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Title
What is performance in public hospitals? A longitudinal analysis of performance plans

Authors
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Abstract
The concept of performance in Public Administration (PA) was extensively introduced with the adoption of the New Public Management (NPM) reforms (Hood, 1991). Originally, according to the NPM paradigm, performance was intended as the capability of public organizations to pursue efficiency and increase productivity in the delivery of public services (Mussari, 2005; O'Flynn 2007; Arnaboldi et al., 2015). In the last decades, however, the concept of performance has significantly evolved through the emerging wave of the so called post-NPM initiatives (O'Flynn 2007). In particular, public management scholars today agree that performance should not be focussed exclusively on the output produced by single public organizations (namely the result of an effort toward greater efficiency and productivity) but should mainly be conceived as broader outcomes achieved in partnership with a wide set of stakeholders for the benefit of the wider community (Talbot, 2011; Borgonovi et al., 2018). The healthcare sector has not escaped this trend (Nuti et al., 2018). Particularly, due also to changes in the epidemiological context that characterize modern societies, public hospitals have been called, in recent years, to integrate their actions with the other providers and stakeholders of the healthcare sector. Therefore, the way in which their performance is conceived and defined has been changed accordingly. Both the new concept of performance and the new role of hospitals in health systems are quite consolidated in literature, however, it is difficult to assess how and with what degree the management of public organizations have embraced it in practice. Thus, the research questions this contribution aims to answer to are: what is performance in public hospital? how the concept of performance in hospitals evolved over time? In order to investigate this aspect, the paper analyses the performance plans of different public healthcare organizations in Italy through topic modelling. These management reports are produced annually and are publicly disclosed. The aim of the management reports is to define the performance targets to be achieved by the organization. More precisely, the dataset comprises 185 reports published between 2011 and 2019, counting over 9000 pages overall. Topic modelling allows to analyse this large textual corpus through an algorithmic procedure that generates a representation of the latent topics discussed therein (Hannigan et al. 2019). The advantage of this technique is that it joins the human capability to interpret the semantic content of topics with precise quantification of how much any given topic is prevalent within each unit of analysis (e.g., a document, a paragraph, a page). Italy represents an interesting case to study since it has introduced the first NPM reforms in the early 1990s (Ongaro & Valotti, 2008). As in other countries, this reform trend was gradually substituted by post-NPM initiatives. The last reform that could be labelled as a NPM initiative has been introduced in 2009 (see Law 150/2009, also known as "Legge Brunetta") and was mainly oriented at introducing the practice of performance evaluation at both individual and organizational level (Marcon, 2011). The decision to focus on public hospital is due to the fact that in 2015 a ministerial decree (DM 70/2015, also known as "Decreto Balduzzi") was published in order to guide public hospitals in changing their role and organizational structure toward a better integration with the regional health system in which their operate. As a result, the authors expect to identify the topics which characterize the concept of performance in public hospitals. Moreover, a longitudinal analysis will show how the prevalence of certain topics changed through time. In particular, the authors expect significant changes between the periods before and after the publishing of ministerial decree above mentioned.

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Title

Process control charts in falls prevention: the work path and the experience developed in the AUSL of Romagna

Authors

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Abstract

Background: Patient safety is a priority for all healthcare institutions, mainly for ethical reasons but also for the related economic issues. For implementing effective safety improvement programs, it is necessary to monitor processes and assess performances. Statistical process control is a useful methodology for monitoring performance and processes and healthcare literature suggests the use of control charts for monitoring patient safety metrics. Challenges may occur when applying statistical quality improvement methods often due to the difficulty of combining commercial software with the hospitals information systems. Furthermore, commercial software for control charts can be expensive for hospital units that often struggle with budget constraints. Objectives: In this work, we describe the experience of the AUSL of Romagna that designed, developed and implemented desktop application to obtain control charts for monitoring inpatient falls. Methodology: A multidisciplinary team created a software tool based on R, an open source software for statistical computing, that properly combined with the existing hospital information system, allows, upon request, to generate a Shewhart u-control chart for monitoring the monthly falls rates. The tool had been implemented in twenty nine hospital units. Results: The main results indicated that control charts, not only allowed to increase process understanding by assessing the process' steady-state behavior and identifying changes that indicate either improvement or deterioration safety performance, but also enabled hospital safety managers to identify some critical issues in data collection. Consequently, where necessary, improvement actions had been implemented. It is worth noting that the use of open source software led to a considerable cost reduction and made the customization of the software tool easy. Adverse events cannot be completely eliminated. However, the experience gained by the AUSL of Romagna developing this project has shown that the use of an automatic real-time monitoring system is very effective in reducing the time dedicated to the bureaucratic aspects of patient safety. This allows healthcare professionals to spend more time on the substance of patient safety.

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Title

L'emergenza Covid-19 e l'impatto sul sistema assistenza anziani in Italia: quali lezioni dall'assenza di crisis management?

Authors

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Abstract

Background: L'emergenza Covid-19 ha avuto un impatto significativo e violento sulla popolazione anziana, come i pochi dati attualmente disponibili dimostrano. In questo quadro, grande risalto è attribuito alla diffusione del contagio e al numero dei decessi registrati all'interno di strutture dedicate all'assistenza agli anziani, RSA in primis, i cui pazienti sono risultati fortemente esposti al contagio.
Obiettivo: L'obiettivo di questo articolo è indagare come è stata gestita la diffusione della pandemia nel mondo dell'assistenza sociosanitaria per gli anziani sia a livello di strutture residenziali che di policy adottate dalle Regioni più colpite. Il punto di partenza dell'analisi è la ricognizione delle criticità pre-esistenti nel settore sociosanitario, per poi illustrare le modalità con cui queste sono emerse in maniera dirompente durante la crisi e riflettere su possibili piste di lavoro per gestire la ripresa e la fase post-emergenziale.
Metodologia: Per rispondere agli obiettivi di ricerca esposti, si propone: - Un'analisi dei principali dati di inquadramento del settore (capacità produttiva, utenti in carico, tasso di copertura del bisogno ecc.) nel contesto pre-Covid; - La ricognizione e sistematizzazione dei dati e delle reportistiche esistenti circa i numeri e la gestione dell'emergenza Covid-19 nel mondo sociosanitario (RSA in primis); - La mappatura e analisi della normativa promossa dalle nove regioni maggiormente colpite dal virus (definite come quelle che hanno registrato più di 5.000 casi accertati) sia nella prima fase dell'emergenza (21 febbraio – 3 maggio) che nella seconda (4 maggio – 30 giugno).
Risultati attesi: Dalla lettura congiunta delle evidenze emergerà come l'emergenza abbia reso noto un contesto già altamente frammentato, sia nella rete di offerta che nella configurazione di policy, acuendone le criticità. Inoltre, l'assenza di crisis management evidenziata permetterà di avanzare riflessioni sulle lezioni apprese fino ad ora aprendo a traiettorie di lavoro per il futuro.

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Title

Pandemia COVID-19: il modello “fisarmonica” dell’ASL 2 Sistema Sanitario Ligure.

Authors

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Abstract

Il 30 Gennaio 2020 il Direttore Generale dell’OMS ha dichiarato la malattia da coronavirus (COVID-19) un’emergenza di sanità pubblica di rilevanza internazionale. Nella nostra Regione, la Liguria, alla data del 27 Giugno sono stati registrati 9963 casi numeri che ci hanno reso la sesta regione italiana per casi totali. La nostra Regione è costituita da 5 Aziende Sanitarie Locali e da un IRCCS. La nostra ASL, l’ASL 2 opera su un territorio coincidente con la provincia di Savona, con un bacino di utenza complessivo di 270.194 abitanti. Le prestazioni ospedaliere sono assicurate nell’area ospedaliera da due presidi ospedalieri ciascuno costituito da due stabili. La pandemia da COVID 19 ha determinato una riorganizzazione dell’offerta ospedaliera con una modello dinamico, “a fisarmonica” che ha concentrato in fase 1 le risorse umane, materiali e strumentali presso due dei 4 presidi ospedalieri, quello di Savona e di Albenga, riducendo le prestazioni alla solo urgenza medico-chirurgica di pazienti COVID negativi presso il presidio di Pietra ligure e chiudendo temporaneamente il presidio ospedaliero di Cairo Montenotte. In particolare il presidio ospedaliero di Albenga è stato interamente dedicato alla gestione dell’emergenza infettiva mentre il presidio di Savona, essendo l’ospedale provinciale dell’ASL 2, ha comunque garantito l’assistenza medico-chirurgica anche ai pazienti COVID 19 negativi. Questo ha consentito la creazione di equipe multidisciplinare altamente specializzate e la centralizzazione e l’ottimizzazione delle risorse disponibili. L’attività territoriale di monitoraggio dell’infezione si è avvalsa dell’ausilio di equipe multidisciplinari, i GISAT, che hanno svolto attività domiciliare e telefonica di controllo in stretto coordinamento con le aree gialle (aree dedicate al ricovero dei pazienti COVID positivi) ospedaliere. La fase 2 si è caratterizzata per la progressiva riduzione delle aree gialle e per la contemporanea creazione delle cosiddette “aree grigie” multidisciplinari mediche/chirurgiche che hanno funzionato come zona filtro per tutti i pazienti che necessitavano di ricovero ospedaliero, ma non presentavano quadri clinici, laboratoristici e strumentali sospetti di infezione COVID 19, nell’attesa dell’esito del tampone. E’ stata inoltre costituita un ulteriore zona, l’area buffer, per i pazienti altamente sospetti per infezione da COVID 19 nell’attesa delle conferma diagnostica. La nostra Fase “3” sarà l’avvio di un follow-up nei pazienti con pregresso ricovero per infezione da COVID 19. Le ultime evidenze scientifiche dimostrano le possibili conseguenze cardiache e polmonari nei pazienti con pregressa polmonite da COVID-19. Pertanto, si rende necessaria, nel tempo, l’osservazione clinica e strumentale nei soggetti che hanno contratto tale patologia, con conseguente elevato costo sociale. La copertura economica della presa in carico di questi pazienti nella Regione Liguria è garantita dalla recente approvazione dell’Atto N° 476-2020 nel corso della seduta N° 3616 della Giunta Regionale della Regione Liguria che consente l’implementazione di specifiche attività di monitoraggio da svolgersi sia in ambito ambulatoriale che in

ambito di Day Hospital senza oneri a carico degli assistiti. L'eventuale efficacia ed efficienza del nostro modello organizzativo sarà confermata dall'analisi di una serie di indicatori. Questo permetterà di costruire/aggiornare una mappa dei bisogni assistenziali della nostra azienda, utile in sede di ripartizione della quota parte del fondo sanitario nazionale (FSN), qualora si ripresentasse un'emergenza sanitaria di caratteristiche similari.

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Title
Analisi dell'attività del servizio di riabilitazione in un Ospedale Covid-19 durante la fase 1.

Authors
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Abstract
[Background] La pandemia di Covid-19 ha imposto improvvise e profonde riorganizzazioni dei servizi sanitari per far fronte all'emergenza. All'interno dell'ospedale in cui ha sede il nostro servizio di riabilitazione (Ospedale S. Paolo, Savona, Liguria, Italia – Nordovest) è stata creata una sezione dedicata al ricovero dei pazienti affetti da Covid-19. Gli altri reparti specialistici, di area medica e chirurgica, sono stati mantenuti operativi per i ricoveri ordinari urgenti per altre patologie. Sono state realizzate barriere fisiche e percorsi dedicati per garantire la separazione dell'area Covid-19 dal resto dell'ospedale. Il nostro ospedale conta 395 posti letto (ordinari + riabilitazione) esclusi i DH. Durante l'emergenza vi è stato un picco giornaliero di 80 pazienti ricoverati nei reparti Covid-19. Il nostro servizio è normalmente impegnato in attività di consulenza fisiatrica, fisioterapica e logopedica per i degenti ricoverati nei vari reparti; il nuovo contesto venutosi a creare con la riorganizzazione dell'ospedale per la gestione dell'emergenza ha imposto una profonda e rapida riorganizzazione del nostro servizio: gestione degli spazi comuni e di lavoro e creazione di percorsi interni alla nostra struttura per preservare ambienti "puliti", cambiamenti nella pianificazione del lavoro e delle sue tempistiche, implementazione di misure per mitigazione del rischio dovuto al contatto degli operatori con pazienti infetti e gestione dei DPI, studio delle più idonee modalità operative per il trattamento riabilitativo dei pazienti affetti da Covid-19 sulla base delle poche esperienze inizialmente disponibili. La nostra attività nei reparti Covid è stata richiesta a partire dal 9/4/2020 e non si è più interrotta per tutta la durata dell'emergenza. Nelle prime 5 settimane sono stati valutati complessivamente 73 pazienti affetti da Covid-19 per la presa in carico fisioterapica durante la degenza. [Obiettivi] E' stata monitorata l'attività del nostro servizio di riabilitazione con l'obiettivo di conoscere l'impatto sui nostri carichi di lavoro e sulla nostra organizzazione interna e di ottenere un dataset strutturato in modo da agevolare la reportistica in sede di successive attività di revisione e approfondimento. [Metodo] Abbiamo avuto a disposizione la rilevazione del numero giornaliero di pazienti ricoverati nei reparti "Covid" del nostro Ospedale. Per l'analisi dell'attività riabilitative abbiamo monitorato quotidianamente il numero di operatori coinvolti ed il flusso delle richieste pervenute al nostro servizio. Per ogni valutazione effettuata sono stati registrati dati epidemiologici (data di nascita, sesso, provenienza), clinici (numero di comorbilità presenti, capacità motoria preesistente, evidenza di degenza in terapia intensiva, presenza e tipo di supporto di O2), amministrativi (data di ricovero, data della richiesta, data della valutazione, esito della valutazione). L'elaborazione dei dati ha consentito di definire per ogni richiesta: età del paziente e classe d'età. Per ogni trattamento fisioterapico attivato (richiesta autorizzata) si sono registrati i seguenti ulteriori dati: data 1° trattamento, data ultimo trattamento, esito, data dimissione. I trattamenti che hanno avuto esito favorevole entrano in un programma di follow up mediante intervista telefonica. Una prima analisi dei dati è stata fatta su base settimanale per 5 settimane di attività del nostro servizio. [Risultati] I dati mostrano una rilevante richiesta di prestazioni riabilitative all'interno dei reparti Covid: tra il 33% ed il 52% dei ricoverati, su base giornaliera, per la maggior parte del periodo analizzato. L'esame dei dati su base settimanale mostra un'evoluzione nelle caratteristiche epidemiologiche della popolazione in esame. Ci aspettiamo che ulteriori analisi dei dati forniscano elementi utili al miglioramento delle nostre strategie organizzative.

