make it more expedite multicriteria modelling in hospital contexts; and the design of user-friendly decision support systems to implement reusable models for different groups of medical devices.

Developing behavioural research in Web-Delphi processes: results from a real-world Delphi experiment in Health Technology Assessment

Liliana Freitas[1], Ana Vieira[1], Monica Oliveira[1] and Carlos Bana e Costa[1]

[1] CEG-IST (Centre for Management Studies of Instituto Superior Técnico), Universidade de Lisboa

Delphi processes are participatory processes widely used to collect stakeholders views in a wide range of health contexts, including in health services research, and has been recently explored for other contexts including in Health Technology Assessment (HTA). Delphi's controlled feedback feature allows individual participants to get acquainted with (eventual) new knowledge and, in sequence, revise their opinions, engaging in a knowledge construction process. Nevertheless, several studies show unexpectedly limited opinion changes occurring due to belief perseverance bias. Such bias can be avoided by recognizing expertise in the people one is interacting with, which is hindered by the aggregation of results in a Delphi environment. Aiming to contribute to behavioural research in health literature, a real-world Delphi was conducted with different stakeholders within the scope of medical devices' HTA to explore the effect of feeding back the distribution of the answers disaggregated per groups of stakeholders on the dropout rate and

opinion change. For that, as Delphi's feedback, medical devices' stakeholders were randomly allocated to see the global distribution of the answers and comments, or that information plus the distribution of answers per group of stakeholders. Results from the Delphi process which involved 134 stakeholders showed that the experiment did not affect the dropout rate. No statistically significant difference between conditions was either found concerning the opinion change. Participants commenting on the disaggregation of answers considered it interesting and useful for informing their opinion. These results can impact the choice of feedback formats in future Delphi processes developed in health contexts, suggesting that within the HTA context some Delphi participants prefer consulting the answers per group of stakeholders, with that information potentially not affecting results.

Estimating disease burden through modifiable risk factors: a model simulation

Diogo Nogueira Leite[1], João Miguel Alves[1], Manuel Marques da Cruz[1] and Marta Temporão[1]

[1] Faculty of Medicine, University of Porto

INTRODUCTION: Understanding and quantifying the impact of modifiable risk factors on health outcomes is key to preventing disease and injuries and can guide evidence-based choices of the most effective interventions. Through formula rearrangement it is possible to estimate the total number of cases expected of a given outcome given measures of strength of association and prevalence of risk factors and the incidence of said outcome in the individuals not exposed to related factors and, consequently, the impact the reduction of a given prevalence of a risk factor would have in the health outcome.

AIM: To build a model to visually depict expected cases of selected health outcomes by changing prevalence of selected modifiable risk factors.

METHODS: The authors reviewed published articles for estimates of relative risk and incidence in non-exposed for five risk factors and four diseases. Based on a simplified causal chain, we built a model app. We compared our estimated results with real data regarding lung cancer and tobacco use through a regression model.

RESULTS: The application built allows radar visualization of the incidence for the four selected diseases with basis on factors derived from the literature. This app reflects the underlying mathematical model using incidence on non-exposed and relative risk.

DISCUSSION: The developed tool allows for easy visualization of the dynamics between modifiable risk factors and diseases. The embedded characteristics of the model make it highly flexible, allowing for adjustments to local contexts and/or to new scientific evidence. Limitations and pathways for future research are also discussed.

CONCLUSION: Visualization models can synthesize data adequately and become active players in informing decision-making when it comes to public health concerns and health systems planning.

Cross-country comparisions of National Drug Policies – A Leximetrics approach

Helia Marreiros[1], Ricardo Goncalves[2] and Ana Lourenço[2]

[1] NIPE — Universidade do Minho

[2] Catolica Porto Business School

This paper uses a state-of-the-art comparative law technique – Leximetrics – to build an index of illicit drug policy – The **IDP-GLM** Index. It assesses drug policies' evolution cross-country and cross-time. The focus is on the regulation of psychoactive substances, regarding drug use, production and distribution, and also on health oriented policies over a time-frame of twenty years (1996-2016) in seven selected countries – Portugal, France, Italy, Netherlands, United Kingdom, Canada and Australia. The Leximetrics approach allows turning the law into numbers (Siems, 2011) and therefore measuring it. Leximetrics has been used in a number of empirical legal research fields, such as corporate governance (e.g. La Porta et al., 1998, 2008; Armour et al. 2009b, Cheffins et al., 2014) and labor law (e.g., Deakin et al., 2007; Mitchell et al., 2010). To the best of our knowledge this is the first attempt to use the Leximetrics approach to assess health policies. Although this index was developed to analyze drug policies in these countries, it can be used to analyze drug policies in any country and it can be adapted to measure other health policies. The development of the **IDP-GLM** aims to answer two research questions: (1) how can the illicit drug policy be converted into numbers, so as to allow for intertemporal and international comparison; (2) how has the illicit drug policy evolved over the last two decades in each of the seven countries under analysis. To this aim we started by identifying and collecting relevant legislation, court decisions and drug policy documents for each of the seven countries, which led to a detailed drug policy timeline for each country under analysis. We then developed a Leximetrics coding methodology which allows us to 'transform the law into numbers'. This coding included three variables for Cannabis and for Hard Drugs drug policies: (1) consumption; (2) possession; (3) traffic, which is disaggregated into (31) cultivation, (32) production and (33) distribution; and three variables for health oriented policies: (4) Harm Reduction; (5) Treatment and (6) Prevention. Our results present the turning points from more to less criminal oriented policies or vice versa in all the six dimensions. In relation to consumption, possession and traffic, we find that in what concerns cannabis, most countries show different turning points over time towards less strict drug policies. In what concerns hard drugs consumption, we find that most countries have stricter drug policies during the period under analysis, even though there are several turning points towards a less strict approach. In what concerns harm reduction, treatment and prevention, we observe that all the countries under analysis display increased efforts in the three dimensions in the period 1996-2016. The observed

asymmetric pattern of evolution dictates that the relative position of each country has changed in the period under analysis. Overall, the development of the IDP-GLM Index is an instrument rather than an end in itself. This index was developed in order to understand, in a quantitative way, how different countries evolved over time in each dimension of drug policy. We identify various turning points in each of the drug policy dimensions over time. Typically (but not always) these turning points are in the direction of a more lenient (or less strict) approach towards drug policy. Comparisons across countries show that these shifts were not uniform: some countries took larger steps than others in that direction, thus changing their relative position for each dimension of drug policy. This instrument can be used to understand the extent to which such changes in drug policy resulted in tangible changes on social outcomes, such as consumption prevalence rates (Gonçalves at al. 2021). It can also be used to analyze the evolution of drug policies in other countries and it can also be adapted to analyze the evolution of other health policies.

Sessão 21 – Acute Care II

Prevalence and inequality in screening of breast and cervical cancers in Portugal: where do we stand in the European panorama?

Micaela Antunes[1] and Carlota Quintal[1]

[1] University of Coimbra, CeBER

OBJECTIVES: Breast and cervical cancers are among the most prevalent cancers in women. The evidence has sown that screening women at average risk is highly effective to prevent cancer related deaths. In the case of screening, need is simply defined by age and there are guidelines regarding the frequency of screening (for mammography, screening every two years – women aged 50–69 years; for pap smear test, screening every 3 years, women aged 20-69 years). Differences in utilisation thus represent a violation of horizontal equity. Our objectives are to assess prevalence of, and income-related inequalities in, screening of breast and cervical cancers in Portugal, in comparison with other European countries. We analyse not only the target group/recommended frequency but also the whole female sample and different time frames.

METHODS: Data come from the European Health Interview Survey (2nd wave: 2013-2015) and includes Portugal and other 29 European countries. We jointly analyse coverage and inequality, computing prevalence rates and standard and generalised concentration indices. Sample weights provided in the database are used. Net monthly equivalised income of the household (quintile) is used as the ranking variable.

RESULTS: For mammography/recommended situation, the level of coverage is 84%, compared with a European average of 65%. The concentration index (CI) is 0.007 (not

significant), compared with an average of 0.0482. Portugal has one of the highest prevalence rates and one of the lowest CIs, alongside countries such as France, Finland, Luxembourg and The Netherlands. For pap smear test/recommended situation, the participation is 71% (compared to 70% on average) and CI=0.0383 (average of 0.0518). Compared to the European average levels, Portugal is in the most favourable quadrant, however, other countries have higher prevalence levels and lower CIs (e.g. Austria, Czech Republic, Luxembourg and France). The percentage of women who never screened within target group is 3.5% (average of 12.5%) and 17.65% (average of 15.3%) for mammography and pap smear test, respectively. The respective CIs are -0.1065 (average: -0.1179) and -0.1485 (average: -0.1502). Regarding screening in the whole female sample/recommended frequency, in Portugal, CIs are now significant for both cancers and of much larger magnitude compared to target group (CI=0.0450 and CI=0.0807, for mammography and smear test, respectively). The same pattern emerges when comparing CIs for screening within last 12 months with CIs within recommended frequency, for both cancers and particularly in the case of breast cancer. These differences occur in other countries as well, however, for both cancers, Portugal is always among the countries with greater differences between CIs for the recommended group/frequency and CIs for the other situations analysed.