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Title
Sfide e futuro del sistema trasfusionale italiano

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Abstract
Background: Tra le diverse componenti di un sistema sanitario, il sistema trasfusionale nazionale (STN) ricopre senza dubbio un ruolo cruciale nel perseguire l'interesse pubblico di tutela della salute del SSN1 . Il valore strategico del STN per il perseguimento della mission dello stesso SSN è riconducibile almeno a tre ragioni: (i) assicura l'autosufficienza nazionale (e regionale) nella produzione di emocomponenti; (ii) garantisce l'autosufficienza nella produzione di medicinali plasmaderivati; (iii) assicura il controllo di standard di qualità e di sicurezza adeguati nella produzione di sangue e derivati. Oltre a queste specificità, il settore trasfusionale (ST) si caratterizza per complessità e specificità. La complessità deriva dalla necessità di integrare, in una medesima filiera, attività tra loro estremamente eterogenee, mentre la specificità discende dalla natura di queste stesse attività quali la promozione della donazione in una comunità o la gestione di attività di produzione industriale. Negli ultimi anni, alcune dinamiche evolutive del sistema risultano particolarmente critiche nel contesto attuale, generando una crescente complessità nel sistema di governo e di gestione del STN. Altri elementi di attenzione sono poi rappresentati dai modelli regionali di programmazione, organizzazione e finanziamento, dalla carenza di meccanismi e/o cruscotti di rilevazione e valutazione delle performance dell'attività del sistema, dallo shortage di medici specialisti del segmento e la sua scarsa capacità di attrarre nuove figure professionali. Obiettivi: Alla luce delle dinamiche di contesto appena enucleate e considerando l'assenza di analisi strutturate sulle principali sfide e sul futuro del sistema trasfusionale italiano, il lavoro ha raggiunto i seguenti obiettivi: § Fornire una fotografia dell'intero STN considerando tutte le componenti come parte di un'unica filiera ed evidenziando la governance, gli strumenti di programmazione e coordinamento, i meccanismi di finanziamento dell'attività; § Raccogliere e confrontare la lettura del STN da parte dei diversi attori del settore, per individuare potenzialità e criticità endogene ed esogene dell'attuale sistema; § Utilizzare altre realtà internazionali (i.e. Francia e Spagna) come «benchmark» per il posizionamento del sistema italiano ed evidenziare eventuali gap di funzionamento, coerentemente con le specificità nazionali; § A fronte delle potenzialità e criticità del STN emerse dall'indagine svolta e delle esperienze fornite dai casi internazionali, individuare possibili cambiamenti di governance e organizzativi nell'attuale sistema per garantirne la sostenibilità nel medio – lungo periodo Metodo: Per svolgere l'attività di ricerca sopra descritta, si è proceduto nel seguente modo: 1. Review documentale e analisi desk della letteratura sul sistema trasfusionale italiano (e sistema di ogni contesto regionale) e internazionale (Spagna e Francia), con particolare attenzione agli aspetti di governo e di gestione del sistema; 2. Interviste e Focus Group (partecipazione di cinquanta diversi soggetti). Le interviste sono state condotte con i key informants, esperti, rappresentanti delle istituzioni nazionali e dell'industria; mentre i quattro Focus Group sono stati ideati per i rappresentanti dei Centri Regionali Sangue (CRS); 3. Workshop plenario a cui hanno partecipato tutti i soggetti in precedenza coinvolti nei quattro Focus Group per discutere le evidenze emerse nel corso sia dei focus group sia delle interviste con i key informants; Risultati I dati qualitativi raccolti hanno consentito innanzi tutto di fornire una fotografia finora inedita del STN in tutte le sue articolazioni, presidiando aspetti chiave di una politica pubblica quali la governance, i meccanismi di finanziamento, i meccanismi di interazione tra i diversi livelli organizzativi e gli attori del sistema. Sono, quindi, emersi i principali punti di forza e le principali aree di criticità del sistema stesso, fornendo così la base di partenza necessaria per impostare delle proposte di intervento mirate ad affrontare gli aspetti critici sia endogeni sia esogeni e garantire la sostenibilità del sistema nel medio – lungo periodo.

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Title

Response to COVID-19: Was Italy (un)prepared?

Authors

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Abstract

On 31st January, the Italian cabinet declared a 6-month national emergency after the detection of the first two COVID-19 positive cases in Rome, two Chinese tourists travelling from Wuhan. Between then and the total lockdown introduced on March 22nd, Italy was "hit by nothing short of a tsunami of unprecedented forces, punctuated by an incessant stream of deaths. [...] Italy's biggest crisis since World War II" (Pisano et al, 2020). The SARS-CoV2 outbreak and the related COVID-19 pandemic has been the worst public health challenge endured in recent history by Italy, a country still and slowly recovering from the 2008 economic crisis. The latter brought about the introduction of cost-containment measures aimed at reducing public expenditure for health and healthcare, shifting de facto the burden of healthcare finance from the government to households (e.g. increase of co-payment for drugs, specialist and diagnostic care), and setting tighter budget constraints for pharmaceutical public expenditure (Thomson et al, 2014; Ferrè and Ricciardi, 2015). The extraordinary pressures on the National Health System (SSN) by the COVID-19 pandemic inevitably leads to questions about the preparedness of the SSN and the appropriateness and effectiveness of responses implemented at both national and regional level. Italy has been the first European country to be (badly) hit by this pandemic and the first to introduce stringent lockdown measures. After mapping the timeline of events and regulatory provisions at the national level, we tracked measures implemented in a sample of five key regions representative of the country situation (i.e. Lombardy, Veneto, Emilia-Romagna, Umbria, Puglia) (Bosa et al. 2020; Galizzi and Ghislandi, 2020). The aim of the paper is to critically review the Italian response to the COVID-19 crisis through the lens of the multilayer central vs regional architecture of the healthcare system in the country. More specifically, we intend to: A. appraise the timeliness and effectiveness of the policies introduced at different levels; B. uncover their potential shortcomings and/or strengths; C. explore their potential relationships with structural indicators at the regional level; and D. provide an initial assessment of the current and future organizational and financial impacts of the COVID-19 crisis on the national and regional healthcare systems. The recurring tensions between central and regional governments have emerged as a key challenge also during the management of the COVID-19 pandemic. Different stages in the epidemiological evolution of the disease may justify flexible responses across the country. However, the prospect of a second wave in the fall and the appalling -9.1% International Monetary Fund forecast of Italy's GDP in 2020 demand a vigorous, brave and cohesive recovery plan with virtually no room for further hesitation.

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Title
The Assignement of Triage when the Shift Changes

Authors
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Abstract
Resources in Emergency Departments are very often insufficient for all the patients to be treated immediately. A standard procedure to efficiently determine priorities and to ration resources across patients is the process of Triage, which sorts patients into a queue on the basis of their arrival time and level of priority. In this framework it is important to note that first, the assigned priority is not a deterministic function of patients' conditions and that identical patients arriving in different points in time may be assigned different levels of priority; and second, the timeliness of treatment may be crucial, and waiting longer before visit/treatment may be harmful for patients. In this project I try to understand whether identical patients arriving at different points in time are assigned the same priority level. More precisely I will focus at the shift change, and assess the presence of discontinuities in the probability of receiving a given priority level when the medical staff assigning the triage code is at the beginning or at the end of their shift. This project employs administrative data on the universe of ED admissions of 3 large, publicly owned hospitals in Italy, between 2013 and 2017. This extremely rich dataset contains the exact arrival time, demographics, priority level assigned, the reported/visible symptoms at arrival, and the final outcome of the ED visit. Information on ED visits are potentially matched to longer term outcomes for the patients (such as following ED visits, hospitalizations and pharmaceutical consumption). Furthermore, through telephone survey of the head nurses of the hospitals in the sample, I collected information on the shift patterns for the three hospitals. In an RDD approach, and controlling for the compositional differences of patients arriving in different points in time, preliminary results show that patients are (conditionally) more likely to be assigned higher priority at the beginnig of a shift. This finding is consistent in all the hospitals and in all the shifts. I complement this finding showing no evidence of discontinuities at the shift-change in the rich set of observables available, nor on the predicted probability of receiving a higher priority level. There are few possible mechanisms that can be discussed. First, the discontinuity could be due to a shift-oriented load management, where nurses want to avoid excessive "load" whithin their shift and become more prone to assign higher priority at the end of shift. Second, it could be the case that the costs of symptoms evaluation are increasing over time within a shift, then if the correct assestment of priority requires effort, and nurses are tired towards the end of their shift, it is rational for them to, in doubt, assign higher priority more often. Although at the moment I am not able to precisely pin down the mechanism behinf this relation, the discontinuity I show generates a quasi-random variation in triage assignment when the shift changes. Such discpntinuity can be exploited to study the effect of priority on immediate and long-term outcomes.

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Title
La Gestione Operativa nelle Aziende Sanitarie pubbliche e private: analisi del ruolo svolto durante l'emergenza covid e implicazioni gestionali

Authors
Marta Marsilio, Anna Prenestini

Abstract
La gestione delle operations è centrale per affrontare problemi di standardizzazione, riorganizzazione e riprogettazione di flussi e percorsi di pazienti e beni sanitari con l'obiettivo di eliminare o ridurre la variabilità artificiale, garantire una maggiore efficienza dei servizi sanitari e supportare il miglioramento della qualità. La gestione delle operations ha un impatto anche sulla variabilità naturale, non modificabile, che si traduce in flussi di pazienti più difficilmente "orientabili" dall'azienda. Sebbene questi flussi non possano essere programmati, possono comunque essere analizzati e "previsti" sulla base di serie storiche di dati di accesso, riorganizzando le attività produttive in modo da venire incontro alla domanda senza creare grosse pressioni e disfunzioni sull'organizzazione. Durante l'emergenza dovuta al COVID-19, gli scopi tradizionali della gestione delle operations sono stati minati dalle caratteristiche stesse della pandemia, in quanto caratterizzata da elementi che ne hanno reso difficilmente "prevedibile" l'impatto in termini di flussi dei pazienti: sono venuti a mancare – soprattutto nel primo periodo – quelle condizioni che permettono solitamente di sviluppare scenari di impatto sui flussi ospedalieri, come: i) la conoscenza della sua effettiva diffusione nella popolazione; ii) serie storiche sulla patologia e sul presumibile afflusso dei pazienti in ospedale; iii) la conoscenza delle conseguenze sullo stato di salute dei pazienti e, quindi, del fabbisogno assistenziale richiesto. In questo scenario, le Aziende Sanitarie hanno dovuto velocemente adattare la gestione delle loro operations per fronteggiare la crisi e governare i flussi dei pazienti, cercando di sfruttare ogni elemento di prevedibilità che man mano emergeva dalla situazione per riorganizzare efficacemente le proprie attività produttive. Scopo della ricerca è analizzare il ruolo svolto dalla funzione Gestione Operativa (GO) durante la crisi in termini di contributo alle scelte strategiche, tattiche e operative aziendali. A tale scopo, si intende analizzare: i) il ruolo della funzione GO precedente all'emergenza COVID; ii) il coinvolgimento della funzione GO nelle attività di gestione della crisi in termini di ambiti di azione e di strumenti utilizzati; iii) i principali risultati ottenuti dal coinvolgimento della GO nella gestione della crisi in termini di miglioramento dei processi. La metodologia prevede un multiple case study con l'analisi di quattordici Aziende Sanitarie pubbliche e private presenti in 5 Regioni italiane (Lombardia, Emilia Romagna, Piemonte, Toscana e Lazio) caratterizzate dall'aver costituito al proprio interno una funzione strutturata di GO. Sono in corso le interviste a 24 tra membri della Direzione Strategica Aziendale, Direzione Medica di Presidio e Responsabili della Gestione Operativa. L'intervista dura in media 1 ora e mezza; tutte saranno trascritte verbatim. L'analisi del coinvolgimento della funzione GO avverrà rispetto ad alcuni driver fondamentali su cui le Aziende Sanitarie hanno agito per rispondere alla crisi: i) la struttura organizzativa e i meccanismi operativi a supporto delle decisioni; ii) le reti per la gestione dei flussi dei pazienti; iii) l'asset management e il lay out fisico; iv) la riorganizzazione dei flussi dei beni sanitari e dei dispositivi; v) le tecnologie. Si trarranno delle implicazioni manageriali in termini di miglioramento o di evoluzione della funzione per estenderne e strutturare l'ambito di azione anche in caso di emergenze sanitarie. Le riflessioni saranno particolarmente rilevanti anche per gli scholar, per l'evoluzione futura degli studi di operations management nelle Aziende Sanitarie e di patient flow logistics

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Title

Superamento “dell’EFFETTO REGNO”

Authors

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Abstract

BACKGROUND: Emergenza CoViD 19 ha raggiunto e investito il nostro presidio ospedaliero all’inizio di marzo 2020. Si tratta di un presidio ospedaliero edificato intorno agli anni 70, in due blocchi, collegati da 3 corridoi; il blocco nord in cui sono allocate le specialità chirurgiche e quello sud dove prendono posto quelle mediche. Il padiglione sud, di 6 piani, ospita dall’alto verso il basso: RFF ed endoscopia digestiva), malattie infettive e medicina B, pneumologia, gastroenterologia (degenze) oncologia e medicina A, geriatria A e B e nefrologia, cardiologia e UTIC, neurologia e psichiatria. Totale posti letto per acuti: 359 PL (DGR 614/2019). Fino alla pandemia da Coronavirus, il setting clinico-assistenziale e gestionale (anche in termini di gestione del personale) nel nostro ospedale era organizzato “ a silos”, per singole UU.OO, con eccezione per la Breast Unit. Tra i singoli professionisti solo un rapporto di consulenza e non di collaborazione o co-working. OBJECTIEVS: all’inizio della pandemia è stata percepita dai direttori delle UU.OO di malattie infettive, della Pneumologia , della Medicina generale e della Geriatria, di uniformare i processi e percorsi diagnostico-terapeutici e, in accordo con DMO, si è iniziato a riorganizzare il setting di questi reparti , dove venivano ricoverati i pazienti con diagnosi certa di CoViD 19. Gli obbiettivi furono: a) definizione di percorsi CoViD (es: corridoi ed ascensori ad esclusivo utilizzo dei malati affetti da CoViD); b) corretta e fluida gestione dei posti letto in reparto medico e in semiintensiva pneumologica; c) tutela (fisica e psicologica) del personale medico, infermieristico e OSS attraverso il loro accorpamento in un’unico “team working” garantendo adeguata turnazione; d) contenimento del contagio all’interno del presidio ospedaliero. Questo processo riorganizzativo è avvenuto sostanzialmente ad isorisorse e secondo dinamiche “bottom-up”; la leva organizzativa è stata superare le barriere architettoniche di una struttura statica con una riorganizzazione dinamica delle risorse umane. Inoltre all’esordio dell’emergenza, sono stati messi in atti percorsi di formazione per il personale del PS e dei reparti medici, quest’ultimi dove si sono concentrati la maggior parte dei ricoveri, per il corretto utilizzo dei DPI e per organizzare percorsi di accesso alla struttura ospedaliera differenziati CoViD/ CoViD free. METHODOLOGY: 1) Modifiche alla struttura esistente (doppie porte e divisori in cartongesso); 2) Incontri quotidiani con i direttori UU.OO coinvolte per validare o modificare decisioni prese; 3) Gestione da parte della DMO dei posti letto CoViD in reparti medici, semi-intensiva pneumologica e terapia intensiva; 4) Istituzione e formalizzazione di un telefono CoViD (malattie infettive dalle 8 alle 20); 5) Costante contatto con anestesisti-rianimatori per gestione precoce delle IOT, per agevolare flusso dei pazienti verso setting adeguati; 6) Decisione di IOT in reparto di degenza per ridurre al minimo il rischio di diffusione del virus tra gli operatori sanitari; 7) Creazione di un team leader tra il personale infermieristico e OSS per coordinare il lavoro. MAIN RESULTS: dopo un iniziale periodo di assestamento, si è assistito ad una completa omologazione dei percorsi e processi assistenziali all’interno dei team working composti da medici pneumologi, geriatri ed internisti, sovvertendo un modello organizzativo “a silos” e superando, almeno temporaneamente ,“l’effetto Regno” per approdare al modello organizzativo “a matrice”. E’ stato possibile attivare quindi, seppur per breve periodo, un modello ad intensità di cure, che ha coinvolto le specialità mediche per acuti. In questo setting venivano infatti trattati pazienti con differente compromissione respiratoria (dal respiro spontaneo fino alla ventilazione NIV) grazie alla gestione modulare delle specialità mediche per acuti. Abbiamo potuto osservare che le UU.OO coinvolte sono state in grado di passare da un modello organizzativo rigido, ad uno più dinamico, “a soffietto”, in grado di modularsi in base alle necessità epidemiologiche. Abbiamo apprezzato la stretta collaborazione con la DMO nella difficile gestione dei posti letto. Ci auspichiamo che i risultati osservati in corso di emergenza sanitaria siano ripetibili e mantenuti sempre, che il team multidisciplinare e il coworking

diventino un mezzo per garantire alla popolazione cure adeguate e all'Azienda Sanitaria uno strumento di implementazione dei percorsi diagnostico-terapeutici assistenziali.

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Title
Cancer screening invitations in the developing world.

Authors
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Abstract
Roughly 90 percent of cervical cancer deaths occur in low- and middle-income countries (LMICs), where the lack of adequate infrastructures hampers the organization of screening programs, while informational, cultural, and socio-economic barriers limit the participation in the few existing programs. We implemented a field experiment within the national cervical cancer screening program in the Republic of Armenia to test whether, in spite of these barriers, easily implementable and low-cost invitation strategies employed in high-income countries could enhance screening uptake in LMICs. We find that the dispatch of invitation letters enhances screening take-up, especially when followed by reminders. Different message frames have no impact on participation

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Title
Response of Ticino's hospital to the pandemic: the relevant case study of the hospital "La Carità"

Authors
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Abstract
[Background] In 2020, the SARS-CoV-2 pandemic hit the world and reached Switzerland on February 25th, with the first case diagnosed in the Canton Ticino, one of the most hit areas of the country – at its peak, it experienced about 22% of the national COVID-deaths despite accounting for 4% of its population. Its health system was compelled to juxtapose or even anticipate some Federal measures. The reconfiguration of the Ticino hospital system consisted of creating COVID-centers and differentiating care in six intensity levels. The main capacity building effort concerned the expansion of intensive care beds (level 1) and dedicating beds for COVID cases requiring acute care (level 2). This strategy aimed to effectively respond to the crisis by: avoiding intra-hospital outbreaks; fostering economies of scale and knowledge; preserving core essential services for non-COVID patients. [Objectives] The aim of this research is to conduct an in-depth analysis of the response organized by the management of the Regional Hospital of Locarno "La Carità" (ODL), appointed reference COVID-center for Canton Ticino at the beginning of March. It played a pivotal role in facing the logistic, organizational and institutional challenges of setting the acute care response of the Cantonal hospital system. [Methods] The data collection relied on semi-structured interviews (including materials shared during face-to-face talks or via email) and local media news. The management of the ODL was solicited through the network of professional contacts associated to the Executive Master Net-MEGS. The interviews were structured based on the relevant literature available concerning the topic, distinguishing relevant conceptual areas: logistics; management; equipment and technologies; human resources; personnel and family support; palliative care; ethics; social capital. Three researchers conducted on-field interviews with the General Director, the Medical Director, the Head of the Nursing Service, the Head of Quality and Patients Safety, the responsible of the Psychological Service, and the Head of the Technical and Logistical Service. The interviews took place on May the 15th, lasted about 6 hours, have been tape-recorded and transcribed in the following 48 hours. [Results] The response organized by the ODL shed light on the importance of operating in a context of intra- and inter-organizational cooperation. In this respect, relevant examples are the coordinated transfers of patients across the different hospital sites, the concentration of specific medical technologies and professionals in the COVID-center, and the sharing of knowledge and practices. The analysis showed the relevance of institutionalizing public-private collaborations to successfully face the emergency. In addition, the ODL top management dedicated attention to the "two populations" hit by the crisis: the patients and the hospital's personnel; this contributed to rule the negative effects of radical changes implemented to face the pandemic. In general, the adaptation process has been described as "liquid", since priorities and objectives required constant updates according to the logic of "learning by doing". For example, during the crisis the top management realized that, in the case the pandemic had got worse, there would have been issues of services rationing; therefore they facilitated a sharing of values between the hospitals' top management to set common ethical principles and stimulate an official statement from higher-level authorities in an attempt to cope with the worst scenario. The interviewees did not report issues regarding supplies availability. In this respect, centralization might have played a strategic role in dealing effectively with the procurement challenges. Findings suggest that top management leadership, a shared responsibility towards a common goal, constant communication, and pre-existing personal connections among key actors played a critical role to cope with the crisis. Finally, the emergency highlighted the importance of a sufficient level of independence from other countries (and regions), both in terms of qualified personnel and supplies.

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Title
3D printing in healthcare: emerging applications and future trends

Authors
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Abstract
In early December 2019 a new Coronavirus, identified as Covid-19, started to spread in Wuhan, China, showing its strength in generating pneumonia and bron-chopneumonia up to the death for a lot of individuals. The measure of lockdown appeared as the only prevention and protection in-strument possible and after two months the World Health Organization announced the pandemic status: the virus arrived everywhere, upsetting down lives and habits for everyone. So, in a context dominated by the fourth revolution (Kagermann et al., 2011) and the spread of new technologies the main problem was the unsatisfied request for products that are essential in the fight against Covid-19. They are masks, lung respirators, disinfectant gels, and other individual protection devices, but they were not available anymore for community. In this sense, this work aims to analyze the potential of new technologies in healthcare. In particular, the purpose is to show whether and how, in a context where materials have become largely unavailable and the alternatives of making or buying impossible, open source (Perens, 1998) supported by 3D printing could represent a valid solution. 3D printing deposits specific materials layer-by-layer allowing the realization of any object. Despite initial adverse opinions, 3D print-ing allowed the achievement of relevant results in healthcare, such as the realiza-tion of noses, skin, customized coverings for artificial limbs, cosmetic and bionic ears, including the molds for teeth aligners. In this sense, bioprinting will repre-sent the further development of 3D printing, allowing to obtain biomedical parts imitating natural tissue characteristics. More in depth, the study will analyze the contribution provided by makers, identified as “digital craftsmen” (Maietta and Aliverti, 2013), able to exploit the Internet network in order to share ideas, processes, resources, and costs to obtain specific products. With regard to the Italian context, several examples of digital projects will be presented, highlighting their contribution to the mitigation of the ongoing emergency, as well as the numerous aspects that still need to be clarified in order to ensure the immediate and safe use of such technologies.

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Title
Le cure palliative in Italia: quali prospettive future di settore?

Authors
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Abstract
Background: Il settore delle Cure Palliative (CP) in Italia è un ambito giovane, complesso e in larga misura ancora inesplorato. Il suo formale riconoscimento risale alla legge n.38/2010 che sancisce all'art.1 "il diritto del cittadino ad accedere alle cure palliative e alla terapia del dolore". Negli anni, i setting assistenziali che si sono posti in essere sono essenzialmente due: le cure palliative domiciliari e l'assistenza in hospice – struttura di ricovero complementare ed integrata all'ospedale e al domicilio che costituisce uno dei nodi della rete locale di CP. Secondo gli ultimi dati disponibili a livello nazionale, il numero totale di persone ricoverate in Italia in hospice nel 2017 è stato pari a 42.572 (+13% rispetto al 2014). Allo stesso modo, secondo il flusso informativo SIAD del NSIS, nel 2017 il numero di pazienti in fase terminale assistiti al proprio domicilio è risultato pari a 40.849 (fortemente sottostimato). Obiettivi: Il presente studio si pone l'obiettivo di indagare a 360° lo status attuale del settore delle cure palliative per comprenderne le specificità a livello nazionale e regionale e riflettere sulle sfide future che il sistema si troverà ad affrontare. In particolare, gli obiettivi della ricerca possono essere così sintetizzati: 1. Comprendere la stretta relazione tra offerta di cure palliative e stima del bisogno per fotografare l'attuale tasso di copertura del bisogno nel nostro paese (sia a livello nazionale che di singolo contesto regionale); 2. Analizzare diverse tipologie e metodi di risposta al bisogno di cure palliative, confrontando il contesto italiano con due casi scelti (confronto internazionale); 3. Indagare i principali punti di forza e debolezza del sistema e le possibili evoluzioni del sistema nel suo complesso e fornire una riflessione sul suo potenziale impatto. Metodo: La metodologia adottata si articola in tre fasi principali. La prima fase, propedeutica per poter quantificare il tasso di copertura del bisogno oggi in essere nel nostro Paese, è scandita come segue: • Review sistematica della letteratura internazionale e nazionale sul tema del bisogno delle cure palliative e relative stime di bisogno in Italia e in altri paesi del mondo; • Ricognizione dettagliata di tutte le strutture e setting assistenziali presenti nel nostro paese per mappare le varie articolazioni di cui si compone oggi l'offerta di CP in Italia; • Messa a sistema delle stime di offerta e bisogno e conseguente definizione del tasso di copertura del bisogno. La seconda fase della ricerca ha voluto altresì porre in essere un'analisi documentale online delle informazioni consultabili e reperibili (normativa, documenti, rapporti ministeriali) riguardo al settore delle CP in due diversi contesti europei (Germania e Regno Unito). Sono stati individuati questi due casi internazionali alla luce dei seguenti criteri: comparabilità demografica in termini di popolazione totale e comparabilità di sistemi (sanitari). Infine, la terza fase della ricerca, principalmente volta ad una riflessione più ampia sul futuro delle CP - riflessione che va letta alla luce degli attesi cambiamenti esogeni in atto nei prossimi decenni –, ha visto l'organizzazione di un Focus Group della durata di circa tre ore con cinque diversi attori del settore. Risultati Lo studio condotto sul tema ha permesso di mettere in luce che il settore delle CP appare contraddistinto da un basso tasso di copertura, certamente disomogeneo tra le diverse realtà regionali del Paese e in grado di dare risposta ad una percentuale inferiore alla metà dei bisogni presenti nel nostro paese. In aggiunta, il settore delle CP è ad oggi ancora caratterizzato da modelli assistenziali ad alta intensità, che contemplano il ricovero perlopiù negli ultimi giorni di vita del paziente. Allo stesso modo, il ricovero in hospice e unità di CP è concepito quasi esclusivamente con riferimento a pazienti oncologici e non affetti da altre patologie di origine non neoplastica.

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Title
How to estimate healthcare costs of a pandemic: the case of COVID-19 in Italy

Authors
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Abstract
[Background] The NHS response to SARS-CoV-2 pandemia should be evaluate to demonstrate and improve its sustainability. Local clinical needs and healthcare costs are key parameters for that kind of analysis. For that reason, crucial is to merge and find a balance among official figures, real world data (RWD) and hypothesis. The Graduate School of Health Economics and Management (ALTEMS) has been monitoring the response of the Italian NHS since the beginning of the emergency with a weekly Instant Report to provide an integrated analysis of available data. The major goals are to identify differences and analogies among national and regional COVID-19 models of care and anticipate short and long term needs. Since May 28th 2020, a specific section of the Instant Report is dedicated to the impact of pandemia on NHS's expenditures. **[Methodology]** To provide estimates of health care costs associated with COVID-19, we integrate official data with evidence provided by scientific and grey literature. Official statistics are released daily and weekly by the Italian Ministry of Health in collaboration with the National Institute of Health (ISS) and respond to the need to monitor the evolution of epidemic curve. While our goal is to identify reliable and representative data to support economic estimates of the impact of COVID-19 on Italian NHS sustainability. For that reason, a literature search is constantly performed to collect robust and reliable estimate of critical costs, as the daily cost of intensive care units (ICU). Our analysis aims to identify not only direct healthcare costs but also costs due to loss of activity. Indeed, the reorganization of hospitals, and of the whole NHS, requested by the COVID-19 workload determined a contraction of previously performed in- and outpatient activities. A step by step approach was adopted. First, the loss of scheduled hospitalizations was estimate taking into account the most recent data available on hospital activities. Then, a scenario analysis was performed to estimate overall costs of COVID-19 patients on the base of data released by ISS on the distribution by clinical severity of current positive case. To estimate severity level associated healthcare costs, DRG tariffs were used as proxy. We considered the DRG selection performed by the Ministry of Health and Italian Regions, and a simulation performed by 3M as well as aggregated RWD provided by a COVID-19 center. On the base of all these elements we made assumptions to evaluate costs both for treated cases and deaths due to COVID-19.Finally, special attention was dedicated to the daily cost of ICU care, given the role play in COVID-19 treatment by mechanical ventilation (and other technologies) in the most severe cases. Official data is available on ICU days both at national and regional level. While data on costs is provided by literature and hopefully future RWD analysis. **[Main (expected) results]** Our approach allows us to provide regular updates on the impact of COVID-19 on Italian NHS. On the base of the most recent performed estimates (9 July, 2020), the loss of inpatient activity reached € 3.3 billions. While the scenario analysis still showed a high variability in direct healthcare costs associated with the treatment of COVID-19 patients. The extreme scenario is associated to a costs of € 1.568 million, while in a steady state scenario costs reach € 687 millions. The wide rage is due significant variations in the severity distribution of positive cases from March to July 2020. Lack of detailed data on severity as well as the need to made assumptions motivated our decision to still present only a scenario analysis and not try more elaborated simulations. While, the ICU estimated costs reached € 264 million given 185.527 days in ICU at July 7th. Distribution among regions is not homogenous and Lombardy still plays a critical role (representing 36.6% of total ICU national costs). In literature, mainly grey one, are emerging the first Italian RWD on hospital costs, distribution of cases among level of care and on LOS. Variability will be further investigated to review and improve our estimates. At the moment our first priority is to have more complete access to regional data to assess and better investigate the different response models adopted at local level.

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Title
Evolution of operating models in healthcare. Focused-factory model applied at general hospitals: Evidence from a multiple case study

Authors
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Abstract
Background: Hospitals are investing many efforts in patient-centered care implementing organizational models focused on medical conditions to enhance value for patients (M. Rafiq et al., 2019). The focusedfactory (FF) model is at the center of much debate in literature and it's suggested a deeper empirical analysis of focused hospital phenomena concerning healthcare operations (Cook D. at al., 2014). The healthcare literature underlines how FF can be achieved in various ways according to different degree of focus (E. Bredenhoff et al., 2010) and analyzed under different understanding keys (W.R. Pratt, 2008). FF has been recognized as an innovative model that allows hospitals to provide care at higher quality and lower cost (S. Kumar, 2010), but literature doesn't clearly establish the boundaries between specialty hospitals and general hospitals (GHs) which provide high specialized care through the so-called focused centers (FCs) (W.R. Pratt, 2008). Since that a GH provides a full range of services, many units and professionals are involved in the delivery process; so it should be clarified how FCs interact with other units (D. Cook at al. 2014). Finally, scholars have tried to address gaps regarding metrics to measure the focus degree of hospitals (C.M. McDermott, G. N. Stock, 2011) but indications are ambiguous. Objectives The purpose of the present study is to decline the analysis of focus as emphasis given the design, the processes and the infrastructure of the FC testing the model on case studies. Hence the research tries to address two main purposes: i) Understand how GHs operationalize FF model; ii) Test empirically a measure of focus in GHs; Methodology Evidences stated in this study are based on the analysis of multiple case study assessing the management of two different clinical conditions. Per each medical condition were selected three healthcare organizations. To analyze in depth focus in GHs, it was used the "four perspective model" (Hyer et al. 2009) identifying four dimensions of analysis: i)Knowledges and resources; ii)Spatial boarders; iii)Production processes; iv)Organizational features. Data were collected through semistructured interviews of all the actors involved in the care of patients, documents, study visits, and advisory boards (ABs). Main results The current study offers useful insights to understand in a better way how GHs are implementing FF model identifying main critical features to develop a FC (Figure 2) A measurement tool of focus (Figure 3) was built summarizing a five-item scale per each one of the four dimensions. During ABs were identified the main variables shaping focus emphasis of FCs: - Resources: 1.Group of physicians; 2.Activation of specialist consultation; 3.Shared patient visits; 4.Multidisciplinary team at organizational level; 5. Multidisciplinary team at regional level - Processes: 1.No guidelines; 2.Guidelines at hospital level; 3. Guidelines at regional level; 4. Clinical pathway at organizational level; 5. Clinical pathway at regional level - Spatial boarders: 1.No dedicated spaces; 2.Close location of ancillary services; 3.Dedicated administrative service; 4.Dedicated low complexity settings; 5.Integrated ancillary services - Organizational features:1.No part of a regional network; 2.Spoke I level; 3.Spoke II level; 4.Regional HUB; 5.Comprehensive Care Center. The implementation of FF in GHs implies a deep reorganization of human resources, consequently adoption of multidisciplinary approach (table 1) requires the alignment of other dimensions including: i) shared layout; ii) standardization of clinical processes; iii) IT systems. Definition of clinical pathway at corporate or regional level plays a key role in the homogenization of both organizational and clinical practices improving focus on patient's needs. FCs are hospital units with physical boundaries limited to a specific hospital area, but interactions with other services are frequent where is not possible to include high complexity services within the plant due to resource scarcity or to exploit economies of scale. These imperfections have been recognized as common due to flexibility needs. Then, it will be difficult to operationalize a pure FF model within GHs conceiving as a matter of fact a hybrid model. The paper contributes to academic knowledge

providing a deeper understanding of FCs in GHs. Finally, it provides guidelines to policy makers and healthcare managers to enhance patient-centered care.