CONCLUSIONS: Considering only the target group and recommended frequency, Portugal is well positioned in the European panorama, particularly in the case of breast cancer screening with high prevalence and no evidence of income-related inequalities. Nonetheless, attention should be paid to possible overutilisation due to screening in non-recommended ages and/or more frequently than recommended. WHO and the International Agency for Research on Cancer (IARC) have stressed the need to ensure that women are properly informed about benefits and harms of screening, thus, higher access to screening per se should not lead to increased screening, irrespective of women's age.

Abortion access in Portugal: the relationship with abortion rates, timings, type of providers, and methods

António Melo[1]

[1] Université Paris Dauphine-PSL

OBJECTIVES: Hindered access to abortion may lead to a decrease in the abortion rate, by decreasing the probability of becoming pregnant and of aborting once pregnant. Nevertheless, hindered access can have more subtle effects, particularly on the conditions under which abortion takes place. This paper exploits the variations in the geographical distribution of abortion supply occurring between 2008 and 2016 in Portugal to investigate their effect on abortion rates, timings, methods, and type of providers.

METHODS: We use individual-level data on all abortions and births in Portugal. Access was measured by the travel time to the nearest abortion provider As we do not have

individual-level data for all fertile females in Portugal, but only for pregnant women, to estimate how variations in travel time affect the probability that any woman aborts, we conduct an analysis on the number of abortions occurring each year in municipalities — the lowest geographical aggregation level at our disposal — using a Fixed Effects Poisson Maximum Likelihood estimator. Using individual-level data on pregnancies, we estimate, employing a linear probability model, how travel time relates to the probability to abort conditional on being pregnant and to the risk of aborting after 9 weeks of pregnancy, of having a surgical abortion, and of aborting with the private sector by own initiative or after referral by public hospitals.

RESULTS: We document that municipalities farther than one hour away to the nearest abortion center have 9% fewer abortions than municipalities within 30 minutes away from a provider (p-value<0.05). Contrarily, we do not find a relationship between travel time and the probability to abort, conditional on being pregnant. Regarding the conditions under which abortion takes place, we find that 15 minutes increases in travel time are associated with an increase by 21% in the risk of aborting after 9 weeks of pregnancy (p-value<0.05). Given the lack of healthcare professionals who are not conscientious objectors, public hospitals may not be able to provide abortions within the legal 10 weeks limit to women who arrive at a later stage of their pregnancy. This is coherent with our findings that women who live farther away from a provider are more likely to be referred to the private sector – 15 more minutes to a provider is associated with an increase by 25% in the probability of being referred to a private clinic (p-value<0.01). As private clinics predominantly use the surgical method — 97% of abortions in private clinics are surgical while in the public sector 97% are medically induced — this possibly explains the reason why 15-minute increases in travel time are associated with an increase by 38% in the probability of having a surgical abortion (p-value<0.01).

CONCLUSIONS: We provide suggestive evidence that not only may hindered access prevent women from aborting, it may also make women abort later, pushing them out of the public sector and in turn possibly leading to the use of the surgical method – both more costly and invasive than the medical method.

Hospitalizations for intestinal infectious diseases in early childhood: spatial analysis among Brazilian micro-regions

Cristiéle Vieira[1], Cassia Favoretto[1] and Paulo Jacinto[1]
[1] Universidade Federal do Rio Grande do Sul

The objective of this study is to analyze the spatial factors associated with hospitalizations for infectious intestinal diseases in early childhood among the micro-regions of Brazil in 2015. For this purpose, a production function proposed by Grossman is used as a theoretical basis in which the state of health in this phase is measured by the type of hospitalization and depends on socioeconomic and demographic factors (monetary poverty rate, inadequate sewage and demographic

density) and health management (pediatric beds and Family Health Strategy (**ESF**) teams — proxies for the provision of Tertiary and Primary Care services of the Unified Health System-**SUS**, respectively. Assessing child health is one of the most efficient ways to measure the development of a country, especially when considering that the child is more sensitive to exogenous factors and his body is still developing, having a reduced capacity to defend against external aggressions environment and society. In this line, the present study uses Exploratory Spatial Data Analysis (**ESDA**) as a method, complementing with specifications of spatial econometric models and a Geographically Weighted Regression (**GWR**). The use of these techniques allows the regional and local identification of the environments in which the cases of these diseases are more accentuated. It also provides the recognition of high-risk areas, based on the consideration of the characteristics of the space and the resident population, with the incorporation of a range of economic, social, demographic and health management conditions. The results of the research showed the existence of spatial autocorrelation of hospitalizations for intestinal infectious diseases in early childhood among the micro-regions of the country, with High-High clusters identified in the North and Northeast and Low-Low regions in the coastal part of the South and Southeast of Brazil. In the global econometric models, it was observed that the factors of monetary poverty rate, inadequate sanitation, pediatric beds (tertiary care) and Family Health Strategy teams (primary care) positively affect hospitalizations for these diseases, while demographic density had a negative effect. The **GWR** models showed the existence of a strong local association of the poverty rate in the micro-regions of the Northeast, of pediatric beds in the Southeast and of delayed hospitalization in the North of the country. These results confirm the existing disparities in hospital admissions between the micro-regions in Brazil. If they are not taken into account in the specifications of the models, they can generate biased results and lead to less efficient public policy designs. The relevance of these results for surveillance and prevention of intestinal infectious diseases in early childhood among Brazilian micro-regions occurs under two approaches: first, based on the methodological innovation used, it was possible to capture the regionalized effect of the Brazilian health system in the context of infectious diseases. In addition, important indicators of living conditions have been identified that locally affect the health of children under five, lead to greater infant morbidity and may trigger long-term effects in the adult phase of these individuals. In general, in economically developing countries such as Brazil, negative socioeconomic vulnerabilities in childhood disadvantage and impair cognitive skills throughout life and, consequently, the accumulation of human capital. Second, policies within the scope of **SUS** can be better targeted at each geographical areathrough the appropriate distribution of resources related to management and the performance of more effective actions to prevent these diseases, as well as early diagnosis and health promotion of this public.

Sessão 22 – Acute Care III

How do hospitals respond to incentives? The case of c-section rates

Ana Moura[1] and Pedro Pita Barros[2]

[1] Tilburg University

[2] Nova School of Business and Economics

OBJECTIVES: Payments to healthcare providers are increasingly tied to their performance on various measures. We study the introduction of a program aimed at reducing c-section rates in public hospitals in Portugal. The program started in 2014 and penalizes hospitals whose c-section rates are higher than government-set thresholds. We investigate three research questions: 1) do public hospitals reduce c-section rates following the introduction of the penalty?; 2) Which women are less likely to receive a c-section once the penalty is in place?; and 3) Are there spillovers to private hospitals?

METHODS: Using individual data on the universe of deliveries in public hospitals during 2010-2016, we start by showing that risk-adjusted hospital c-section rates are persistent over time. This implies that hospitals are differentially exposed to the introduction of the penalty, depending on their historical c-section rates. Our empirical strategy leverages these historical differences and compares the likelihood of receiving a c-section for women visiting hospitals with different historical c-section rates, before and after the introduction of the penalty. To investigate spillovers to private hospitals, we use data from the Hospital Survey. Drawing on the peer-effects literature, we allow hospital c-section rates to be influenced by the c-section rates of nearby hospitals and allow this relationship to differ depending on whether hospitals are public or private as well as before and after the introduction of the penalty.

RESULTS: We find that the introduction of the penalty contributed to reduce c-section rates. Women visiting hospitals with a 1 percentage point (pp.) higher historical hospital c-section rate, are 0.25 pp. less likely to get a c-section after the introduction of the penalty. Our results suggest potential unintended effects of the policy, as women exhibiting pregnancy risk-factors which are indicators for c-section in clinical guidelines also experience a reduction in the likelihood of receiving a c-section. Finally, we find that c-section rates in private and public hospitals are strategic complements. This is important because it shows that reductions in c-sections rates in public hospitals are not compensated by increases in c-sections in private hospitals. Instead, reductions in c-section rates in public hospitals are amplified by the private sector.

CONCLUSION: Our findings convey that financial incentives to health care providers can be a powerful tool to reduce hospital c-section rates, even in a context where

hospitals are not profit-oriented, there are no consequences for physician pay, and the financial penalty for the hospital is small relative to its annual budget.

Waiting times for scheduled surgery in the Portuguese NHS: a spatial econometric analysis

Joana Cima[1] and Álvaro Almeida[2]

[1] Centre for Research in Economics and Management, University of Minho

[2] Faculdade de Economia, Universidade do Porto

OBJECTIVES: The extensive waiting lists for both appointments and scheduled surgeries are a persistent problem in access to health in public health systems. This fact contributes to longer waiting times, which besides harming the patient's clinical condition, may also impact on public perception regarding the health care systems. The same concern applies to Portugal, wherein the waiting times for surgery have gradually increased in recent years, with the cancellation rate remaining about 14% in 2015 (latest year available). Identifying public health policies aimed at controlling waiting times is crucial to ensure better management of the waiting list and improved access to surgical treatment (shorter waiting times). Thus, a key question in this study is to analyse whether there is evidence of spillovers in the Portuguese **NHS**, and how it impacts on surgery waiting times and cancellations.

METHODS: Using data that comprises information for Portuguese **NHS** hospitals from 2013 and 2015, we estimate two hospital-specific indexes for waiting times and the probability of cancellations obtained from patient data, as proxies for hospital quality. Because of the way the indexes are created they are purged of demand-side characteristics and should reflect only aspects related to hospital's management and organisation, as well as factors originating on the supply-side. Then, we estimate spatial panel models to observe endogenous or exogenous spatial dependence patterns between hospitals. We take into consideration factors such as the hospital type of management and the organisational model, dimension, or teaching status.

RESULTS: The results show a positive endogenous spatial dependence for waiting times, meaning that when a hospital waiting times index changes, the same index in neighbouring hospitals moves in the same direction. Regarding the probability of cancellation, we find an exogenous spatial dependence. This result means that the probability of cancellation for a given hospital depends on the other hospital's explanatory variables.

CONCLUSION: This research seems to indicate the existence of spillover effects on waiting lists that could be used to optimise access to scheduled surgery. It also allows identifying the hospitals' features that contribute the most to these findings, namely, the fact those hospitals belong to the social sector or not.

Epidemia de Cesarianas: o Efeito do Projeto Parto Adequado

Igor Procopio[1], Flávia Chein[1] and Cristine Pinto[2]

[1] Universidade Federal de Juiz de Fora

[2] EESP-FGV

OBJETIVO: o objetivo do artigo é avaliar um programa voltado para a redução do número de cesarianas sem indicações clínicas. A necessidade de soluções baseadas em evidência para a redução das taxas de cesarianas é uma questão de saúde pública mundial e alvo de interesse da Organização Mundial da Saúde (OMS). Especificamente, o artigo avalia o Projeto Parto Adequado, que é uma iniciativa conjunta da Agência Nacional de Saúde Suplementar do Brasil, do Institute for Healthcare Improvement e do Hospital Israelita Albert Einstein, contando ainda com o apoio da Ministério da Saúde brasileiro. O objetivo principal é avaliar se o Projeto foi capaz de reduzir as taxas de cesarianas nos hospitais participantes. Adicionalmente, avalia-se se houve impacto no tempo de gestação, no peso do bebê ao nascer e, em caso de cesariana, se o parto ocorreu após a gestante entrar em trabalho de parto.

BASE DE DADOS E MÉTODO: o artigo analisa o efeito do Projeto Parto Adequado nas taxas de cesarianas, bem como em medidas de nascimento. A base de dados utilizada é proveniente do Sistema de Informações sobre Nascidos Vivos (SINASC) do Sistema Único de Saúde do Brasil. Para avaliar o efeito do Programa Parto Adequado, compara-se a evolução dos indicadores analisados entre os Hospitais Participantes do Projeto com um grupo de hospitais não participantes com características semelhantes. Essas características são as mesmas que foram utilizadas para a seleção dos hospitais participantes, taxa de cesárea acima de 75%, mais de 500 partos por ano. Além disso, só foram considerados os Hospitais privados e em municípios onde havia hospitais participantes do programa. A estimação seguiu o método de diferenças e diferenças. Os dados disponíveis permitem o acompanhamento da trajetória dos hospitais antes do início do Projeto, sendo possível testar a hipótese de tendências paralelas necessária ao método de diferenças em diferenças.

RESULTADOS: os resultados do artigo indicam que o Projeto Parto Adequado foi efetivo na redução da taxa de cesarianas nos hospitais participantes do Projeto. Já no primeiro ano do Projeto foi encontrado um efeito de 2 pontos percentuais no aumento da taxa de cesariana, com esse efeito chegando a 4 pontos percentuais no terceiro ano do Projeto. Esses valores representam cerca de 14% e 28% , respectivamente, de aumento na taxa de parto normal. Também foram encontrados resultados positivos no aumento do peso do bebê ao nascer. Apesar de nenhum efeito ter sido observado no primeiro ano do Projeto, em 2016 e 2017 foram verificados aumentos de 10 e 17 gramas, respectivamente, no peso do bebê. Este resultado é interessante, pois mostra que o excesso de cesarianas desnecessárias pode levar a piora de resultados de nascimento. Adicionalmente, investigou-se se o efeito do Projeto varia de acordo com a condição inicial da taxa de cesariana, ou seja, se os hospitais que tinham as menores taxas de cesarianas se comportam de maneira distinta daqueles com maiores taxas dentro dos hospitais participantes do Projeto.

Os resultados indicam que o efeito do programa é maior para aqueles hospitais em que as taxas de cesarianas eram mais baixas antes do início do Projeto.

CONCLUSÕES: o artigo analisa o efeito de um programa voltado para a redução das taxas de cesarianas sem indicações clínicas, especificamente o Projeto Parto Adequado. Justifica-se a análise do programa devido às altas taxas de cesarianas observadas em grande parte do mundo, notadamente no Brasil. Os resultados indicam que o Projeto foi capaz de reduzir as taxas de cesarianas nos hospitais participantes, bem como teve impacto positivo no tempo de gestação e no peso do bebê ao nascer. Ressalta-se a importância das evidências encontradas no artigo para a formulação de políticas públicas voltadas para adoção de melhores práticas na gestação e procedimentos de parto, baseadas em evidências científicas.

Sessão 23 – Healthcare Costs III

A cost analysis of an intervention targeting emergency department high users

Francisco von Hafe[1], Simão Gonçalves[1], Flávio Martins[1] and Ana Rita Londral[1]
[1] Value for Health CoLAB, NOVA Medical School, Lisbon, Portugal

OBJECTIVES: According to a 2015 study, frequent users of the Emergency Department (ED) account for 12% of ED users in Portugal, however, they generate 35.9% of the total ED visits. Research has found that 4 out of 10 of these are unnecessary leading to avoidable costs and resource waste. In 2016, a joint-venture between Hospital Garcia de Orta and the Agrupamento de Centros de Saúde Almada-Seixal created a program to target this issue. The Resolution Group of ED High Users (GRHU) is a multiinstitucional multidisciplinary team, that identifies high-users (patients who visit the ED at least ten times a year). GRHU addresses the healthcare and social needs of high-users by delivering patient-centered case management interventions. The main objective of this study is to conduct a cost analysis to evaluate the impact of the intervention on healthcare utilization and expenditures.

METHODS: Study sample. A total of 238 patients were included in the GRHU intervention. To be included in this analysis the following inclusion criteria were used: (i) the patient must have ED episodes throughout the entire period of analysis; (ii) only data up to the end of February 2020 are included; (iii) the patient is alive throughout the entire period of analysis. Hence, this study includes a total of 152 patients who were intervened between the 22nd of June 2017 and the 4th of June 2020. Periods. To study the impact of the intervention we performed a non-controlled before-after analysis of patient's ED visits data on 6 and 12-month windows from the intervention. The 12 or 6 months before the first appointment was then defined as the before-period, while the 12 or 6 months after the first appointment was the after-period. Return on investment (ROI). The GRHU program savings were

estimated as the difference between the costs before and after the intervention per patient per 12 or 6 months window. The included cost categories were: **ED** visits, hospitalizations, exams, and outpatient appointments. The healthcare resources usage variation costs were calculated from two different perspectives: the hospital and the payer (**NHS**). From the hospital's perspective, we perform a top-down costing methodology using costing information provided by the hospital's finance department. The cost to the payer was calculated according to the hospital's Long-term Contract Program (2017-2019). The costs of the intervention were calculated using the hospital perspective. In this analysis, we are only concerned with Human Resources (**HR**) costs. Intervention costs include the costs of the appointments with patients but also the necessary time to prepare them. So, the total costs of the intervention were calculated based on the number of hours devoted by each **HR** to the **GRHU**. The **ROI** associated with the participation in the **GRHU** intervention was estimated as the ratio between the savings and the cost of the **GRHU** intervention.

RESULTS: A 70%-100% reduction in the number of **ED** visits was observed in 25% of the patients. On average, when comparing 6 months before and after the interventions, patients who participated in the **GRHU** intervention reduced the number of visits to the **ED** by 59%. For the 12 month period, that reduction was 51%. Literature reports that interventions that aim to reduce the number of **ED** visits are cost-effective, meaning that the savings triggered by the intervention exceed its costs.