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Title

L'emergenza Covid-19 e il settore della sanità privata: impatti di breve e medio periodo

Authors

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Abstract

[Background] Il settore sanitario è stato il grande protagonista dell'emergenza legata all'epidemia di Covid19, che ha richiesto un grande sforzo organizzativo e manageriale, oltre che clinico. Sebbene nel contesto italiano il sistema pubblico si sia mostrato in grado di riaffermare la sua capacità di dare risposte di qualità a bisogni di salute anche molto complessi, è necessario considerare anche l'eventuale apporto alla causa dell'articolato ecosistema di attori di cui si compone la sanità privata. Si tratta di provider privati, molti dei quali accreditati con il SSN, di associazioni, di terzo-paganti, che offrono servizi sia sul mercato che in convenzione con il sistema pubblico (oltre il 20% della spesa pubblica è stata destinata nel 2018 all'acquisto di prestazioni ospedaliere, ambulatoriali, domiciliari, residenziali, ecc. da erogatori accreditati con il SSN) e finanziano la fruizione di un'ampia gamma di prestazioni (al 2018, circa il 26% della spesa sanitaria italiana ha origine privata, in gran parte out-of-pocket, e in maniera residuale, sebbene crescente, tramite intermediazione di fondi e assicurazioni). Anche a causa delle forti interconnessioni e interdipendenze con il SSN, anche il settore della sanità privata ha risentito in maniera significativa dei contraccolpi dovuti all'emergenza sanitaria e alla sua gestione. La concentrazione e riconversione delle risorse verso il trattamento dei pazienti affetti da Covid19, le difficoltà nel reperire i DPI, le norme sul distanziamento sociale, la qualità delle relazioni con le istituzioni locali sono solo alcuni dei fattori che hanno comportato significativi cambiamenti per queste organizzazioni e che ne hanno influenzato le sorti durante questo complesso periodo. **[Obiettivi]** Il presente lavoro di ricerca ha l'obiettivo di approfondire, da un lato, gli impatti legati all'emergenza Covid-19 registrati dai diversi player che operano nel campo della sanità privata, in termini gestionali, organizzativi, di immagine e di relazione con il SSN e, dall'altro, comprenderne le implicazioni per il futuro della industry nel suo complesso. **[Metodo]** La metodologia di ricerca scelta è ispirata alla grounded theory methodology. Nello studio sono state coinvolte realtà operanti nel settore della sanità privata, molte delle quali figurano tra i partner dell'Osservatorio sui Consumi Privati in Sanità (OCPS) di SDA Bocconi. La raccolta dati che li ha visti coinvolti ha previsto la realizzazione di una serie di interviste semi-strutturate volte a raccogliere informazioni e dati circa le immediate ricadute dell'emergenza sui volumi erogati, sulle operations, sulle eventuali innovazioni introdotte e sul rapporto del settore con il sistema e l'opinione pubblica. Le oltre 19 ore di registrazione delle interviste complessivamente raccolte in questa prima fase sono state in seguito elaborate in modo indipendente da due ricercatori al fine di svolgere una content analysis. Un secondo ciclo di interviste a operatori e opinion leader del settore pubblico e privato consentirà di delineare gli scenari attesi per il futuro di breve e medio periodo, corroborando informazioni qualitative con dati quantitativi raccolti tramite un panel di operatori. **[Risultati attesi]** I dati e le informazioni raccolte durante la prima fase sono state sistematizzate attraverso quattro aree di indagine: (i) le principali criticità riscontrate nell'operatività a fronte dell'epidemia; (ii) le prime stime di contraccolpi subiti in termini di volumi di attività e di fatturati; (iii) le eventuali soluzioni innovative messe in atto; (iv) le riflessioni relative al rapporto tra ecosistema privato e SSN, durante la crisi e in prospettiva per il futuro. I primi risultati hanno mostrato come il settore nel suo complesso abbia partecipato attivamente alla gestione e alla risposta di sistema all'emergenza, pur riscontrando non poche difficoltà a livello organizzativo e gestionale; si tratta inoltre di un settore che ha sofferto molto della sospensione delle attività sanitarie non urgenti e di campagne di informazione spesso molto critiche dell'operato della sanità privata, ma che non ha mancato di cogliere l'occasione portata da questo eccezionale momento di discontinuità per tentare di introdurre degli elementi di innovazione nei propri modelli di servizio, nel modo di lavorare, nella relazione con i propri dipendenti e clienti. I risultati attesi dalla seconda fase di raccolta di informazioni e dati consistono nell'elaborazione di scenari contenenti alcuni fattori chiave di cambiamento per il settore

della sanità privata nel breve e medio periodo e in particolare relativamente a: i) la durata delle misure di contenimento e distanziamento; ii) la risposta e le relazioni con il servizio sanitario nazionale e i servizi sanitari regionali; iii) la dinamica del reddito e dei consumi nazionali.

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Title

Come trasformare l'emergenza Covid 19 in opportunità per riorganizzare l'offerta ambulatoriale: il caso dei poliambulatori territoriali della ASST Nord-Milano

Authors

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Abstract

[Introduzione] Con l'insorgere dell'epidemia da Covid 19 molte aziende sanitarie, in ottemperanza delle disposizioni regionali, hanno dovuto rivedere in maniera strutturale i processi di accesso e di offerta delle proprie prestazioni. Questi cambiamenti hanno impattato sia sull'attività inpatient che sulle prestazioni outpatient. Con la progressiva ripresa delle attività non urgenti, la "fase due" dell'epidemia, le aziende sanitarie si sono trovate davanti alla sfida di rispondere a una maggiore domanda di servizi, accresciuta da mesi di sospensione delle attività non urgenti, con una capacità produttiva invariata o ridotta. Infatti, molte aziende sanitarie, in ottemperanza delle varie disposizioni regionali (es. DGR n. XI/3115 del 7/05/2020 della Regione Lombardia), hanno dovuto rivedere i propri processi produttivi per garantire: percorsi separati all'interno delle strutture, la sanificazione degli ambienti, la sicurezza degli operatori e il distanziamento tra un paziente e l'altro. Questi nuovi principi organizzativi hanno inevitabilmente influenzato la capacità produttiva delle aziende. Tali principi risultano essere particolarmente significativi per l'attività ambulatoriale a causa un insieme di fattori tra i quali ad esempio: i maggiori flussi di utenti, la dislocazione fisica delle attività ambulatoriali all'interno dei presidi o di strutture territoriali, la pluralità di accessi per alcune tipologie di utenti, l'impossibilità di effettuare test diagnostici su tutti gli utenti (a differenza delle attività inpatient), la diversa organizzazione del personale coinvolto con una maggiore incidenza di personale non dipendente, i vincoli spaziali connessi alla gestione delle aree di attesa. È quindi ragionevole attendersi una crescente tensione tra le esigenze di produttività delle aziende e la volontà di garantire il distanziamento dei pazienti. A questo proposito, uno degli elementi chiave diventa l'efficiente gestione delle agende degli specialisti ambulatoriali. In letteratura il tema è stato ampiamente affrontato sin dai primi studi negli anni 50 evidenziando in particolare due misure: il tempo di inattività del medico e il tempo di attesa del paziente (Ho, C. J., e Lau, H. S. 1999). Se tradizionalmente si è ritenuto più importante minimizzare il primo a scapito del secondo il nuovo contesto ci spinge a ripensare questa dicotomia. In particolare, diventa essenziale a fini produttivi garantire quanto più possibile un flusso costante ma distanziato di pazienti, minimizzandone i tempi di attesa in coerenza con i più recenti approcci di Gestione Operativa in sanità (Tlapa, D, et al. 2020). **[Obiettivi]** Coerentemente con quanto espresso in premessa, il presente lavoro si pone l'obiettivo di analizzare i processi produttivi aziendali e il relativo processo di change management volto alla riconfigurazione dell'offerta ambulatoriale della ASST Nord-Milano. Nello specifico la ricerca si pone i seguenti obiettivi: 1) valutare l'impatto delle misure di distanziamento sulla produttività delle attività ambulatoriali; 2) Identificare soluzioni/modelli organizzativi per minimizzare l'impatto sulla produttività, rendere più fluidi i percorsi degli utenti e ridefinire l'offerta per specialità in termini di concentrazione/prossimità; 3) Identificare i fattori abilitanti e i possibili ostacoli a tali cambiamenti organizzativi. **[Metodologia e risultati attesi]** La metodologia di ricerca utilizzata è l'analisi del caso dell'Azienda Socio-Sanitaria Territoriale Nord-Milano, data la sua rilevanza nell'offerta pubblica di prestazioni ambulatoriali nella Città di Milano. In particolare le fasi della ricerca sono: • l'analisi della letteratura volta a individuare le soluzioni organizzative maggiormente innovative adottate nella strutturazione delle agende; • l'analisi dei dati di produzione e dei tassi di saturazione dei poliambulatori territoriali pre e post Covid; • l'analisi della struttura delle agende pre-Covid; Coerentemente alle aspettative i primi risultati mostrano una significativa riduzione della produzione di prestazioni ambulatoriali a seguito dei vincoli di distanziamento. Sebbene ancora da verificare, si ritiene che un appropriato set di agende e la riorganizzazione dei processi di erogazione possano mitigare la riduzione di volumi e migliorare la qualità dell'offerta.

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Title
Innovare per affrontare la crisi: cosa abbiamo imparato e cosa resterà?

Authors
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Abstract
[Background] Per far fronte alla dirompente e inattesa emergenza sanitaria Covid-19, i sistemi sanitari a livello globale hanno messo in atto delle risposte organizzate secondo paradigmi completamente nuovi e veloci. Sono emersi nuovi fabbisogni e priorità, come la necessità di evitare le occasioni di affollamento (i cosiddetti assembramenti), i tentativi di monitoraggio dello sviluppo dei contagi, il bisogno di ingenti quantità di strumenti per la prevenzione (DPI) e cura delle infezioni (ad es. i ventilatori polmonari). Proprio rispetto ai nuovi fabbisogni, si è presto messo in gioco il mondo variegato dell'innovazione e della tecnologia. Ospedali, centri di ricerca e imprese, anche di settori lontani dalla sanità, si sono impegnati insieme in uno sforzo sistemico di ricerca di soluzioni per la gestione dell'emergenza. Tipicamente la sanità viene definita come un ambito in cui l'innovazione è complessa e difficile da tradurre in pratiche e routine (Fleuren, 2004; Ferlie et al., 2005; Greenhalgh et al, 2004; Robert et al., 2010; Boscolo et al, 2019), mentre sorprendentemente negli ultimi mesi abbiamo assistito ad una forte semplificazione nei processi di adozione e sperimentazione: un cambiamento dettato dalla disperazione e che per tale motivo potrebbe tradursi in una meteora di breve durata. Lo studio intende indagare il ruolo e le peculiarità dei processi di innovazione tecnologica in tempi di crisi e in contesti sviluppati, tema attuale e peraltro poco approfondito in letteratura (Govindarajan et al., 2012). **[Obiettivi]** Lo studio approfondisce il ruolo dell'innovazione tecnologica nella gestione dell'emergenza Covid-19. In particolare la ricerca si è posta un triplice obiettivo: (i) fornire una panoramica delle nuove opportunità tecnologiche rese disponibili ai sistemi sanitari, le loro finalità e gli ambiti di applicazione; (ii) comprendere quali strumenti siano davvero stati messi in campo e con quali risultati; (iii) stimare alcuni possibili scenari di innovazione per il futuro prossimo: cosa resterà nel ritorno all' ordinario? **[Metodo]** Il presente contributo ha previsto due fasi di raccolta dati: la prima, funzionale a definire i perimetri di innovazione tecnologica oggetto della ricerca; la seconda, a ricostruire gli scenari di innovazione che si sono concretizzati nelle diverse realtà locali, con particolare riferimento al contesto italiano. La prima fase (inizio marzo 2020), si è basata su un'indagine desk finalizzata a raccogliere le diverse esperienze di innovazione tecnologica messe in campo e a tenere traccia del dibattito pubblico relativo alla capacità dell'ecosistema dell'innovazione e delle tecnologie di dare concreto supporto alla gestione della crisi sanitaria. Quanto è stato raccolto tramite il costante monitoraggio della stampa nazionale e internazionale, pubblicazioni scientifiche, social media, stampa specializzata, contributi di centri di ricerca, fonti istituzionali ecc. è stato poi categorizzato in base alle seguenti variabili: (i) tipologia di tecnologia; (ii) livello di sviluppo e applicazione; (iii) finalità (rispetto all'emergenza sanitaria) e (iv) macro area di intervento in cui si colloca. Inoltre, per approfondire ulteriormente la conoscenza delle principali linee di innovazione il gruppo di ricerca ha utilizzato la tecnica di analisi per casi multipli (Yin, 1994), basata principalmente su interviste approfondite e sull'esame di documentazione fornita dagli stessi interlocutori. Realizzata una prima ipotesi di sistematizzazione delle varie esperienze, la seconda fase di ricerca ha previsto delle interviste semi-strutturate ad KOLs in ambito di innovazione tecnologica in sanità, al fine di: (i) validare la mappatura, (ii) raccogliere opinioni esperte circa il reale contributo di questi strumenti tecnologici alla gestione della crisi, (iii) fare sintesi dei percorsi di innovazione sperimentati, (iv) tentare di ricostruire quali potrebbero essere degli scenari di innovazione in sanità per il contesto italiano nel prossimo futuro (5-10 anni). **[Risultati attesi]** Lo studio offre una sistematizzazione delle diverse iniziative di innovazione tecnologica potenzialmente applicabili alla gestione dell'emergenza Covid-19, e mette in relazione, da un lato, le diverse finalità perseguibili in contesti simili di crisi sanitaria e, dall'altro, le macro aree di possibile applicazione di questi strumenti, con l'obiettivo di aiutare e orientare tanto il dibattito pubblico su questo tema, quanto le scelte strategiche future in questo ambito (Tabella 1). In secondo luogo, grazie al contributo di esperti e operatori del settore, un risultato atteso

è la ricomposizione del percorso di innovazione concretizzatosi durante l'emergenza sanitaria in Italia, mettendone in luce le peculiarità, punti di forza e criticità. Il team di ricerca mira a ricostruire un quadro quanto più chiaro possibile del tema "innovazione e Covid-19", sintetizzando e integrando quanto è stato detto e auspicato e quanto è davvero poi stato realizzato nel nostro Paese. Dalla disamina completa di ciò che è avvenuto, sarà importante comprendere che cosa probabilmente rimarrà (quali singole innovazioni, nuovi modi di operare o fornire servizi, quali posture organizzative, ecc…) e come tradurre questa conoscenza in implicazioni manageriali, sia a livello di azienda sanitaria che a livello di centri di ricerca e produttori privati di tecnologia e innovazione.

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Title

Gli impatti organizzativi della normativa anticorruzione nelle aziende sanitarie pubbliche: la prospettiva dei Direttori Amministrativi

Authors

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Abstract

[Background] Su pressione di una significativa porzione di opinione pubblica, forze politiche e istituzioni internazionali, l'Italia ha rinnovato la sua normativa anticorruzione con l'approvazione della L. 190/2012. Tale legge, i decreti attuativi e i Piani Nazionali Anticorruzione che l'hanno seguita hanno condotto all'introduzione generalizzata nelle Aziende sanitarie di diversi strumenti. Tra i principali, si ricordano: • il Piano triennale di prevenzione della corruzione (PTPC), con analisi dei rischi specifici, redatto dal dirigente responsabile della trasparenza e della prevenzione della corruzione (RPCT); • il collegamento di tale Piano Anticorruzione con il ciclo di budget e valutazione delle performance; • il codice di comportamento aziendale; • canali di comunicazione specifici e forme di protezione per il dipendente che denuncia fenomeni corruttivi ("whistleblower"); • obblighi di trasparenza con riferimento agli incarichi interni, alle procedure di acquisto di beni, servizi ed opere e all'accessibilità/qualità dei servizi (es. tempi di attesa nell'erogazione delle prestazioni); • la rotazione dei dirigenti che operano in posizioni a rischio di corruzione; • iniziative di formazione e sensibilizzazione del personale. Otto anni dopo la L. 190/12, e a fronte di una serie di centri ricerche ed istituzioni come ANAC che ne mappano principalmente il grado di implementazione formale, ne rimangono meno indagati i risvolti manageriali. La normativa anticorruzione, infatti, si è sovrapposta e giustapposta a una serie di strumenti e attori incaricati di varie forme di controllo interno ed esterno (dal collegio sindacale, all'OIV, alla corte dei Conti, sino alla magistratura ordinaria). Tale complesso insieme ha da un lato rimarcato l'importanza della legalità e delle buone pratiche gestionali nell'ambito delle aziende pubbliche; dall'altro, ha influenzato i processi organizzativi e gestionali, con impatti spesso percepiti come negativi in termini di efficienza, efficacia e clima organizzativo. **[Oggetto e obiettivi]** Il lavoro, che è circoscritto alle aziende sanitarie pubbliche italiane (ASL, ASST, AO, IRCCS pubblici), si pone i seguenti obiettivi: • raccogliere una prima sistematica valutazione degli impatti percepiti dal top management con riferimento ai diversi strumenti anticorruzione. Gli impatti, come accennato, possono essere positivi (maggiore trasparenza, riduzione di occasioni collusive, emersione di illeciti) ma anche negativi (maggiore durata dei processi amministrativi e carichi di lavoro, minore propensione del management all'assunzione di responsabilità); • indagare quali logiche sarebbero preferibili, secondo il management aziendale, per migliorare il bilanciamento tra impatti desiderabili e indesiderabili degli strumenti anticorruzione: semplificazione normativa, rafforzamento degli organici, delle competenze e degli strumenti informatici, riorientamento dei sistemi di misurazione della performance, ecc; • raccogliere suggerimenti sugli interventi normativi, di governance o organizzativi più necessari. **[Metodo]** Sul piano del metodo, la ricerca ha previsto • la rassegna della normativa e della letteratura grigia all'intersezione tra diritto e management sanitario per eseguire una mappatura degli strumenti anticorruzione più rilevanti nel panorama nazionale; • lo svolgimento di alcune interviste a key informant per delineare le principali dimensioni di valutazione degli impatti; • la somministrazione di una breve survey indirizzata ai Direttori Amministrativi attualmente in carica in tutte le aziende sanitarie pubbliche italiane, strutturata sulla base degli obiettivi di ricerca sopra elencati. Il questionario è stato ad oggi compilato da 30 direttori amministrativi, ma la raccolta dati è tuttora in corso. **[Risultati attesi]** I primi risultati della ricerca indicano una certa polarizzazione delle percezioni sugli strumenti anticorruzione. Un primo gruppo di interpellati ne sottolinea l'efficacia in termini di maggiore trasparenza ed eliminazione di occasioni collusive, pur comportando un certo aggravio organizzativo. Un secondo appare radicalmente scettico sull'efficacia degli strumenti, evidenziando invece i maggiori oneri amministrativi e il rischio di rallentamento decisionale.