CONCLUSIONS: Literature suggests that enlisting patients in case management interventions can reduce unnecessary **ED** visits leading to more appropriate usage of the healthcare resources. In our ongoing cost analysis, we expect to confirm the hypothesis that, for both cost perspectives, hospital, and payer, the **ROI** of this intervention to be over one Euro. That is, for every Euro spent more than one Euro was saved. This study should be used as a baseline for implementation of similar interventions at a larger scale, supporting decision-makers to make better resource allocation.

Applying a "government perspective" fiscal analysis to analyse health conditions: The example of uncontrolled osteoarthritis pain in the UK

Rui Martins[1], Nikos Kotsopoulos[1], Ana Paquete[1] and Mark Connolly[1]

[1] Global Market Access Solutions Services LTD, UK

OBJECTIVES: To explore a fiscal analytical modelling framework to quantifying broader economic consequences of chronic conditions. We use uncontrolled knee and hip osteoarthritis (**OA**) pain as a motivational example and estimate disease-related changes in labour force participation, demand for fiscal benefits, and changes in direct and indirect government tax revenue.

METHODS: A "government perspective" Markov state transition model with an annual cycle was created to simulate transitions between the states of employment, unemployment, long-term sickness, disability, early retirement, and death. We compare labour force participation in individuals with controlled compared to uncontrolled OA hip or knee pain. Individuals with controlled OA pain were assumed to have similar labour force participation to the general population. UK labour statistics were used to inform state membership in this cohort. Published measures of OA-related fiscal burden were identified in a targeted literature search. The resulting odds and risk ratios were applied to baseline fiscal states probabilities to inform state transition in the uncontrolled pain cohort. Lost tax revenue was informed by UK tax rates and national insurance contributions applied to age-specific earnings. Social benefit rules were applied to calculate the value of financial support. Healthcare costs were calculated based on resource utilisation reported by an UK observational study. Results were reported as incremental differences in total taxes and transfers, discounted at 3.5% annually. The base case considered a 50-year-old individual with uncontrolled OA pain, retiring at age 65. Deterministic and probabilistic sensitivity analyses (PSA) were conducted.

RESULTS: For a 50-year-old individual with moderate uncontrolled OA pain and a 15-year work expectancy, the model estimated a £69,383 reduction in employment earnings leading to a 30% reduction in paid taxes (£24,307). This individual would receive an excess of £13,820 in government benefits, compared to a person with controlled OA pain. In people with severe uncontrolled OA pain, incremental foregone earnings were estimated to be £126,384, £44,925 were not paid through taxation and £23,308 were received in public benefits, compared to the controlled pain cohort. Healthcare costs represented 15% and 13% of total fiscal costs in the moderate uncontrolled OA pain and severe uncontrolled OA pain comparisons, respectively. The OA-related likelihood of fiscal outcomes were the most influential inputs but did not significantly change the conclusions of the. The PSA used 10,000 Monte Carlo simulations and suggested that a difference of £40,000 per person with moderate uncontrolled OA pain compared to the controlled OA pain cohort would be true in over 50% of the iterations. For the severe OA pain comparison, the model predicted that a difference greater or equal to £70,000 would be obtained in over 50% of the model iterations.

CONCLUSIONS: Despite substantial, the public economic costs of chronic diseases are often not considered in burden of disease analyses. Maintaining an active workforce is paramount to sustainable economic growth and reduction of public spending. By applying a government perspective to assess health and healthcare investments, it is possible to understand how changes in health status can influence future tax receipts and transfer payments. As noted in the UK, the costs to government from ill-health in working age populations for workless benefits and lost tax revenue from people unable to work effectively represent approximately 85% of government costs, and health sector costs are only a minority. This framework can to some extent inform the sustainability of tax-financed health systems. Additionally, it can be used to augment cost-effectiveness models to inform the cross-sectorial impact of diseases, help define disease priorities, and view the public economic benefits of treating health conditions.

Healthcare Resource Utilization by Cardiovascular Disease Risk Category in a Portuguese Local Health Unit

Cristina Gavina[1], Francisco Araújo[2], Marisa Pardal[3], Diana Grangeia[3], Filipa Moreira[3], Andreia Leitão[3] and Tiago Taveira-Gomes[4]

[1] Hospital Pedro Hispano, Porto

[2] Hospital Lusíadas, Lisboa

[3] Novartis Farma — Produtos Farmacêuticos SA, Porto Salvo

[4] Universidade do Porto, Porto

BACKGROUND/OBJECTIVES: Cardiovascular diseases (**CVD**) are the main cause of mortality in Portugal, with stroke and ischemic heart disease as the leading causes of death among **CVD**. Atherosclerosis entails a high burden and costs in the Portuguese population, accounting for 260 943 disability-adjusted life years and 11% of all health expenditures in 2016. This study aims to assess healthcare resource utilization (**HRU**) of patients according to their **CV** risk category (low, intermediate, high and very high).

METHODS: A retrospective cohort study was conducted using electronic health records from patients followed at a single comprehensive administrative unit that provides both primary and secondary care. Patients aged 40-80 years old followed for **CV** risk prevention that were alive at 31/12/2019 (index date) and had at least 1 appointment with a primary care physician in the 3 years preceding the index date were included for the analysis. Measured **HRU** included total hospital episodes (inpatient, outpatient and emergency room visits) and primary care medical appointments. All episodes were considered for analysis. We described **HRU** for each **CVD** risk category and specifically for **ASCVD** patients.

RESULTS: A total of 78 312 patients were included in the analysis, with the following **CV** risk category distribution in accordance to 2019 **ESC**/**EAS** Guidelines for the management of dyslipidemias: 33% low risk, 29% intermediate risk, 15% high risk and 23% very high risk. For the total cohort there were 4 935 544 hospital episodes recorded, 24%, 28%, 17% and 31% in low, intermediate, high and very high risk categories, respectively. Most episodes were primary care visits (N=4 810 975), followed by inpatient visits (N=51 270). With respect to very high **CV** risk patients, 56.6% of patients (N=10 385) had at least 1 inpatient episode, which corresponds to 1.36 inpatient visits per very high risk patient. Inpatient visits for this risk category had a median length of 4 days (**IQR**=[2, 8] days) amounting to a total of 187 111 inpatient days. Very high **CV** risk patients inpatient days corresponded to 57% of all inpatient days for the study population. Concerning **ASCVD** patients, which represented 44.5% (N=8 154) of all very high **CV** risk patients, most recorded episodes were primary care visits (N=725 832), followed by inpatient visits (N=14 553). Most **ASCVD** patients (70%) had at least 1 inpatient visit and the median length of inpatient visits was 5 days (**IQR**=[2, 9] days). Total inpatient days for **ASCVD** patients (N=14 553) accounted for 63% of all inpatient days for very high **CV** risk patients.

CONCLUSIONS: There is a very high **HRU** throughout the spectrum of **CV** risk, specially by patients with very high **CV** risk and, among these, by

ASCVD patients. This study provides useful inputs for impact assessment of strategies that can potentially reduce the utilization of healthcare resources and, consequently, the economic burden of ASCVD.

Sessão 24 – Pharmaceutical Markets

Effects of the policy regulation on generic competition and pharmaceutical savings in Portugal. Do incentives matter?

Inês Teixeira[1], Joana Mansinho[1], António Teixeira Rodrigues[1], Humberto Martins[2] and José Pedro Guerreiro[1]

[1] Centre of Health Research & Evaluation (CEFAR), National Association of Pharmacies (ANF)

[2] INFOSAÚDE, National Association of Pharmacies (ANF)

OBJECTIVES: With a variety of incentives schemes for generics dispensing worldwide and considering Portuguese pharmaceutical market and trends, the present study aims to measure the impact of the generic incentive scheme introduced in January 2017, in Portugal. The scheme attributes a specific remuneration (0.35€ per package, including 0.02€ VAT) to pharmacies for the dispensing of reimbursed medicines, namely those included in the generic competitive market and with the price within the 4 lowest prices of each group of the internal Reference Price (RP) system. Moreover, it involves a clawback made by pharmacies, whenever the amount of costs (C) which correspond to the incentives, exceed the savings (S) achieved by the National Health Service (NHS) through the reduction of reference prices (RP) in comparison with the previous year. After an initial descriptive analysis of market indicators such as market shares and market prices of generics and non-generics medicines, the goal is to estimate both potential and real savings achieved with generics and the incentive system for cheaper medicines dispensing for the different stakeholders of interest as the NHS, patients and community-pharmacies.

METHODS: With a focus on the outpatient market, a before-and-after study was conducted, highlighting the policy implementation in January 2017, using a dataset composed with monthly sales by product from Portuguese community pharmacies and medicines prescription panel data between January 2014 until December 2020. Potential and real expenditure savings were estimated based on the price difference in each group of the internal RP System. The statistical analysis was performed with Statistical Analysis System (SAS), version 8.2.