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Title
Costs of diabetic foot complications in Tuscany (Italy): a population-based study

Authors
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Abstract
Background: Diabetes, is a major health public health challenge worldwide with global estimates exceeding 460 million adults living with diabetes and about 760 billion dollars of expenditures for diabetes in 2019 (https://www.diabetesatlas.org). Part of these expenditures are due to complications including cardiovascular events, kidney failure and foot complications. In particular, diabetic foot complications highly contribute to both mortality and morbidity among the diabetic populations and pose considerable financial burden to patients and healthcare systems. A recent review of studies on costs for diabetic foot complications (amputation, ulcers, gangrene) across European countries reported increasing costs (Tchero et al 2018). Despite the significance of the increasing prevalence and costs of diabetes and its complications, populationbased studies on the economic impact of diabetes and diabetic foot which remain one of the most common, complex and costly diabetes–related complication are still scarce and limited to country-level estimates or collection of prospect data from selected diabetic centers (e.g., Eurodiale study). Objectives: In this study, starting from a large population based cohort of people with diabetes in Tuscany region (Italy), we analyze the short- and medium-term costs of diabetic foot complications for Type-2 diabetic (T2D) population, representing about 95% of the diabetic population. Methodology: We used a population-based approach to identify diabetic people living in Tuscany region using diseasespecific algorithms that combine different healthcare administrative data at individual level. We examine the direct medical costs of foot complications at the base year (2018), considering T2D population aged 30 years or more, who entered the regional cohort in the years 2010 to 2014 and were alive at December 31 2017. This selection was made to ensure that the patient's complications during the 3 years prior to the base year (2018) were associated to diabetes. We estimated care costs for foot complications using a GLM given the low number of zero costs (2.5%). Following Cheng et al (2018) for healthcare costs estimation, we considered year 2018 as the base year and we divided costs of foot complications into two components: (i) event costs, defined as the complication costs accrued in year 2018 when the patient first experienced the diabetic foot complication (short-term costs); (ii) state costs, defined as the costs accrued in the year 2018 that were associated with the management of this complication that patient had been dealing for since 2015, 2016 or 2017 (long-term costs). This model also adjusted for age and sex, we decided to not control for comorbidities to avoid over adjustment. Main expected results: The study provides a comprehensive analysis of direct costs for diabetic foot related complications in an Italian Region of about 4 million of inhabitants with a prevalence of 5.3% of diabetic population. In general, predicted unadjusted direct costs in 2018 were € 1,709 per person in diabetic people (€ 876 in nondiabetic population) with hospitalization spending accounting for the highest share, followed by outpatient care and drugs. With regard to T2D patients in general, the number of diabetic residents in Tuscany alive at 31 Dec 2018 were 51,748 of these, 53% were males, the average age of the cohort was 69 years and the majority (89%) did not experience any diabetes related complication in the years 2015-2018. On the other hand, T2D patients with at least one DM-related complication were older than patient without (mean age 76 vs 68), show a higher percentage of males and their annual total healthcare costs were € 6,731 compared to € 1,898 of those without any complication. With regard to diabetic foot, we identified patients with diabetic foot syndrome if having at least one of the following complications: foot ulcers, Charcot neuroarthropathy, both major or minor lower extremity amputations, revascularizations, gangrene and foot infections. Estimated annual costs in 2018 were € 10,931 (95% CI: 9,525-12,336) for foot complication (event), € 3,055 (95% CI: 2,493-3,617) for foot complication (state), meaning follow-up costs to major complications occurred in the three-years before and € 17,390 (95% CI: 14,987-19,794) for foot complication (state and event). We also calculated the incremental costs for foot complications considering as reference a 70-year-old T2D man with no foot

complication. The group experiencing state and event complications incurred in the highest incremental costs (+ € 16,702) followed by the group of T2D patients with complications in 2018 only (+ € 9,536) and the group experiencing complications in 2015-2017 (+ € 8,00). DM-related complications could significantly increase healthcare utilization and costs. Although the low proportion of patients with DM-related complication in Tuscany, overall € 5.8 million were spent for treating short and long-term complications (2015-2018). The results of this analysis provide data that are useful for local health professionals and management for the optimal allocation of resources toward specific services such as prevention of complications to patients with potential high risks (men and elderly) through the encouragement of lifestyle changes, provision of DM education and monitoring patient compliance at followup.

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Title
Hybrid professionals and academic productivity

Authors
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Abstract
Background: La produttività del personale medico all'interno di un policlinico risulta difficile da valutare a causa delle molteplici attività che devono svolgersi contemporaneamente: non solo assistenza sanitaria rivolta ai pazienti, ma anche attività accademiche come ricerca scientifica e didattica. Nessuna singola variabile può rispecchiare pienamente tutti questi aspetti. Gli *hybrid professionals*, sono le figure professionali sanitarie che si trovano a svolgere più ruoli, spesso non identificati con precisione. A differenza dei professionisti "puri", individui formati per svolgere compiti complessi in maniera indipendente, i professionisti ibridi affiancano l'assunzione di responsabilità manageriali all'attività professionale, legata principalmente all'assistenza sanitaria. Obiettivi: La presente analisi esamina il caso studio del Policlinico Universitario di Messina, in cui si distinguono tre dipartimenti universitari e 7 Dipartimenti di Attività Integrate (DAI): in questi ultimi operano docenti, ricercatori, ma anche dirigenti e direttori di struttura complessa, che si trovano a dover conciliare più compiti. L'obiettivo a cui tende il presente contributo è formulare una risposta al seguente interrogativo: data la distinzione, all'interno del Policlinico Universitario, tra dipartimenti universitari e DAI, quali sono gli elementi organizzativi che si rivelano predittori di efficienza e produttività scientifica? In che misura l'afferenza a un DAI o ad un dipartimento universitario influisce sugli incentivi individuali? Metodologia: Viene impiegato un dataset appositamente costruito per la presente ricerca, contenente informazioni sui medici del Policlinico Universitario di Messina, desumibili dall'anagrafe universitaria e relative ai medici afferenti alle aree scientifiche 5 e 6, distinti in professore ordinario (o di I fascia), professore associato (o di II fascia), ricercatore. Dalla banca dati on line Scopus (www.scopus.com) sono state ricavate le informazioni individuali relative a numero di pubblicazioni, numero di citazioni, h-index, che vengono impiegate per procedere alla valutazione della qualità della ricerca individuale; al fine di valutare l'attività didattica, si tiene conto del numero di ore dedicate a tale attività, a fronte del vincolo di ore di didattica richieste dal proprio ruolo. Si sono incluse anche delle informazioni legate alla remunerazione e alla circostanza di svolgere attività intramuraria. Viene svolta un'esauriente analisi statistica e i singoli gruppi (DAI e dipartimenti universitari), vengono confrontati attraverso il test Kruskal Wallis. La stima di un modello di mistura Poisson Gamma evidenzia le variabili che sono significativi predittori di produttività scientifica. Risultati attesi: L'attenzione alle modalità organizzative dovrebbe consentire di individuare il *setting* ideale affinchè gli *hybrid professionals* possano esercitare la professione medica, svolgendo, al contempo, mansioni dirigenziali, senza pregiudicare la qualità di didattica e ricerca. Potrebbe così proporsi una soluzione efficiente al complesso problema di ottimizzazione multi-obiettivo a cui i professionisti sanitari sono chiamati a dare risposta.

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Title

HTA e interventi sanitari: la valutazione dei costi indiretti quale strumento per una migliore programmazione regionale e aziendale alla luce dell'emergenza Covid 19

Authors

F.S. Mennini, L. Gitto, A. Salustri.

Abstract

Tra i principali obiettivi della valutazione economica in sanità vi è quello di fornire una stima dei costi associati ai programmi esaminati. Le informazioni rilevanti per il decisore riguardano, da un lato, il calcolo delle risorse necessarie per attuare un dato programma e delle conseguenze economiche prodotte da quel programma, tanto nell'ottica del SSN che del sistema di welfare nel suo complesso.
Le risorse necessarie per l'attuazione di un programma sanitario presentano dei costi indiretti: questi ultimi sono relativi all'impatto che la patologia ha sulla sfera sociale del paziente. Una valutazione dei costi comprensiva di tutti i costi (quindi anche dei costi indiretti) rappresenta un valido strumento per una efficiente programmazione aziendale e regionale e per una migliore allocazione delle risorse.
Come recentemente ha insegnato l'esperienza Covid 19, a fronte di costi diretti onerosi, i costi indiretti sono, però, drammaticamente maggiori: essi devono considerare i posti di lavoro e le giornate di lavoro persi, le disabilità emergenti e il conseguente onere a carico degli enti previdenziali (INPS e INAIL). La maggior parte delle malattie sono caratterizzate, infatti, da un impatto importante e prevalente dei costi indiretti (tra gli esempi del rilevante impatto dei costi indiretti che possono citarsi vi sono: il costo per il trattamento del diabete - 9 mld di € -; il costo delle malattie cardiovascolari - 6 mld di €; il costo della schizofrenia - 1,6 mld di €-; il costo dell'artrite reumatoide - 1 mld di € -; il costo dell'influenza -1 mld di € -). La scelta di un'appropriata metodologia di calcolo dei costi indiretti costituisce un problema aperto a diverse soluzioni, a seconda del contesto di riferimento. In generale, mancano dei criteri condivisi e dei precisi riferimenti nella letteratura economico-sanitaria. I contributi che, nella letteratura economica, hanno effettuato delle stime dei costi indiretti impiegano due principali tecniche: la più conosciuta è l'Human Capital Approach (HCA), alla quale si è affiancato, più recentemente, il metodo basato sul calcolo dei Friction Costs (FC). Mentre la metodologia basata sull'HCA intende valorizzare il tempo dedicato all'attività lavorativa in base alla retribuzione lorda dell'individuo, perché, secondo il presupposto dell'economia neoclassica "in un mercato del lavoro ben funzionante, il risultato produttivo ed il compenso del lavoratore sono uguali in valore", il metodo basato sui FC afferma che la quantità di produzione perduta per assenza dal lavoro sia dipendente dal tempo necessario a ripristinare il livello di produzione iniziale. Le due metodologie conducono, per il settore sanitario, a risultati diversi. La presente analisi ha l'obiettivo di evidenziare, attraverso una solida rassegna di vari studi, sviluppati negli ultimi anni in sistemi sanitari diversi, i pregi di ciascun metodo. Alla luce della revisione degli studi svolti in diverse aree geografiche europee, il presente lavoro intende trarre indicazioni sull'applicabilità di HCA e FC a seconda del contesto di riferimento.

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Title
I diversi modelli di governance e la gestione del covid-19: gerarchia, mercato e network

Authors
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Abstract
Negli ultimi due decenni è stata sviluppata un'ampia analisi sulla governance dei sistemi sanitari. I diversi studi si sono focalizzati su aspetti dei sistemi sanitari molto diversi, a causa della difficoltà di definire, valutare e operazionalizzare il concetti governance (Barbazza e Tello 2014). Secondo una definizione ampia, la governace può essere intesa come l'insieme dei principi, delle regole e delle procedure che riguardano la gestione e il governo di una società, di un'istituzione, di un fenomeno collettivo (Clarke and Newman, 1997). Con riferimento ai sistemi sanitari, Brinkerhoff e Bossert (2008) hanno descritto la governance come "l'insieme delle regole che distribuiscono ruoli e responsabilità tra gli attori dei sistemi sanitari e modellano l'interazione tra loro". La governance dei sistemi sanitari è stata analizzata secondo una prospettiva sia normativa – individuata gli le caratteristiche di sistemi che presentano una governance "democratica" o "buona" – che descrittiva. In questo filone sono individuati diversi archetipi, che analizzando la distribuzione delle responsabilità tra il centro e la periferia e le modalità e le strutture di esercizio delle funzioni di governo ai diversi livelli. Esempi di archetipi sono sistemi orizzontali, network, gerarchici o di mercato (Barbazza e Tello 2014). E' stata anche analizzata l'associazione fra i modelli di governance e l'efficacia dei sistemi sanitaria. Uno studio di Nuti et al. (2014) ha investigato la correlazione fra i differenti modelli di governance e i livelli di performance di alcune regioni italiane. In particolare, lo studio ha individuato cinque diversi modelli di governance: i) "trust and altruism", in cui si assume che i comportamente dei comportamenti dei public servant siano guidati dall'interesse pubblico e di conseguenza non sono previsti incentivi per successi e fallimenti; ii) "choice and competion", guidato la logiche di quasi-mercato; iii) "hierarchy and targets", in cui prevale le relazioni fra il centro e la periferia si fondano su logiche di "commad and control"; iv) "transparent public raking", in cui è data una forte enfasi sull'impatto che la pubblicazione di indicatori, positivi o negativi, produce sulle performance; v) "pay for performance", in cui le valutazione e le ricompense del top management sono legati alle performance delle aziende sanitarie. Lo studio conclude che il sistema "choice and competion", adottato dalla sola Lombardia, è associato a performance migliori. Il covid-19 ha prodotto effetti fortemente eterogenei nelle diverse regioni italiane. Tali differenze sono causate da molteplici fattori. Alcune differenze sono esogene ai sistemi sanitari, quali il grado di coinvolgimento nel commercio internazionale – che secondo alcune tesi potrebbe spiegare l'arrivo del virus in Italia – oppure il livello di densità abitativa – che può influenzare la velocità di diffusione del virus. Altre differenze possono essere endogene ai sistemi sanitari regionali. All'interno di queste, potrebbe essere interessante analizzare l'efficacia dei diversi modelli di governance durante la diffusione delle pandemie. Nell'articolo, utilizzando la classificazione proposta di Rohdes (1997) è investigato se sistemi di governance gerarchici, di mercato o a network possono avere un'efficacia differente durante la diffusione delle pandemie. Sono analizzate tre regioni come casi studio: i) Veneto, come come esempio di modello di governance gerarchico; ii) Lombardia, come esempio di modello di governance di mercato;; iii) Emilia Romagna, come esempio di modello di governance a network. L'articolo si focalizza sull'analizzare le modalità di coordinamento fra il livello regionale e le aziende sanitarie. La tesi di fondo è che modelli di governance differenti impiegano modalità di coordinamento differenti che hanno un'efficacia diversa durante periodi di emergenza. Ad esempio, in Lombardia, dove prevale un modello di governance di mercato, il coordinamento tra il centro e la periferia del sistema avviene prevalentemente attraverso la definizione di un sistema di regole (la cosiddetta "delibera delle regole" annuale). Tale modalità di coordinamento, risulta poco efficace in periodi di elevata incertezza – in cui risulta difficile stabilire delle regole – e può creare lentezza nel processo decisionale e impedire un'implementazione efficace ed uniforme delle diverse unità periferiche del sistema. Al contrario, in Veneto, prevale un a modello di governance gerarchico e il coordinamento tra il centro e la periferia del sistema avviene prevalentemente attraverso un

insieme di direttive (gli incontri del board dei direttori generali) e autorizzazioni (le tre CommissionI Regionali per l'Investimento in Tecnologia ed Edilizia). In periodi di pandemia, il modello appare efficace in termini di tempesitività delle decisioni, omegeneità di implementazione e assenza di incertezza per gli attori dei sistemi. L'articolo cerca di definire in modo analitico i tre approcci di Rodhes con riferimento ai sistemi sanitari e comparare convergenze e differenze dei tre modelli di governance.