RESULTS: Significant changes were observed on market indicators since this incentive scheme was implemented in 2017. The downward trend on generics' market share in units, registered from 2014 (71.9%) to 2016 (70.1%), started to stabilize in 2017 (70.2%) until 2019 (70.4%) and decreased in 2020 (69.1%). At the same time, the average price of medicines decreased from 7.93€ (2014) to 7.65€ (2016) and increased in the following years (7.74€ in 2017 to 8.02€ in 2020), with the entry of newer, high

volume of sales and more expensive medicines in the generic competitive market. In the years after the policy took place, medicines with the lower prices increased their market share from 35.2%, in 2017, to 38.0%, in 2020. In terms of expenditure for the **NHS**, the incentives scheme generated savings of 36.5M€, in the 4-year length, while the overall expenditure saving by dispensing cheaper medicines was around 1,511M€. Through this system, community pharmacies were actually reimbursed in 28.2M€ in 4 years (on average 0.18€ per package instead of the initial 0.33€ fee).

CONCLUSIONS: The adopted scheme generated savings for the **NHS** during the period of analysis, acting as an incentive for cheaper medicines dispensing, lowering the **RP** and counteracting the downward trend on generics' market share. However, there was an underestimation of the real impact of the system as inherently it ignores, first, the gains for the **NHS** of promoting the dispense of medications below the **RP**, and second, the cumulative effects at the long run once it only considers the **RP** transition period. Additionally, there is a risk-sharing based solely on a clawback made by pharmacies to the **NHS**, not contemplating redistributing benefits whenever savings surpass the incentives paid to them. Hence, future policies should focus on capturing the potential savings that still exist for both health service and patients in order to expand access to medicines and therapeutic adherence.

Estratégias de dissuasão da entrada no mercado do medicamento

Carolina Monteiro[1] and Paula Veiga[1]

[1] Universidade do Minho

O desenvolvimento e a competitividade na indústria farmacêutica têm merecido um vasto interesse da literatura, dada a sua importância para a economia e para a saúde. Do ponto de vista da Economia Industrial, a concorrência potencial que surge com a extinção da patente e a entrada de produtores de genéricos tem motivado vários autores a identificar as diferentes estratégias de dissuasão utilizadas pelas empresas que lhes permitem garantir e/ou manter a sua posição no mercado. Independentemente das estratégias utilizadas pela empresa detentora do medicamento de marca, é do consenso geral que a entrada de medicamentos genéricos e a implementação de leis que promovam a sua utilização são os fatores que mais influenciam o seu preço e quota de mercado. Através da recolha, junto do **INFARMED**, de uma amostra de substâncias ativas comercializadas no mercado ambulatório em Portugal, pretende-se analisar o impacto da entrada do genérico no preço e na quota de mercado do medicamento de marca. Para isso, foi implementado um modelo contrafactual — o **ITS** ("Interrupted time series") cujo propósito é captar o efeito da ocorrência de uma dada intervenção que se espera que provoque alterações significativas na tendência da variável em estudo através de relações de causalidade/inferência causal. É por isso visto como um cenário alternativo (modelo contrafactual) à tendência prevista sem a ocorrência de uma intervenção. Espera-se que a entrada do genérico provoque uma diminuição no preço praticado do medicamento de marca e, quanto maior este diferencial de preços, mais significativa

seja a perda de quota de mercado por parte da farmacêutica do medicamento de marca. Os resultados obtidos revelam que nem todas as substâncias ativas se comportam da mesma maneira face à entrada de um concorrente genérico no mercado e, enquanto uns optam por aumentar o preço outros procuram uma redução seguida de uma estabilização do mesmo. É, no entanto, visível em todos os casos uma tendência decrescente no preço ao longo do horizonte temporal predefinido. Relativamente à quota de mercado, verificasse uma transferência de poder de mercado para o medicamento genérico, contudo, contrariamente ao esperado na maioria dos casos o preço relativo parece provocar uma variação positiva na quota de mercado dos medicamentos de marca. A grande vantagem do uso do **ITS** neste estudo, passa pelo controlo dos efeitos da tendência (antes da intervenção) o que nos remete para uma estimativa muito próxima do que acontece na realidade. No entanto, não deixa de ser uma análise "quase-experimental" e , efetivamente não nos dá a mesma inferência causal que um estudo experimental, isto porque é impossível controlar todos os fatores externos que influenciam a variável dependente.

Uncovering Competitive Forces in Prescription Drug Markets – Evidence from Statins

Carolina Santos[1], Eduardo Costa[1] and Sara R. Machado[2]

[1] Nova School of Business and Economics

[2] Department of Health Policy, London School of Economics

This paper investigates competitive dynamics of pharmaceutical firms using the Portuguese statins' market as a case-study. We provide an overview on multiple channels through which firms' market power is likely to be affected. We analyze how the presence in different market segments and repeated interaction with rivals affect the competitive environment and we investigate the role of ownership structure on such dynamics. Finally, we explore the effect of generic entry in a new off-patent statin (Rosuvastatin) on the generic price competition in older off-patent statins. We combine information from three datasets. The first contains monthly sales for pharmacies by product across regions. The second is a pricing database containing retail, reference, and price caps for all drugs sold in the Portuguese Reference Pricing System. The third compiles data on ownership structure and global ultimate owner for each of the companies active in any statin market, in Portugal. Results indicate that while multimarket presence is relevant for firms' pricing decisions – firms active in more statins charge lower prices (relative to their price caps) than firms specializing in one statin -, repeated interaction of firms in different statins markets does not allow these firms to sustain higher prices. The same results hold when we perform the analyses at the level of the global ultimate owner instead of the selling firm. Lastly, results from synthetic control analyses show that entry of generics in Rosuvastatin softens price competition between generics in Atorvastatin – a close substitute of Rosuvastatin. On the other hand, generic price competition in Simvastatin – a weaker substitute of Rosuvastatin – is not affected by the expansion in the off-patent statins' market. Overall, these

findings suggest low levels of price competition in the off-patent statins' market, with price caps being the main determinant of firms' pricing decisions.

Sessão 25 – Inequalities II

Income-, and education-, related inequalities in colorectal cancer screening: is Portugal aligned with other European countries?

Carlota Quintal[1] and Micaela Antunes[1]
[1] Universidade de Coimbra, FEUC, CeBER

OBJECTIVES: Colorectal cancer (**CRC**) is the third most common cancer in men and the second most common cancer in women. There is evidence that screening persons at average risk for **CRC** is effective to reduce **CRC** cases and deaths. The recommendation is to screen persons aged 50 to 74 years. Regarding the frequency of screening, guidelines suggest screening every 2 years for faecal test and screening every 10 years for colonoscopy (we considered the combination of both). Within the target group, everyone is deemed to have the same need, hence, inequalities in screening are simultaneously regarded as inequities in healthcare utilisation. This study thus aims to assess income-, and education-, related inequalities in **CRC** screening in Portugal. We further aim to investigate whether the situation in Portugal follows the pattern in other European countries. We consider not only the target group but also the whole population (to check what happens when non-recommended ages are included in the analysis).

METHODS: Data come from the second wave of the European Health Interview Survey (2013-2015). The sample comprises 280,574 observations (30 countries). Coverage rates and concentration indices are calculated. Net monthly equivalised income of the household (quintile) and level of education (primary, secondary and tertiary) are used as the ranking variables.

RESULTS: For the target group, the coverage rate is 55%, which compares to a European average of 38%. The concentration index (**CI**) for education is 0.0137 (statistically significant). In 14 countries, there is no evidence of inequalities (**CI**s not significant). There is not a common pattern across European countries, however, positive **CI**s tend to be of greater magnitude than negative **CI**s. Spain has the highest value (0.0711, meaning that screening is concentrated among higher levels of education) and the European average is 0.0117. Concerning income-related inequalities, in Portugal, the **CI** is 0.0364 (significant), suggesting concentration among richer individuals. Again, in 16 countries, **CI**s are not significant and again there are mixed results, nonetheless, indices tend to be positive (average of 0.0146). Highest value occurs in Romania (0.15), followed by Cyprus and Italy, both with **CI**s about 0.085. When we considered the whole population, in the case of income-related inequalities, the **CI** for Portugal (0.0305) is close to the result found in the

target group. Now **CI**s are not significant in fewer countries (7), but we still obtained mixed results. Somewhat surprisingly, the analysis of educational inequalities in the whole population revealed a clear pattern across countries, where **CI**s are not significant only in 4 countries, and screening is concentrated among individuals with lower education. In Portugal, the **CI** is -0.1012 (average is -0.0492).

CONCLUSIONS: In no fewer than 20 countries, the level of coverage in target group is below the threshold of 45% considered as an acceptable participation rate under European guidelines. In this respect Portugal shows a favourable result. Regarding inequalities, particularly across income groups, Portugal performs worse than several other countries where there is no evidence of inequality in screening. When it comes to educational inequalities in the whole sample, a clear pattern emerged from our results, with Portugal being aligned with the remainder countries included in the European Health Interview Survey. The concentration of use among individuals with lower education should be a cause of concern and further investigation. In the case of **CRC**, it might be especially difficult to weigh pros and cons of screening and there is evidence that individuals less educated struggle more to make informed decisions.