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Title

Innovare i sistemi di controllo direzionale aziendale: implicazioni e opportunità per le aziende del SSN in tempo di Covid-19

Authors

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Abstract

[Background] In un contesto di crescenti fabbisogni di salute riconducibili all'invecchiamento demografico, all'aumento dell'incidenza e prevalenza delle cronicità e alla rapidità dell'innovazione tecnologica, il sistema sanitario italiano è stato investito, nell'ultimo ventennio, da un complesso quadro di dinamiche sistemiche e, negli ultimi mesi, da un'importante crisi dovuta alla pandemia da Covid-19. Con riferimento a quest'ultima, è apparso evidente come i tradizionali meccanismi operativi, pensati in logica di articolazione organizzativa o prestazionale, hanno impedito o rallentato, quantomeno nella fase di massima crisi, la presa in carico complessiva dei pazienti (Covid-19 e no Covid-19). Con riferimento alle dinamiche di sistema, invece, specialmente in una prima fase, le aziende hanno tentato di adattarsi ai mutamenti cercando di sviluppare metodologie e logiche finalizzate al miglioramento di qualità dei servizi e di utilizzo delle risorse (Elefanti et al. 2001). Nel farlo, l'approccio utilizzato è stato tuttavia orientato al mantenimento di una certa frammentazione interna legata a una lettura «verticale» delle organizzazioni. Recentemente, tuttavia, la stagione di contenimento delle risorse del settore e le accresciute dimensioni delle aziende successive agli interventi di ingegneria istituzionale avviati da diversi SSR, ne hanno esteso il perimetro di azione e accresciuto complessità gestionale e organizzativa. La crisi Covid-19 ha ulteriormente reso necessario questo processo. In questo quadro, autori internazionali (ad esempio Porter e Lee, 2013) e nazionali (Tozzi e Ferrara, 2017) suggeriscono di ripensare le logiche retrostanti la lettura delle aziende, adottando un approccio trasversale e integrato al tema delle piattaforme produttive per l'erogazione dei servizi sanitari e ai modelli interpretativi delle organizzazioni. Adottare tale prospettiva significa abbracciare la «funzionalità» come criterio guida e spostare il focus su un nuovo oggetto aggregante, il processo, "*di fatto l'unica dimensione in grado di legare tra loro misure di risultato con misure che in qualche modo rappresentino lo sforzo prodotto per il suo perseguimento"* (Dossi, 2002). Significa in altri termini focalizzare l'attenzione sul processo di cura inteso in senso olistico, piuttosto che sull'azione della singola unità organizzativa. L'analisi dei processi e la pianificazione della capacità produttiva aiutano infatti a snellire procedure cliniche e amministrative (Jones e Mitchell, 2006), aumentare l'efficienza nell'erogazione dei servizi (Lecci e Morelli, 2014) e sposano le esigenze specifiche di un settore, quello sanitario, che endemicamente richiede un approccio più profondo nella misurazione di cicli programmatori di risorse, azioni e risultati (Bergamaschi e Lecci, 2008). In effetti, le organizzazioni sanitarie hanno già avviato una maggiore focalizzazione sull'analisi, la gestione e il miglioramento continuo dei processi, con l'obiettivo di creare valore per il paziente (Dallocchio et al., 2010) e sfruttare gli spazi per una riduzione degli elementi di variabilità (per un approfondimento, si veda Villa et al., 2007). Tali dimensioni possono essere approfondite e studiate guardando alle modalità di applicazione e ampiezza d'uso dei sistemi di programmazione e controllo (P&C) aziendali, dato il ruolo che idealmente la funzione riveste nel contribuire a guidare e governare un'organizzazione e nel supportare processi di cambiamento e di miglioramento delle performance (Lawson et al., 2003, De Bruijn, 2002). L'introduzione di nuovi paradigmi genera infatti un impatto rilevante sul sistema esistente di misurazione e controllo delle operazioni aziendali, implicando un'evoluzione delle componenti analitiche. Dunque, la crescente rilevanza assunta dai processi nell'assistenza sanitaria

può essere causa ed effetto di una maggiore attenzione ai meccanismi operativi interni alle aziende e al sistema di controllo direzionale di cui queste si dotano (in termini di oggetti, strumenti e *packages*). Per studiare le influenze subite o guidate dai sistemi di controllo direzionali aziendali, si fa tipicamente riferimento a tre dimensioni (Agliati, 1996): (a) *dimensione strutturale*, che guarda all'individuazione degli oggetti di rilevazione e agli strumenti di misurazione più idonei per fissare gli attributi dei fenomeni reali che si vuole rappresentare; (b) *dimensione organizzativa*, che riguarda la capacità dei sistemi di supportare il processo decisionale. In quanto tale, essa è strettamente correlata all'utilizzo, alla chiarezza e alla solidità delle informazioni prodotte, utili per introdurre elementi di trasformazione intra-aziendale; (c) *dimensione informativa*, che riguarda la gestione dei flussi informativi e la definizione di una piattaforma di supporto adeguata rispetto al fabbisogno informativo espresso attraverso l'individuazione dell'oggetto di rilevazione, nell'ottica di una razionalizzazione ragionata delle diverse fonti di informazione già disponibili.

Un adeguato e coerente design della prima dimensione rappresenta una condizione necessaria per un efficace presidio delle altre due. Agire su essa comporta introdurre innovazioni di rilievo nei sistemi di controllo direzionale aziendale, necessari alla luce della nuova vocazione «funzionale» aziendale. Tuttavia, essa non è stata sufficientemente indagata dalla letteratura di riferimento, se non con contributi che analizzavano aspetti specifici: alcuni autori ad esempio hanno sottolineato la presenza di fattori che possono facilitare l'introduzione di elementi innovativi nelle aziende sanitarie analizzando il coinvolgimento del top management aziendale (Campanale, Cinquini e Tenucci, 2014) o la collaborazione tra componente professionale e manageriale (Cinquini e Campanale, 2010). Si segnala tuttavia l'assenza di contributi che in maniera strutturata mappino i «nuovi» sistemi di controllo e ne sistematizzino i fattori critici di successo (e/o ostativi) in fase attuativa.

[Obiettivi] Il contributo mira pertanto a rispondere alle seguenti domande di ricerca:

1. indagare la dimensione strutturale con riferimento al grado di innovazione nei sistemi di controllo direzionale delle aziende del SSN raggiunto alla luce del cambio paradigmatico dell'oggetto di rilevazione:
    a. Quale stato dell'arte in termini di orientamento ai processi nella lettura degli accadimenti aziendali?
    b. Quali condizioni abilitanti? Quali fattori critici di successo? Quali elementi ostativi?
    c. Esistono differenze dovute alla natura istituzionale del soggetto erogatore?
2. definire degli "archetipi" di sistema di controllo direzionale con riferimento alle aziende sanitarie italiane a partire dalla scomposizione di grado di innovazione e fattori critici di successo analizzati;
3. verificare se sistemi di controllo appartenenti ad "archetipi" caratterizzati da una più elevata propensione all'innovazione riportino misure di performance (economica e legata all'attività) significativamente differenti rispetto ad aziende con sistemi di controllo che adottano un approccio "tradizionale";
4. interpretare le dinamiche evolutive in essere alla luce delle implicazioni poste dall'emergenza Covid-19.

[Metodologia] La progettualità prevede i seguenti metodi di ricerca e le seguenti fasi. (i) Analisi desk della letteratura scientifica e grigia sul tema dei sistemi di controllo direzionale, orientamento ai processi aziendali e ai fattori critici di successo e/o ostativi già indagati. (ii) Somministrazione di un questionario elettronico ai responsabili del controllo di gestione delle aziende sanitarie pubbliche e private accreditate italiane. (iii) Cluster analysis funzionale all'individuazione di archetipi che possano classificare i sistemi di controllo direzionale delle aziende del SSN. La clusterizzazione verrà promossa a partire dalle risposte raccolte attraverso la somministrazione del questionario elettronico. (iv) Analisi quantitativa che metta in relazione il grado di innovazione che caratterizza gli "archetipi" con le

performance economiche (utilizzando il database CE messo a disposizione dal Ministero della Salute) e di attività (ad esempio facendo uso delle informazioni rese disponibili dal Programma Nazionale Esiti) delle aziende di riferimento. (v) Focus group interpretative.

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Title
Illogicità gestionali e organizzative nelle RSA della Lombardia ai tempi del Coronavirus

Authors
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Abstract
Il presente lavoro è uno studio descrittivo che ha l'obbiettivo di mettere in evidenza le criticità gestionali e organizzative che si sono manifestate nelle strutture sanitarie della Lombardia con particolare riferimento alle RSA e alle lungodegenze.Dopo un inquadramento generale e un'analisi di contesto dell'impatto del virus edella evoluzione dellapandemia attraverso una revisione sistematica della letteratura scientifica di medicina per evidenziare le caratteristiche genetiche e cliniche di cosa conosciamo ad oggi della SAR-COV-2, cosa determina ad oggi la sua conformazione e virulenza, lo studio cerca di analizzare sul campo l'organizzazione interna delle strutture sanitarie attraverso un approccio metodologico per processi, basato sui percorsi assistenziali e le procedure organizzative anti Covid, che hanno completamente stravolto l'assetto organizzativo delle stesse strutture sanitarie per garantire la sicurezza dei professionisti e dei pazienti. Questo percorso di cambiamento organizzativo non è stato esente, soprattutto nelle fasi iniziali, da grandi difficoltà gestionali, errori di valutazione nelle scelte strategiche prese ai verticiistituzionali e aziendali, nelle indicazioni fornite aiprofessionisti da parte dei responsabili, che non sono stati adeguatamente attenti a una gestione corretta del rischio per ridurre il contagio. Non mancheranno valutazioni di sistema sulla sanità Lombarda, che ècaratterizzata da un modello operativo centrato sul ruolo dell'ospedale e fondato sull'autonomia gestionale e una forte responsabilità individuale nelle gestioni, un sistema che si è rilevato molto rigido e che ha prodotto grandi eccellenze nel campo delle neoplasie e cardiopatie, ma privo della necessaria flessibilità e adattabilità in un contento di emergenza sanitaria come quello che stiamo vivendo, come anche privo di reti territoriali adeguate a filtrare, prevenire e gestire anche in ADI i pazienti Covid19. Nella parte finale del lavoro verrà riportata l'esperienza dello scrittore, Dr. Luca Morelli, che ha prestato servizio come infermiere nei Reparti Covid della Fondazione Don Gnocchi ed è in grado di testimoniare con la sua esperienza sul campo come ha vissuto i cambiamenti organizzativi trattati in questa ricerca. Le conclusioni saranno incentrate sugli insegnamenti ricevuti da questa esperienza inedita e quali risposte dovrebbe dare in futuro la politica e la ricerca per poter intervenire in maniera efficace attraverso la predisposizione di un piano pandemico ben strutturato e una gestione virtuosa del management delle crisi. La ricerca, a sua volta,dovrebbe investire in un approccio di "bene comune", anziché finalizzata alla preservazione degli interessi delle lobby farmaceutiche. Nel contempo sarebbe bene evitare i personalismi degli scienziati che vogliono sostenere a tutti i costi le loro tesi, quando ci sono in ballo le vite di milioni di persone del pianeta terra.

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Title
Nuovi modelli organizzativi per l'emergenza Covid-19. Il caso dell'Asp di Crotone

Authors
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Abstract
[Background] Il Covid-19 è una malattia infettiva che è emersa alla fine del 2019 nella provincia cinese di HUAN e si è diffusa con rapidità in Europa, Hong Kong, Sudafrica, Stati Uniti etc., comportando serie preoccupazioni per la salute pubblica. L'epidemia di Covid-19 non è stata ancora dichiarata chiusa, trasformandosi in una preoccupazione globale di carattere sanitario, ma dagli effetti devastanti anche dal punto di vista socioeconomico per le ricadute inevitabili sui mercati, sul lavoro, sui territori. Con tali premesse, il presente lavoro mira a comprendere come le aziende sanitarie abbiano risposto alla emergenza derivante dalla situazione epidemica da Covid-19, attraverso lo strumento del caso studio, al fine di individuare possibili riflessioni e suggerimenti per il futuro. **[Objectives]** L'obiettivo principale del presente lavoro è comprendere come il sistema sanitario pubblico abbia risposto all'emergenza da COVID-19, seguendo la prospettiva dell'azienda sanitaria. A tale scopo, partendo dall'analisi degli strumenti messi a disposizione dal Sistema Sanitario Regionale per le esigenze territoriali, ci si è focalizzati sulle modalità organizzative adottate dall'Azienda Sanitaria Provinciale di Crotone. La scelta di tale azienda sanitaria risultava essere di interesse per gli scopi di studio a cagione delle sue peculiarità; infatti l'ASP di Crotone risulta essere un'azienda sanitaria con un unico Ospedale operativo per tutta la provincia. Pertanto, le esigenze imposte dalla gestione dell'emergenza epidemica finiscono per assumere criticità del tutto specifiche e di impatto per l'intera comunità. La sfida è quella di cogliere elementi manageriali ed organizzativi da portare ad esempio e testimonianza per prossime implementazioni e nuove occasioni di apprendimento. Il documento parte dalla letteratura e utilizza una metodologia deduttiva con un case study. Il documento intende offrire a ricercatori e policy makers una base conoscitiva per sviluppare ulteriori analisi per una migliore comprensione di un evento di portata storica e che, se ben analizzato, permetterà di innescare un processo di apprendimento utile alle decisioni future. **[Metodologia]** Lo studio adotta un approccio qualitativo basato su un case study, secondo i metodi e le istruzioni suggerite da Yin (2009). Ciò ha comportato la raccolta di dati attraverso interviste semi-strutturate e ricerca documentale. L'accesso privilegiato alle informazioni pertinenti ha permesso agli autori di raccogliere dati da diverse fonti, aumentando la qualità delle informazioni ottenute (Benbasat, 1984). Uno studio qualitativo sembrava particolarmente adatto alla finalità della ricerca e alla complessità del fenomeno, poiché consente di prendere in considerazione le caratteristiche specifiche del contesto e del sistema sanitario (Bamberger, 2000), nonché di esplorare il processo di implementazione di nuove modalità gestionali ed organizzative in risposta all'emergenza COVID-19 adottate all'interno di una azienda sanitaria provinciale, rappresentata dall'Azienda Sanitaria Provinciale (ASP) di Crotone. La raccolta dei dati è stata condotta nei primi mesi (marzo-giugno) del 2020 utilizzando le tipiche tecniche di studio del caso di Yin (2009), ovvero interviste a decision maker (e nello specifico al Direttore Generale, Sanitario e Amministrativo) e analisi di materiali documentali ottenuti dalla stessa azienda. L'obiettivo di questo studio è pertanto quello di ricavare suggerimenti per ulteriori e più approfondite analisi sui modelli organizzativi implementati dalle aziende sanitarie con il relativo impatto sul territorio provinciale. **[First Results]** Il presente contributo vuole comprendere i principali modelli organizzativi di risposta al Covid-19 adottati nelle regioni del Sud Italia e nello specifico in Regione Calabria con l'ASP di Crotone. L'analisi della letteratura ha permesso di delineare i diversi modelli organizzativi in sanità e lo studio del case study la riorganizzazione delle attività assistenziali nell'emergenza epidemiologica in atto. Le prime evidenze ottenute sottolineano come l'azienda abbia dovuto gestire contemporaneamente le problematiche legata all'emergenza e le attività di alta specializzazione, superando criticità specifiche, tutto ciò rappresentando una importante sfida gestionale.

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ECONOMICS SECTION

Title
Solving the Milk Addiction Paradox

Authors
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Abstract
The milk addiction paradox refers to an empirical finding in which commodities that aretypically considered to be non addictive, such as milk, appear instead to be addictive. Thisresult seems more likely when there is persistence in consumption and when using aggregatedata, and it suggests that the AR(2) model typically used in the addiction literature is proneto produce spurious result in favor of rational addiction. Using both simulated and real data,we show that the milk addiction paradox disappears when estimating the data using an AR(1)linear specification that describes the saddle-path solution of the rational addiction model. TheAR(1) specification is able to correctly discriminate between rational addiction and simplepersistence in the data, to test for the main features of rational addiction, and to produceunbiased estimates of the short and long-run elasticity of demand. These results hold bothwith individual and aggregated data, and they suggest that, for testing rational addiction, theAR(1) model is a better empirical alternative than the canonical AR(2) model.