Desigualdade de oportunidade em saúde no Brasil 2013-2019

Cristiéle Vieira[1], Rafael Ricco[1] and Sabino Porto Júnior[1]
[1] Universidade Federal do Rio Grande do Sul

Desigualdade de oportunidade em saúde é uma situação onde as condições de saúde não estão sendo afetadas somente por fatores de responsabilidade do indivíduo, como, por exemplo, o nível de esforço para levar uma vida saudável revelado pelo estilo de vida, mas também por circunstâncias pessoais que estão fora da autonomia de escolha dos indivíduos(Roemer, 1998). A presente pesquisa objetiva, portanto, analisar como aspectos de circunstâncias individuais, de política pública, aspectos socioeconômicos e de estilo de vida pessoal influenciam a autoavaliação em saúde nas grandes regiões do Brasil em 2013 e 2019 para os indivíduos em idade ativa -18 à 60 anos- que respondem pela maior parte da oferta de trabalho no país. A condição de saúde individual é retratada pela variável autopercepção de saúde, que apesar de ser uma forma de avaliação subjetiva, é tida como uma das mais sensíveis para indicar o nível de bem-estar do indivíduo e, diferentemente das medidas objetivas (morbidade, mortalidade, doenças, etc.), esta variável também é capaz de mensurar outros valores intrínsecos relacionados a definição de saúde: saúde mental e social dos indivíduos, por exemplo. A base de dados utilizada é a Pesquisa Nacional em Saúde (**PNS**) realizada pelo Instituto Brasileiro de Geografia e Estatística (**IBGE**) em parceria como Ministério da Saúde — 2013 e 2019. Os microdados da **PNS** agregam informações sobre variáveis mensuráveis referente as características individuais, circunstâncias individuais, condições de acesso de saúde, estilo de vida e status socioeconômico dos indivíduos.O objetivo é avaliar o impacto dos determinantes socioeconômicos sobre a autopercepção de saúde reportada pela população alvo brasileira, por regiões e ao longo do tempo. O método utilizado consistirá em duas etapas: incialmente

estima-se uma regressão logística tendo como variável dependente uma dummy binária com valor 1 para indicação de muito boa ou boa autopercepção de saúde, essa regressão estima a probabilidade dos indivíduos autodeclarem, na amostra, uma boa saúde. Em seguida, aplica-se uma decomposição do Valor de Shapley buscando entender o papel relativo de cada variável na autopercepção de saúde observada, o que permite separar o impacto relativo de variáveis de circunstâncias e de esforço. Essa análise possibilita a obtenção de um indicador de desigualdade de oportunidade de saúde no Brasil. Os resultados obtidos da decomposição de Shapley, indicam que as variáveis circunstanciais (região censitária, sexo, raça ou etnia, por exemplo) são estatisticamente significativas, inclusive com aumento do peso das variáveis região censitária e raça, ao longo do tempo. Em 2013, com exceção da região Norte, a maior influência sobre a autopecepção positiva de saúde ocorreu entre os indivíduos que possuíam acesso a plano de saúde. Já em 2019, pessoas que declaram realizar maior nível de atividade física, em média, declaram perceber maior qualidade de saúde, com pequenas variações entre as regiões do país. Esses resultados, significam que houve aumento da desigualdade de oportunidades, pois em geral, as variáveis circunstâncias apresentaram impacto negativo e relevante na autopercepção de saúde e isso se manteve para os dois períodos.

Mental health services use for depressive symptoms in Portugal: socioeconomic status, needs perception and affordability concerns

Luis Roxo[1] and Julian Perelman[2]

[1] NOVA National School of Public Health, Universidade NOVA de Lisboa

[2] Public Health Research Centre, NOVA National School of Public Health, Universidade NOVA de Lisboa, Lisboa, Portugal

OBJECTIVES: Evidence about the association between socioeconomic status (**SES**) and mental health services (**MHS**) use suggests that higher education is a predisposing factor, but that income is not. Still, evidence is scarce about the underlying mechanisms, with limited evidence about the association about education and income and specific barriers to **MHS** use. This study aims to assess the link between **SES**, needs perception, and affordability, among persons with depressive symptoms. and how this link is mediated by health insurance.

METHODS: Data from the 6th Portuguese National Health Survey (2019) were used. Among those with mild, moderate or severe depressive symptoms (N=3,807; Personal Health Questionnaire-8 ≥ 5), we used gender-stratified logistic regressions to model perception of need for **MHS** and affordability (unfulfilled **MHS** needs due to financial constraints), as a function of educational level and income quintile, adjusting for age groups, marital status, and severity of depressive symptoms. Health insurance (private and subsystem) was used as mediation variables. Personal weights were used to adjust for non-response.

RESULTS: Compared to low education, high-educated men lad lower perception of need (17.2%, OR=0.46, 95%CI=0.45-0.47) and high-educated women had higher (31.3%, OR=1.29, 95%CI=1.27-1.31). Men in the first income quintile were more likely to recognize need (34.2%, OR=1.22, 95%CI=1.09-1.15). Among those with self-reported needs, affordability constraints were more likely among men and women with secondary (42.1%, OR=1.83, 95%CI=1.77-1.89 among men; 41.8%, OR=1.56, 95%CI=1.53-1.60 among women) and higher education (61.9%, OR=18.3, 95%CI=17.3-19.4 among men; 24.2%, OR=1.17, 95%CI=1.13-1.20 among women). Those in the poorest income quintile were more likely to report affordability concerns (66.5%, OR=18.7, 95%CI=17.6-19.8 among men; 51.5%, OR=5.77, 95%CI=5.57-5.97 among women). After adjusting for health insurance (private and subsystem), the disadvantage of those in the poorest income quintile decreased (OR=7.64, 95%CI=7.16-8.14 among men, OR=3.75, 95%CI=3.61-3.88 among women), as well as the disadvantage of high-educated men (OR=12.0, 95%CI=11.3-12.8). Women's health inequalities widened after adjusting for health insurance and health subsystem.

CONCLUSIONS: High-educated men seem more likely to report both low perceived need and affordability concerns. Low-income individuals' concerns about affordability question universal mental healthcare and may contribute to wider health inequalities. Differential access to health services seems to contribute to socioeconomic inequalities in MHS use.

Sessão 26 – Pharmaceutical and medical devices

Pharmaceutical pricing dynamics in a reference price system – Evidence from changing drugs' co-payments

Eduardo Costa[1] and Carolina Santos[1]

[1] Nova School of Business and Economics

Reference price regimes for prescription drugs are usually implemented with the aim of curbing public expenditure with pharmaceuticals, induce drug substitution from branded to generics drugs and enhance competition. In these systems, patients co-pay the difference between the drug's pharmacy retail price and the reimbursement level. Relying on a detailed product-level panel dataset of prescription drugs sold in Portuguese retail pharmacies, from 2016 to 2019, we evaluate pharmaceutical firms pricing decisions for branded and generic drugs, as well as consumers' reaction to price changes. In particular, we exploit the variation induced by a policy change, which decreased reference prices for 36% of the equivalent-drug groups in our sample. Results of a difference-in-differences analysis show that, despite the reference price decrease, affected firms increased their prices — particularly for off-patent branded products. Such reaction from firms results in an increase in the price paid by patients. Such price effects resulted on a 16% decline on branded drugs consumption, with significant heterogeneity

across regions and therapeutics. Estimates suggest that NHS co-payments savings were achieved through higher out-of-pocket payments paid by patients, with a pass-through above 100%. Additionally, pharmaceutical firms' reaction to the reference price decrease was contrary to what was expected, suggesting underlying competitive dynamics which should be considered prior to policy changes.

Which value aspects are relevant for the evaluation of distinct types of medical devices? A Web-Delphi process to explore the views of health stakeholders in Portugal

Liliana Freitas[1], Ana Vieira[1], Monica Oliveira[2], Helena Monteiro[3], Claudia Santos[3] and Carlos Bana E Costa[4]

[1] CEG-IST (Centre for Management Studies of Instituto Superior Técnico), Universidade de Lisboa

[2] Universidade de Lisboa

[3] INFARMED — Autoridade Nacional do Medicamento e Produtos de Saúde, I.P.

[4] CEG-IST (Centre for Management Studies of Instituto Superior Técnico), Universidade de Lisboa

BACKGROUND: Health Technology Assessment (HTA) studies support the introduction and use of health technologies in the healthcare systems. For conducting HTA for medical devices, the set of value aspects used by evaluators in practice varies, there being little research exploring the views of stakeholders on which aspects are relevant to consider in the evaluation of distinct types of medical devices.

OBJECTIVE: This study aims to explore which value aspects are relevant for the evaluation of two types of medical devices, Implantable medical devices and In vitro tests based on biomarkers, according to distinct health stakeholders. **METHODS:** A 2-round Web-Delphi process was designed. A list of 34 aspects resulting from a literature review and expert consultation was presented. The different health stakeholders were asked to classify each aspect on a relevance scale for the two types of medical devices, i.e. regarding how relevant the aspect was for evaluating implantable medical devices and for evaluating in vitro tests based on biomarkers.

RESULTS: One-hundred and thirty-four participants completed the process. A high number of aspects was found to be relevant for the evaluation of both types of medical devices, with a high level of agreement being achieved within the groups of stakeholders. It was possible to identify evaluation aspects stakeholders see as having the same relevance for the two distinct types of medical devices and aspects that have a different relevance depending on the type of medical device being considered. Hence, it was hypothesized some aspects can be considered as general, and others as device-specific.

CONCLUSION: This study shows that it is possible to make a diverse group of stakeholders interact in a Web-Delphi process towards a discussion on which

value aspects are relevant for the evaluation of distinct types of medical devices; that there are aspects seen as similarly relevant irrespectively of the type of medical devices being considered; and that distinct types of devices can entail specificities which should be accounted in the evaluation processes. Future work is needed for extending these findings for other types of medical devices and ultimately to go further in the evaluation of medical devices with case studies.

The agreements between the Government and the Pharmaceutical Industry in Portugal: an analysis since the financial crisis and its further developments

Diogo Teixeira Pereira[1]

[1] Nova SBE Health Economics & Management Knowledge Center

INTRODUCTION: In April of 2011 the Portuguese government asked for an international bailout to recover and strengthen the public finances. After that, but more intensively after September, **APIFARMA** (the Portuguese pharmaceutical industry association) has started its international lobby movements to defend its policy concerns (Pereira, 2019). These were based on two essential points: (i) the new basket of reference countries of the international reference pricing system did not push prices down too far; and (ii) avoid the phenomenon of parallel exports. As a result of that international movements, it was negotiated at the national level the 2012/2013 agreement between the pharmaceutical industry and the Portuguese government. It safeguards the policy concerns of industry and avoids administrative reductions. Due to its nature of payback policy it did not affect the international reference pricing system and, because of that, it avoids the parallel trade phenomenon.

OBJECTIVES: To know if the government has been able to exploit the context of crisis and its bailout to strengthen its bargaining power with the pharmaceutical industry.

METHODOLOGY: This research focus on the relations between Government and Research-based Pharmaceutical Industry during the international bailout and its Economic Adjustment Programme. It draws the analysis in the bailout period (2011-1st semester of 2014) and its further developments in the post-bailout period (from the 2nd semester of 2014 until 2018). It is, therefore, a qualitative research with an approach based on the process tracing method that aims to build-up the puzzle of the political decision-making process. Data has been collected from two type of sources. On the one hand, primary sources: 30 semi-structured personal interviews, in which anonymity was guaranteed, with political and pharmaceutical industry leaders. These were carried out between November 2017 and May 2018. In a total of 43,5 hours of interviews. On the other hand, legislation and official documents gathered from public and private entities.

RESULTS/CONCLUSIONS: During the bailout period when the pressure for financial rigor was greater, the demand for greater rigor in these agreements has also been greater. In the post-bailout we see a certain 'relaxation' in the execution of these agreements. This empirical evidence shows, therefore, that without external pressure, the political community created with these agreements lost its momentum and presented the symptoms of the end of the external pressure of the bailout. These agreements are a powerful tool for the government to avoid slippage in public spending on medicines and for Industry it is an interesting way to avoid administrative reductions. The platform created by the agreements allows industry to exercise political influence over the government, proposing certain measures and avoiding others that could be more serious for it. Moreover, price transparency is undermined, because public prices end up not being the real prices of medicines. However, these agreements do not offer an incentive for neither the government nor the Industry to take more structural measures for more efficient management of the expenditure, such as setting a price for each medicine, instead of contributions being made through credit notes, which maintains the dependency relationship between each hospital and the pharmaceutical company. To sum up, the government sought to use the external pressure during the bailout to strengthen its bargaining power before pharmaceutical industry. However, due to the industry's lobbying resources and extensive networking, that strengthening has been challenged. Hence, we suggest that political status quo remained unchanged in the long-term.

Sessão 27 – Burden of Illness II

Cost of osteoporosis-related fractures in postmenopausal women in Portugal

Judite Gonçalves[1], Ana M Rodrigues[2], Anabela Barcelos[2], Helena Canhão[2] and Céu Mateus[3]

[1] Nova School of Business and Economics

[2] Nova Medical School

[3] Lancaster University

BACKGROUND: With an aging population, osteoporosis has become a major public health concern. Low impact fractures, the main consequence of osteoporosis, result in increased morbidity and mortality and represent a major and growing economic burden on healthcare systems worldwide (1, 2). Postmenopausal women are at particularly high risk for osteoporosis and low impact fractures (2).

METHODS: This retrospective observational study estimated the costs of osteoporotic fractures in postmenopausal (roughly defined as aged 50+) women in Portugal; specifically, direct costs from healthcare consumption in the first year following vertebral, hip, wrist, and/or "other" fracture types. An expert panel (two rheumatologists, one physiatrist, one orthopedist) defined typical healthcare

consumption in the year following each type of fracture with a high level of detail (doctor visits by specialty, medical exams, procedures during hospitalization or outpatient care, and physiotherapy). We also considered medical equipment typically prescribed, which goes beyond the payer perspective because costs are borne out-of-pocket by the patients. Yearly incidence rates of non-hip fractures were estimated from the 2013-15 wave of the Epidemiology of Chronic Diseases cohort (EpiDoC), an observational, population-based cohort of non-institutionalized adults in Portugal (3). Incidence of hip fractures was estimated from the 2014 national Diagnosis Related Groups (**DRG**) database that covers all hospitalizations in the Portuguese National Health Service (**NHS**). Resources were valued according to the national tariffs practiced in the **NHS** in 2019, which were multiplied by typical utilization of each resource as defined by the expert panel (specific to each type of fracture), and finally multiplied by the numbers of yearly incident fractures.

RESULTS: We estimated that, in Portugal, about 5,000 wrist, 9,500 hip, 3,500 vertebral, and 39,000 other-site fragility fractures occur each year among women aged 50+. Healthcare costs per patient range from €1,600 for wrist and "other" fractures (e.g., shoulder, lower leg), to € 4,500 for hip fractures. Physiotherapy accounts for the majority of costs, with the exception of hip fractures, where hospitalization costs represent approximately half the total healthcare costs. In Portugal, incident fragility fractures among women aged 50+ years cost an estimated € 116.5 million in direct healthcare costs per year, which compares with € 152 million yearly direct healthcare costs associated with heart failure, also among 50+ women (4). Although hip fractures cost about twice as much as non-hip fragility fractures, they only account for 1/5 of fragility fractures among 50+ women, and about 1/3 of the total estimated direct cost of osteoporosis-related fractures per year in Portugal.

CONCLUSIONS: Our results indicate that osteoporosis-related fractures in 50+ women in Portugal represent a significant economic burden, in particular for the **NHS**. Furthermore, while the focus has traditionally been on hip fractures, the prevention of non-hip fragility fractures, which account for 2/3 of the estimated costs, also deserves attention. Increased awareness amongst physicians, payers, decisionmakers, and patients may help to address the clinical, humanistic and economic burden of osteoporosis.

Burden of Disease and Cost of Illness of Alzheimer's Disease in Portugal

João Costa[1], Margarida Borges[2], Rosa Encarnação[3], Horácio Firmino[4], Manuel Gonçalves-Pereira[5], Patrícia Lindeza[6], Filipa Sampaio[1], Isabel Santana[7], Rita Sousa[1], Ricardo Taipa[8], Ana Verdelho[9] and Luís Silva-Miguel[1]

[1] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa

[2] Laboratório de Farmacologia Clínica e Terapêutica, Faculdade de Medicina, Universidade de Lisboa

[3] Hospital de Magalhães Lemos, EPE

[4] Centro Hospitalar e Universitário de Coimbra, EPE

[5] CEDOC Nova Medical School/Faculdade de Ciências Médicas, Universidade Nova de Lisboa

[6] Instituto de Saúde Ambiental, Faculdade de Medicina, Universidade de Lisboa

[7] Serviço de Neurologia, Faculdade de Medicina, Universidade de Coimbra

[8] Neuropathology Unit / Portuguese Brain Bank and Department of Neurology Centro Hospitalar Universitário do Porto

[9] Departamento de Neurociências e Saúde Mental, Centro Hospitalar Universitário Lisboa Norte EPE

OBJECTIVES: Alzheimer's disease (**AD**) is a progressive, multifactorial neurodegenerative brain disorder. The pathophysiology initiates decades before the first symptoms. The progressive cognitive decline compromises patients' behavioural and daily living skills. **AD** is the main cause of dementia with substantial humanistic and economic burden. We aimed to estimate the social costs and health losses associated with **AD** in patients aged ≥ 65 years in Portugal mainland during 2018.