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Title
Analyzing income-related inequality in obesity status, depth and severity in Spain

Authors
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Abstract
In this paper we focus on the way income (as a measure of socioeconomic status) and obesity (as a proxy of health status) are associated to one another to describe the health status of the poor in comparison to the rich. Aiming to provide first European evidence, we do not evaluate income inequality only in obesity status, but also in its depth and severity, as the health risks associated with being obese are increasing even more at the top of the BMI distribution. We start by examining both changes in obesity rates as well as in income-related inequality in obesity over time using Spanish individual-level and cross-section data from the past two decades. In order to observe the main factors explaining income-related inequality in obesity, we decompose the overall inequality in obesity status, depth and severity to its main contributing factors. To achieve that, we make use of the Spanish data from the National Health Survey of Spain (ENSE), comparing two points in time (2017 with 1997) and splitting by gender. Our findings show that SES inequality in obesity status considerably differs by gender in agreement with the literature, while based on our decomposition results income is remarkably the most important (negative) contributor to the overall income inequality in obesity status, playing education a more modest role. Overall, obesity is concentrated among the poor in Spain since the CI is always negative and statistically significant, but the degree of inequality has a declining trend, even though all three measures of obesity increase over the years. This finding may reflect significant changes on the key determinants of individual obesity risk over the past years. A possible change could be the increasing importance of the characteristics of the built and food (obesogenic) environment in shaping the lifestyle and eating habits of the individuals.

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Title
Should I care for my mom or for my kid? Sandwich generation and depression burden in Italy

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Elenka Brenna

Abstract
Setting and objective - In Italy, during the last decades, elderly care has been mostly provided by family members, especially adult children, and typically daughters. This paper is aimed at investigating if Italian individuals aged 35 to 59 caring for an elderly or disabled relative and having at home at least one kid up to fifteen, are more likely to suffer from depression compared to individuals who only provide care to relatives, without being involved in parenthood responsibilities.
Data - The dataset is the Italian European Health Interview Survey (EHIS), second wave, year 2015, which, as far as it is known, has not been used for studies on aging and caregiving.
Methods - A Propensity Score Matching between caregivers and non-caregivers aged 35 to 59 is implemented, with the aim of checking if significant differences in the presence of depression are detectable among the two groups.
Results - Findings show that women providing informal care to their frail relatives are less likely to suffer from mental distress. However, results completely change if they have at home children aged less than 15; in this case a higher probability of being depressed is detected for women overwhelmed by the double responsibility of assisting both dependent relatives and their own children. Results are not significant for men.

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Title
The economic and social burden of osteoporosis. Health policy considerations based on a literature review

Authors
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Abstract
Background: Osteoporosis is a chronic degenerative disease affecting mostly women in post-menopausal age and characterized by bone mass loss and skeletal micro-architecture alteration, all conditions that increase the risk of fractures. Fragility fractures have significant consequences, both in terms of mortality and disability, with high healthcare and social costs.
Purpose: The aim of the study is twofold: i) to describe and analyze, with the help of relevant literature, the economic and social burden of osteoporosis, ii) to provide policy makers with valuable measures in order to reduce either the risk of fragility fractures among older population and the economic burden on societies.
Main findings: With the aging of population in developed countries, osteoporosis is destined to increasingly impact on both national healthcare systems and collectivity as a whole. Direct healthcare costs for hospitalization, outpatient treatment and nursing home admissions saddle governments with a significant burden, which has been quantified by several studies. Evidence exists on cost-effectiveness of osteoporosis treatment in reducing the risk of refracture, with positive effects not only for healthcare expenditure, but also in terms of premature mortality, reduced quality of life and autonomy loss. The latter consequences of osteoporosis, together with caregiving costs,are still underestimated in most studies assessing the burden of disease, despite their impact at both individual and societal level.
Conclusions: Early detection and appropriate treatments tailored on specific risk profiles are of utmost relevance to control healthcare expenditure, reduce premature mortality and secure adequate autonomy to elderly people. Cost effectiveness studies, especially those including patient quality of life, should be considered when establishing priority setting in healthcare resource allocation.

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Title
Severe Health Shocks and Access to Public Transfer Programs: Evidence from Italian Administrative Records

Authors
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Abstract
The role and effectiveness of Social Security programs (SSP) are often at the top of policy agendas, especially when economic downturns make welfare a primary importance. At the same time, the economic pressures generated by the ageing population and low employability calls for the extension of working lives through discouraging early retirement, raising the statutory retirement age and tightening disability insurance rules.
So far, little attention has been given to studying the role and the potential 'substitutability' offered by multiple SSPs. Individuals' health conditions, institutional peculiarities, together with the local labour market opportunities may strongly affect people's access to public transfer programs. If welfare benefits are low compared to disability transfers, unemployment benefits are of short duration, and little is available in terms of rehabilitation and job protection, it is likely that the demand of applicants for DI will be relatively high (Bound et al., 1999). On the contrary, where the opportunities to remain on the labour market are more tempting than health-related programs, disability beneficiaries would decrease. Based on novel administrative data, I investigate the effect of acute cardiovascular shocks -resulting in unplanned hospitalizations -on blue collars' entrance into different SSPs in Italy. An extended (post-shock) observational window allows for a deep inspection of the complex interaction between the available SS supports and the dynamic of entry/exit from the labour market.
The present research takes advantage of a unique Italian administrative dataset, namely WHIP&Health, which links work and health histories of a random sample drawn from the Italian population. Labour and social security histories -encompassing private employees, self-employed and atypical workers -span over the period 1990 -2012; while individual's hospitalizations (SDO, Schede di Dimissione Ospedaliera in Italian) are collected from 2001 onwards. In order to remove avoidable bias stemming from observed confounders, I adopt a selection on observables identification approach. More precisely, by taking advantage of a long history of observed health, labour and social insurance variables(up to 15 years before the health shock occurrence), we can consider the conditional probability of a worker experiencing a CVD shock or not -at a particular point in time -to be as good as random (Conditional Independence Assumption).In the spirit of Ho et al. (2007), I compute the Average Treatment Effect on the Treated (ATET)combining pre-processing procedures –firstly around of Corsened Exact Matching followed by an Entropy Balance Matching -aimed at balancing the distribution of covariates between treated and control individuals over a common support. Then, I apply simple parametric estimations on pre-processed samples in order to obtain ATETs that are robust to model misspecification.
Interesting results appear: unsurprisingly, people who experience a severe health shock rapidly enter into disability insurance, especially the so-called ordinary invalidity benefits(OIB), a temporary income support for people whose 'working capacity' is reduced by at least two-thirds and compatible with working activity. Further – and more recent - analyses on the probability of "receiving temporary DI benefits while working" suggest how the work-disincentive effect of OIB is still attractive: receiving the benefit does not translate into keeping these workers in the labour market. Contrary to the widespread literature pointing out early-retirement as one of the main exit channels exploited by severely shocked workers (Disney et al. (2006), Jones et al. (2010)), significant -but negative -differences are found. Consistent with eligibility criteria, a deeper investigation clarified how this gap is primarily driven by people aged 52 and older. The feeling of increased economic difficulties is somewhat confirmed by the

higher probability of asking for social assistance programs, while people who have had a CVD shock rarely claim UI benefits –which are incompatible with ordinary invalidity benefits. An overall consideration of the previous findings should make the policymaker aware of the huge economic consequences derived from health deterioration. The experience of acute CVD shocks -whose rates of incidence are increasing despite lower rates of mortality all over European countries-poses a serious threat for societies, both in terms of general employment as well as additional pressure on public finances.

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Title
Healthcare expenditure in Italy: a comprehensive intergovernmental model

Authors
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Abstract
The objective of the work is an analysis of the determinants of healthcare spending differentials among the Italian Regions for the years 1998-2017. One of the most critical aspects of the empirical analysis of the geographic variation of healthcare expenditure is that the large majority of studies are based on the estimation of a relationship between an aggregate measure of healthcare expenditure (generally per capita) and a set of variables representing demand, supply, health status. In so doing, the analysis squeezes the complex transmission mechanisms of effects in place in between the independent variables and the dependent variable, and swallows relevant information for policy decisions.
The very basic idea the work is built on is that differences in expenditure can be simply regarded as the outcome of differences in quantity (output) of services provision and/or in their unit cost. The source of the latter differences can be brought back to political and managerial decisions, whose identification is crucial, above all for using the results of this analysis for normative purposes (e.g. setting standardized spending levels for the implementation of financing mechanisms, like in Italy). Assuming, on the basis of a simple theoretical model, that the standard output should be the one that maximizes the preferences of the median voter, it is then possible to consider that political decisions may be far from "ideal" and generate an output of services different from the standard. At the same time, managerial inefficiency may generate differences in output and in unit costs.
Based on this general framework, our approach develops a measure of the mismatch, for each region, between the actual observed output and the demand-standardized service level which we call output gap. This measure is the outcome of the estimation of an output function, in a reduced form, yielding an estimate of the regional output that would be necessary for the satisfaction of the specific regional healthcare demand. As for the differences in unit costs they are captured by a standard analysis of allocative efficiency, as connected with the choice of the inputs mix in relation to their prices, and of technical efficiency, which affects the unit costs of services through its impact on the output regions realize with the amount of the different inputs characterizing their capacity-supply choices. The output gap and the allocative and technical efficiency are, then, the building blocks for the estimation of an expenditure (cost) function, in a reduced form, where the technical efficiency and the output gap are included as covariates, and the introduction of fixed effects is used for the estimation of the impact of allocative efficiency. The estimation of the expenditure function allows to relate the regional variations of healthcare expenditure to some fundamental drivers, connected with both structural factors, such as demand for healthcare services, and policy and managerial decisions. At the same time, however, since we are able to isolate these components of the expenditure function, we will be able to compute, for each region, their needs-standardized expenditure. Moreover, since our empirical strategy is largely based on the comparison of the regional outputs, a crucial methodological issue is how to deal with the potential differences in the composition of services and, therefore, how to develop a meaningful aggregate measure that avoids to under-or over-performance of regions, because of their policy choices of the services mix. We adopt the "benefit of the doubt" technique to derive weights for the aggregation of the different services and the different inputs and, therefore, to compute an overall measure of output and input at the regional level, to be appropriately used in our empirical analysis.
Preliminary results suggest that spending reduction by the Regions for budgetary needs has mainly been achieved through the quantity of health services supplied rather than by reducing inefficiency.

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Title
Political Transitions and Heights Evidence from Eastern and Western Europe

Authors
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Abstract
A growing body of research uses heights as an indicator of health and wellbeing. In this paper, we plan to estimate the effects of political regimes and regime transitions on heights at the micro-level. Whether democracy and transition out of communism improved wellbeing is a question that has received some attention in the literature. However, previous studies, mostly based on single country analysis, lack the necessary variation over time and across countries to evaluate large-scale political changes and their effects on health and heights. We draw primary evidence from the seventh wave of the European Social Survey and plan to confirm the robustness of our results using other data sources (e.g., EHIS, WHS, Eurobarometer) with data on individual heights. In additional tests, we compare countries in Eastern Europe and Western Europe to disentangle the highly correlated, but distinctive effects, of democracy and democratic transitions from communist-specific ones.

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Title
The Health-Wealth Trade-off during the Covid-19 Pandemic: Communication Matters

Authors
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Abstract
How do people balance health/wealth concerns during a pandemic? And, how does the communication over this trade-off affect individual preferences? We address these questions using a field experiment involving around 2000students enrolled in a big university in Italy. We design four treatments where the trade-off is communicated using different combinations of a positive framing that focuses on protective strategies and a negative framing which refers to potential costs. We find that positive framing on the health side induces individuals to give greater relevance to the health dimension. The effect is sizeable, stronger among females and altruistic individuals and associated with a higher intention to adhere to social distancing and precautionary behaviours. Moreover, irrespective of the framing, we find a large heterogeneity in student's preferences over the trade-off. Economics students and students who have directly experienced the economic impact of the pandemic are found to favor polices that take in greater account the economic side of the trade-off.

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Title
Mobilità passiva in Liguria per le procedure di sostituzione dell'anca e del ginocchio: analisi dei principali drivers

Authors
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Abstract
Background. La mobilità passiva rappresenta un problema particolarmente rilevante per i sistemi sanitari universalistici, organizzati secondo un assetto istituzionale di tipo decentralizzato e finanziati attraverso la fiscalità generale. In Italia costituisce un diritto per il paziente (dlgs.502/92), al fine di garantire l'equità di accesso alle cure. I principi coesistenti di equità di accesso alle cure e sostenibilità finanziaria generano un trade- off che caratterizza il fenomeno della mobilità passiva. Inoltre promuove l'accumulo di risorse finanziarie presso le LHA già ben dotate (Fabbri e Robone, 2010). La libertà di scelta comport maggiori rischi di iniquità per i gruppi socio-economicamente deprivati (Koivusaloet al.,2006; Fredrikssonet al.,2013). La mobilità passiva rappresenta, tuttavia, un doppio costo per i sistemi sanitari regionali che devono rimborsare per i servizi sanitari erogati ai propri pazienti le altre regioni, ma allo stesso tempo hanno sostenuto i costi fissi per gli ospedali regionali (Brenna e Spandonaro, 2015).
Objectives. L'obiettivo del presente studio è quello di analizzare i principali drivers della mobilità interregionale per le procedure chirurgiche di sostituzione totale dell'anca e del ginocchio e di definire profili omogenei di rischio mobilità passiva.
Methodology. L'analisi ha impiegato i microdati provenienti dalle schede di dimissione ospedaliera (SDO), relativi al periodo 2016 -2018, per tutti i gli iscritti presso l'Anagrafe Sanitaria ligure che si siano sottoposti ad una delle due procedure presso un provider ligure oppure fuori regione. I dati provenienti dalle SDO sono stati integrati con le informazioni relative alle comorbidità e alle esenzioni del ticket attraverso la Banca Dati Assistito ligure. La metodologia adottata ha previsto due approcci: per studiare i drivers della mobilità è stato impiegato un modello di regressione logistica, mentre per la profilazione dei gruppi omogenei di rischio è stato utilizzato uno strumento di data mining, un algoritmo per la costruzione di alberi decisionali (CART).
Main Results. I risultati riportano i principali fattori che influenzano la mobilità sanitaria. Per quanto riguarda le variabili demografiche si evince che i più anziani abbiano un minor rischio di fuga, un maggior rischio si registra invece per le persone che abbiano dichiarato di essere sposate. Per i pazienti con uno stato di salute maggiormente compromesso il rischio di mobilità è ridotto: risultano infatti determinanti importanti la classe di priorità, la comorbidità misurata attraverso il numero di diagnosi. Considerando la qualità offerta in termini di efficienza ed appropriatezza, i tempi di attesa pre-ricovero e preoperatoria e le giornate di degenza influenzano la scelta. La qualità misurata attraverso indicatori derivati dal PNE, mostra come sovente la qualità considerata dai pazienti non sia una qualità oggettiva del provider (Gutacker et al., 2016). La deprivazione socioeconomica inibisce la scelta. Inoltre, la distanza mostra come i pazienti siano disposti a viaggiare anche molti km; tale aspetto, unito alla variabile relativa all'appartenenza ad una Asl di confine, sottolinea che non si tratti soltanto di una mobilità fisiologica. Attraverso l'utilizzo dell'algoritmo di classificazione CART è stato possibile definire profili ad alto e basso rischio di mobilità passiva sulla base delle caratteristiche osservate.