METHODS: The burden of disease and cost of illness were estimated using a prevalence-based approach. Burden of disease was measured in disability-adjusted life years (**DALY**), estimated as the sum of Years of Life Lost (**YLL**) due to premature mortality with Years Lost due to Disability (**YLD**). Costs of illness were estimated using a societal perspective and included medical and non-medical direct costs. The main sources of information were the hospital morbidity database; a Portuguese prevalence study that employed 10/66 Dementia Research Group algorithm; medicine consumption and price data; and the opinions of a panel of 7 experts of several medical specialities with regional representativeness.

RESULTS: We estimated around 143,334 **AD** elderly patients in 2018 (7% of the population ≥65 years), extrapolating a 69% proportion of community-dwellers with dementia. In 2018 there were 7,538 deaths attributed to **AD** that resulted in the loss of 76,709 **YLL**. A total of 45,754 **YLD** were attributed to **AD**. The overall **AD** burden was 122,463 **DALY**. The estimated direct non-medical and medical costs attributable to **AD** in 2018 were €1.8 billion (€1.1 billion attributed to informal care) and €219 million, respectively.

CONCLUSIONS: **AD** has a major socioeconomic impact, being responsible for 7% of the total **YLL** estimated for mainland Portugal. Prevalence estimates were based

on community-dwellers data only and, therefore, maybe conservative. The total estimated cost reached €2 billion in 2018, equivalent to 1% of the Portuguese GDP.

The Impact of Non-Melanoma Skin Cancer in Portugal

Filipa Sampaio[1], Luís Miguel[1], Raquel Ascenção[1], Miguel Correia[2], Osvaldo Correia[3], João Costa[4], Isabelle Hoorens[5], Lore Pil[6], João Maia Silva[7] and Margarida Borges[1]

[1] Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa

[2] Clínica Privada, Lisbon, Portugal

[3] Centro de Dermatologia Epidermis, Instituto CUF, Porto, Portugal

[4] Laboratório de Farmacologia Clínica e Terapêutica, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal

[5] Department of Dermatology, Ghent University Hospital, Ghent, Belgium

[6] Department of Public Health and Primary Care, Ghent University, Belgium

[7] Hospital CUF Descobertas, Lisbon, Portugal

OBJECTIVES: Nonmelanoma skin cancer (NMSC) is one of the most frequent cancers worldwide, with 7.7 million incident cases estimated in 2017 by the Global Burden of Disease Cancer Collaboration. In this study, we have estimated the prevalence and mortality associated with NMSC in mainland Portugal, through the adaptation and validation of an economic decision model integrating the various disease states of NMSC.

METHODS: A population-based multiple cohort model was used to estimate the pathway of the Portuguese adult population as it transitioned between different health states of NMSC between 2010 and 2019. The model considers both basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) and reflects the epidemiology and disease dynamics over time. The Markov model includes the health states free of lesion, non-diagnosed, diagnostic & treatment, follow-up and death.

RESULTS: A total of 308,674 prevalent cases of BCC and 71,423 prevalent cases of SCC were estimated in mainland Portugal in 2019, which corresponds to a ratio of 4.3 cases of BCC for each case of SCC. Women registered a higher prevalence of BCC than men with 57% of cases. Approximately 36% and 73% of the total number of prevalent cases of BCC and SCC, respectively, are in the less severe states of the disease. A total of 1,638 deaths by SCC stage IV were estimated over the modeling period of ten years, which corresponds to one death per 44 cases of SCC.

CONCLUSION: This study provides evidence on the burden associated with NMSC in Portugal. NMSC represents a large public health problem and efforts to understand how to mitigate the disease burden are warranted.

Notas

Notas

20 Outubro 2021 quarta-feira

11:00–12:40 **Financiamento em Economia da Saúde** (PT)
Auditório Caixa Geral de Depósitos
Rute Dinis de Sousa, Patrícia Calado e Sandra Maximiano

12:40–14:00 **Almoço**

14:00–15:00 **Future Research in Health Economics** (EN)
Auditório Caixa Geral de Depósitos
Aleksandra Torbica, Joanna Coast e Céu Mateus

15:00–15:10 **Intervalo**

15:10–16:40 **Economia da Saúde & contributo para o sector público** (PT) Auditório Caixa Geral de Depósitos
Sofia Nogueira da Silva, Joana Carvalho, Claúdia Furtado e Luís Goes Pinheiro

16:40–16:50 **Intervalo**

16:50–18:10 **Economia da Saúde & contributo para o sector privado** (PT) Auditório Caixa Geral de Depósitos
Ema Paulino, Maria José Barros e José Pedro Inácio

18:10–18:40 **Cerimónia de Entrega do Prémio Pedro Pita Barros** (PT) Auditório Caixa Geral de Depósitos

18:40 **Cocktail** Terraço Quelhas 6

21 Outubro 2021 quinta-feira

09:00–09:30 **Sessão de Abertura** (PT) Auditório Caixa Geral de Depósitos

09:30–10:30 **Sessões Paralelas I**
S.1. COVID-19: better data for better decision making (PT) Auditório Caixa Geral de Depósitos
S.2. Formal and informal long-term care for diverse subpopulations: elderly, mentally-ill, and post acute health shock (Sessão Organizada) (EN) Auditório 3
S.3. Health systems: efficiency, sustainability, and public-private mix (PT) Auditório 2

10:30–11:00 **Coffee Break** Claustros do Quelhas 6

11:00–12:00 **Sessões Paralelas II**
S.4. COVID-19 restrictions and their impacts (PT)Auditório Caixa Geral de Depósitos
S.5. The economics of the hospital care workforce: determinants and policies affecting nurses' and doctors' retention (Sessão Organizada) (EN) Auditório 3
S.6. Medication Issues (PT) Auditório 2

12:00–12:10 **Intervalo**

12:10–13:10 **Sessões Paralelas III**
S.7. COVID-19 and the health system (PT Auditório Caixa Geral de Depósitos
S.8. Acute Care I (EN) Auditório 3
S.9. Healthcare costs I (PT) Auditório 2

13:10–14:30 **Almoço** Terraço Quelhas 6

14:30–15:30 **Sessão Plenária I** (EN) **Auditório Caixa Geral de Depósitos**
Price and utilization effects of vertical integration between physicians and hospitals — Meredith Rosenthal

15:30–15:40 **Intervalo**

15:40–16:40 **Sessões Paralelas IV**
S.10. COVID-19: pharmaceutical and non-pharmaceutical interventions (PT) Auditório Caixa Geral de Depósitos
S.11. Child and adolescent health (EN) Auditório 3
S.12. Quality and Performance (PT) Auditório 2

16:40–17:10 **Coffee Break** Claustros do Quelhas 6

17:10–18:10 **Sessões Paralelas V**
S.13. Economic Evaluation (PT) Auditório Caixa Geral de Depósitos
S.14. Inequalities I (EN) Auditório 3
S.15. Health-related behaviors: diet, obesity, drug use, and organ donations (PT) Auditório 2

19:30 **Jantar da Conferência** Restaurante Sacramento (Chiado)

22 Outubro 2021 sexta-feira

09:30–10:30 **Sessões Paralelas VI**
S.16. COVID-19 impacts on health and wellbeing (PT) Auditório Caixa Geral de Depósitos
S.17. Innovation (EN) Auditório 3
S.18. Primary and integrated community-based care (PT) Auditório 2

10:30–11:00 **Coffee Break** Claustros do Quelhas 6

11:00–12:00 **Sessões Paralelas VII**
S.19. Burden of illness I (PT) Auditório Caixa Geral de Depósitos
S.20. Novel methodologies and data (EN) Auditório 3
S.21. Acute Care II (PT) Auditório 2

12:00–12:10 **Intervalo**

12:10–13:10 **Sessão Plenária II** (EN) Auditório Caixa Geral de Depósitos
Gender gaps in Health: past/current trends and future evolution — Judit Vall

13:10–14:30 **Almoço** Terraço Quelhas 6

14:30–15:30 **Sessões Paralelas VIII**
S.22. Acute Care III (PT) Auditório Caixa Geral de Depósitos
S.23. Healthcare costs II (EN) Auditório 3
S.24. Pharmaceutical markets (PT) Auditório 2

15:30–15:40 **Intervalo**

15:40–16:40 **Sessões Paralelas IX**
S.25. Inequalities II (PT) Auditório Caixa Geral de Depósitos
S.26. Pharmaceuticals and medical devices (EN) Auditório 3
S.27. Burden of Illness II (PT) Auditório 2

16:40–17:10 **Coffee Break** Claustros do Quelhas 6

17:10–18:10 **Sessão Plenária III** (PT) Auditório Caixa Geral de Depósitos
Desigualdades Sociais em Portugal e os múltiplos efeitos da pandemia — Carlos Farinha Rodrigues

18:10–18:40 **Sessão de Encerramento** (PT) Auditório Caixa Geral de Depósitos
Com a presença de Sua Excelência a Ministra da Saúde,Professora Doutora Marta Temido

19:40–21:00 **Gravação do "Programa cujo nome estamos legalmente impedidos de dizer"** Salão Nobre
Emitido em diferido na SIC/SIC Notícias