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Title
Mobilità passiva in Liguria per le procedure di sostituzione dell'anca e del ginocchio: analisi dei principali drivers

Authors
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Abstract
Background
La spesa per la vitamina D in Italia ha avuto un forte aumento negli ultimi anni. Nel periodo 2012-2018 la spesa pro capite ha avuto un tasso di crescita totale del 326,5% con un tasso di crescita medio (CAGR) pari a 27,35%.Con la Determina n.1533 del 22 ottobre 2019 AIFA ha istituito la nota 96 con cui ha definito i criteri per la prescrizione, a carico del SSN, dei farmaci indicati per la prevenzione ed il trattamento della carenza di vitamina D nell'adulto (>18 anni).Nei primi mesi dalla sua introduzione la nota 96ha determinato un sensibile calo della spesa rispetto agli stessi mesi dell'anno precedente (-30%circa).Se questo trend si consoliderà si tornerà ad un livello di spesa pari a quello del 2016, si tratta di un livello di spesa ancora molto elevato (tasso di crescita rispetto al 2012 +196%)L'analisi della composizione dei consumi di vitamina D ha dimostrato mostra che nel 2018 il 90% della spesa per vitamina D è stato determinato dalla spesa per Colecalciferolo, uno dei suoi analoghi, che dunque risulta essere il più utilizzato per prevenzione e trattamento dell'ipovitaminosi D. Inoltre si è dimostrato che circa il 90% della spesa per Colecalciferolo è stata assorbita da uno specifico gruppo di prodotti, definibili "formulazioni ad alto costo" in base al prezzo di riferimento rispetto alla quantità di principio attivo contenuto. Questi prodotti sono accomunati dalla caratteristica di consentire la mono somministrazione quindicinale o mensile del farmaco; questa modalità d'uso, nelle evidenze scientifiche, è considerata equivalente (quindi senza un valore terapeutico aggiunto) alla somministrazione quotidiana che può essere garantita con formulazioni di costo molto inferiore. E' stato dimostrato che l'ipotetica applicazione di un prezzo equo ai consumi di colecalciferolo in formulazioni ad alto costo consentirebbe un risparmio del 60% sulla spesa per questo principio attivo, che rappresenta la principale voce di spesa per la vitamina D (nel 2018 Colecalciferolo (ATC A11CC05) ha raggiunto il 1° posto assoluto nella classifica nazionale dei principi attivi a maggior spesa convenzionata in classe A-SSN incidendo per il 2,70% con una spesa di 273 milioni di €).
Obiettivo
Evidenziare l'esistenza di ulteriori strategie di riduzione della spesa per la vitamina D in Italia.
Metodo
Si analizza la composizione dei consumi di vitamina De della spesa per colecalciferolo, dopo l'introduzione della nota 96, per valutare se la strategia di applicazione di un prezzo equo ai consumi di colecalciferolo in formulazioni ad alto costo mantenga un potenziale rilevante.
Risultati
L'introduzione della nota 96 non ha sostanzialmente modificato la composizione dei consumi di vitamina D né quella della spesa per colecalciferolo. Dopo l'introduzione della nota 96 le "formulazioni ad alto costo" continuano ad assorbire circa il 90% della spesa per colecalciferolo e la spesa per colecalciferolo continua a rappresentare il driver principale della spesa per la vitamina D. La strategia basata sul concetto di applicazione di un prezzo equo ai consumi di colecalciferolo in formulazioni ad alto costo può rappresentare uno spunto interessante per i decisori a livello centrale nell'ambito delle azioni per la riduzione della spesa per la vitamina D.

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Title
Corruption Kills: The Association between Maternal Mortality and Corruption - Evidence from 16 Sub-Saharan African Countries

Authors
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Abstract
Background: About 295,000 women died globally during and following pregnancy and childbirth in 2017. Two-thirds of these deaths occurred in Sub-Saharan Africa. **Objective**: We estimate the association between maternal mortality and corruption at the sub-regional level. **Methodology, Setting, And Participants**: Individual data covering pregnancies from 125 regions in 16 Sub-Saharan African countries over the period 2002-2018 were taken from the relevant Demographic and Health Surveys (N = 462,005). Data on corruption for the period 2002-2015 come, instead, from the Afrobarometer Surveys. **Exposures**: Sub-national regional measures of the percentage of people paying a bribe to obtain documents or to avoid problems with the police. **Main Outcomes and Measures**: The primary outcome was the variation in the number of pregnancy-related deaths associated with a one percentage point variation in first-hand experience of bribery. We used linear probability models, adjusting for socio-economic variables at the regional level. **Results**: A 10 p.p. increase in the percentage of people who had first-hand experience in bribery was associated with a 3.463% [95% CI: 0.123, 6.802%] increase in the number of women who died during the pregnancy or within two months of giving birth. **Conclusions and Relevance**: Corruption is significantly and positively related to maternal mortality. To reduce maternal mortality, policy makers should not only increase investments in healthcare, they must also implement measures to combat corruption.

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Title
Chinese Aid to Africa: A Curse or a Blessing? Evidence on Child Health

Authors
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Abstract
Background
China is one of the world's largest providers of foreign aid in Asia, Latin America, and especially in Africa (Easterly 2009; Sachs 2006). Many observers, mainly Western aid agencies, have warned of the real risk of Chinese lending undermining African sovereignty and as well the relationship between Africa and other Western countries (Moyo 2009; Policy, n.d.). Conversely, proponents of development aid argue that the world's poorest nations are trapped in a cycle of poverty and ill–health and that aid can boost them into a cycle of development (Sachs et al. 2004; Economist, n.d.). Which one of the two drives China is still unclear. According to many China used aid to accomplish strategic goals, such as to counter the influence of the USA or the former Soviet Union. In parallel, the odd China-Africa alliance has indeed let China enter new markets for its exports contributing to the current world's fastest-growing major economy.
Objectives
What did Africa get in return? This paper tries to answer this ambitious question. While a growing body of the literature has documented the relationship of foreign aid and economic growth, much less abundant is the empirical evidence about the relationship between aid and health outcomes (Easterly, Levine, and Roodman 2003; Burnside and Dollar 2000). Such a paucity might be explained by the relatively new aid investments in the health sector. Almost 80% of all aid towards health sectors started since 2000 (Herzer and Nagel 2015). Moreover, the few studies on the effectiveness of foreign aid shows mixed results. (Williamson 2008; Wilson 2011) found evidence of the ineffectiveness of foreign aid at increasing overall health (Williamson 2008) and reducing mortality (Wilson 2011). Conversely, according to Bendavid and Bhattacharya 2014 foreign aid to the health sector is associated with an increase in life expectancy and a decline in Under–Five mortality using data for 140 countries covering the period 1974-2000. However, most of these findings are likely to be biased as the allocation of aid funding tends to be highly selected and more specifically concentrated in some regions.
Methodology
This study fills these gaps by investigating the impact Chinese Aid on African Population health by using a compendium of data covering 33 Sub-Saharan African countries2 for the period 2000-2014. In so doing, this paper contributes to the literature in several distinctive ways. First, we focus on a specific aid, the Chinese one, which surprisingly has been largely uncovered in the literature. Second, we address the selection in the funding allocation by focusing only on areas that will eventually receive some investments from China end exploiting the rolling–in of the investments as an exogenous variation. Third, we compare the impact of Chinese investors to other international investors, namely the World Bank, to understand the potential substitution effect between the two. Fourth, we combine a compendium of data, surprisingly still unused, from a large set of countries and for an extended period. Such a rich and novel dataset enables us to study the impact of aid at an exceptionally granular geographical scale.
Results
Our findings show that Chinese aid is associated with a significant decrease in both infant and under-five mortality.

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Title
Local policies on biosimilars: are they designed to optimize use of freed resources?

Authors
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Abstract
Background. Biosimilars are launched after patent expiration of originators and enhance competition. They offer a less-expensive alternative to an existing medicine or pushing alternative medicines to lower their prices to face biosimilar competition [1] and free up resources, which is very important in an era of restricted healthcare budgets [2, 3]. Savings from biosimilars can be used to (i) fund new and costly medicines launched for unmet needs or providing an added therapeutic value on existing therapies, (ii) fund other health care services / initiatives, (iii) make savings; (iv) increase the number of patients treated, thanks to a lower treatment cost. Different policies have been implemented to enhance uptake of biosimilars. The literature has focused on interchangeability and substitutability recommendations, issued by national or regional policy-makers. The evidence on actions taken by health care organisations (HCOs) is more limited.
Objectives. This paper investigates policies on biosimilars implemented at the local level in the Italian National Health Service. Furthermore, it aims at investigating whether these actions are embedded into a general policy framework, that includes: (i) a systematic retrospective and prospective analysis of the effects of patent expiration for biological treatments; (ii) an evidence-based approach to policy making: e.g. prioritising an increase of the number of patients with freed-up resources if there is some evidence of a large proportion of un-treated or under-treated patients.

Methodology. Data were retrieved through a structured questionnaire, validated by two potential respondents administered online to all 199 public HCOs. The questionnaire consisted of 40 closed and open-ended questions and was delivered to the general managers of the HCOs. The questionnaire was sent by e-mail to the target respondents for compilation over the period from October 2019 to January 2020. The questionnaire is divided into five sections: educational/information programs on biosimilars; prospective and retrospective impact evaluations of biosimilars; systematic evaluation of the untreated or undertreated target population for biological treatments; prescription targets and related incentive or sanction schemes; involvement in post-marketing studies on biosimilars.
Results. 76 organisations completed the survey. The HCOs response rate was 38% nationwide and 47%, 33% and 27% in the Northern, Central and Southern regions, respectively. Almost all regions (16 out of the 21 regions, accounting for 93% of the Italian population) were represented with a region-specific response rate ranging from 11% to 100% of HCOs. Most respondents (80%) completed more than 90% of the questionnaire, and only 5% answered less than 70% of questions. Almost all HCOs implemented information/educational initiatives on biosimilars. 75% of HCOs performed systematic impact evaluation of biosimilars, focusing on their economic impact. Only 21% of HCOs detect patient under-treatment due to budget constraints and how availability of cheaper drugs could help. Prescription targets on biosimilars vs. originators and off-patent vs. in-patent molecules sharing the same indication have been introduced in 62% and 75% of HCOs, respectively. Prescribers reaching targets are mostly rewarded trough monetary incentives. According to 25% of respondents their HCO is involved in studies on biosimilars (e.g. risk/benefit profile, patient adherence), but few respondents provided evidence of these studies.
Discussion. This study investigated policies on biosimilars in the Italian public HCOs. The analysis has some limitations. First, the sample accounts for 38% of HCO. Despite almost all regions (and all the major ones) are represented, the proportion of respondents do vary across regions. Second, we rely on the information provided by the respondents. Information on the HCO website are very limited and we could not perform cross-check analysis. Despite these limitations, two main results were found. On the one hand, HCOs shows a quite high level of proactivity regarding policies on off-patent bio-drugs. On the other, it seems that structured actions aimed at appropriately reallocating resources

gained through patent expiration are still lacking, since a minority of HCOs collects evidence on untreated or undertreated patients and are involved in post-marketing studies on biosimilars. The next step would be understanding the impact of these policies on biosimilars penetration rates, which has been investigated by few empirical studies through cross-countries [4] and cross-regional [5, 6] comparisons, but with a specific focus on prescription targets.

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Title
Key drivers of innovativeness appraisal for medicines: the Italian experience after the adoption of the new ranking system

Authors
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Abstract
Background: In 2017 the Italian Medicines Agency introduced a standardized process to appraise innovativeness of medicines. Innovative medicines are provided a speeder market access and dedicated funds. Innovativeness criteria are the unmet therapeutic need, the added therapeutic value and the quality of the evidence (1, 2). The unmet therapeutic need and the added therapeutic value are rated in 5 levels. To appraise the quality of evidence, AIFA has chosen the Grading of Recommendations Assessment, Development and Evaluation (GRADE) method (3, 4). Innovativeness is appraised per indication, and the innovativeness status lasts three years.
Research Question: Despite there is some descriptive evidence on the new criteria introduced in 2017, there is no evidence on the actual role played by these three criteria on the final decision, if these criteria have been consistently used overtime and if other variables have influenced decision-making. We were willing to cover this information gap.
Methods: We scrutinized 54 appraisals (2017-2019). The impact of the three domains were investigated trough a contingency table with Chi-square or Fisher's exact test, as appropriate. Continuous data were analyzed using a Student's T-test, after checking for normal distribution (Shapiro-Wilk statistic), or a Wilcoxon rank-sum test otherwise. The consistency of the process overtime was investigated through a recursive algorithm for innovativeness, using a determinist approach. A set of data were retrieved from the appraisal reports and inserted into an extraction template: final appraisal ("fully innovative", "conditionally innovative" or "not innovative"); rank attributed to the unmet need, the added therapeutic value and the quality of evidence; variables that may have an influence on the final decision taken by the CTS, including: the target disease and population, orphan drug designation, the number of "Summaries of Findings" (SoF) according to the GRADE system, the number of studies supporting the application for innovativeness (and the ones designed as a RCT), the appraisal date.
Results: Appraisals were equally distributed among "fully innovative" (35% of the total), "conditionally innovative" (32%) and "not innovative" (33%). More recently assessed medicines, orphan drugs, pediatric/mixed indications, and medicines approved with at least one RCT were appraised innovative by a larger proportion. However, none of these variables has a significant impact from a statistical viewpoint. In oncological setting, innovative drugs provided on average more RCT evidence in support of the application when compared to non-oncological ones. Furthermore, rarity (according to the orphan drug definition), and type of disease did not seem to be determinant for the innovativeness evaluation. A significant difference between innovative and not innovative outcomes was found both for the added therapeutic value and the quality of evidence domains ($p < 0.01$). Added therapeutic value was the most important driver, followed by the quality of the evidence. The recursive algorithm shows a high level of internal consistency, accounting for 81% of appraisals.
Discussion/conclusions: Our two main findings are that (i) innovativeness appraisals are internally consistent (ii) the added therapeutic value and the quality of the evidence are the most important drivers for innovativeness. The study has some limitations. It is based on a quite small number of appraisals. We could analyze only the final appraisal published by AIFA, but we did not have any access to the applications submitted by the companies. However, our analysis was aimed at evaluating the key drivers and the consistency of the AIFA decision-making process, rather than the comparison of applications submitted by the companies and final decision of AIFA. Despite these limitations, our analysis has some important implications. Companies are pushed to provide solutions with an added therapeutic value and a high quality of evidence. We are aware that investments by the pharmaceutical companies are taken globally, but the more HTA agencies insist on clear and transparent criteria to

appraise new medicines, the higher will be the impact on pharmaceutical companies pipelines. The new process implemented by AIFA enhanced transparency, accountability and, because of its intrinsic consistency, predictability of innovativeness appraisals, thus making access in Italy more reliable in this respect. Last but not least, prioritization of access through innovativeness is managed transparently, on the grounds of quite objective criteria and providing the whole stakeholders with the rationale of decision taken.

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Title
The effects of disease cross-coverage by dupilumab on the costs sustained by the Italian National Health Service

Authors
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Abstract
Background: Pricing models, including different brands for the same molecule, same price for all indications, reflecting the weighted average value of all indications, same price for all indications with indication-specific discounts or managed entry agreements, have been broadly investigated from a theoretical viewpoint (1). Furthermore, pharmaceutical companies are often required to lower prices when a new indication since a larger population will be treated (2). None has investigate the economic advantages of disease cross-coverage so far.
Research question: This oral presentation provides evidence on the economic impact of disease cross-coverage by dupilumab in the perspective of the Italian National Health Service. Dupilumab was approved for reimbursement for Severe Atopic Dermatitis (AD), Severe and Refractory Asthma and Chronic Rhinosinusitis with Nasal Polyps (CRSwNP). More specifically, we investigated the cross-coverage for Asthma in patients treated for AD and CRSwNP and for CRSwNP in patients treated for Asthma.
Methods: The analysis focused on the crowding-out effect of dupilumab on alternative treatments (omalizumab, mepolizumab, benralizumab for Ashtma; oral systemic corticosteroids and Endoscopic Sinus Surgery - ESS for CRSwNP), and did not investigate the net economic effects of the different risk-benefit profiles of dupilumab compared to other treatments in the cross-covered indications. The research relied on a three-years time-horizon simplified budget impact model. The model was populated with data from (i) peer-reviewed evidence (target population – if available - and pivotal studies); grey literature (target population – if peer-reviewed evidence was not available; actual cost of medicines and ESS) evidence. Three alternative scenarios for market penetration (15%-30%-100%) were assumed.
Results: Avoidable direct health annual costs due to cross-coverage for (i) Asthma in patients treated for AD ranged from 0.46 to 3.43 million euros; (ii) Asthma in patients treated for CRSwNP ranged from 0.08 to 0.88 million euros; (iii) CRSwNP in patients treated for Asthma ranged from 0.41 to 4.05 million euros respectively. The total economic benefit ranges from 0.95 to 8.36 million euros.
Discussion: The research has investigated, using dupilumab as a case, the economic advantages of disease cross-coverage. These findings are very important for payers, that always look at sustainable solutions to optimize the use of scarce resources. The study has some limitations. It did not incorporate avoided/incremental events due to a possible better/worse risk-benefit profile of dupilumab vs alternative treatments. Since there are not direct comparison between dupilumab and the competitors, indirect comparisons should have been carried out for the three indications and the relevant alternative treatments. Furthermore it did not investigate economic benefit of cross-coverage on lower diseases severity (for example mild asthma), but this was not possible in the absence of evidence on this larger population target. Nonetheless, the analysis relies on the best available evidence for Italy to shed light on a topic which has not been sufficiently investigated to date.

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Title
Determinants of price for orphan medicines in Italy

Authors
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Abstract
Background. The assessment and appraisal process for orphan drugs has been deeply investigated by the literature (1), and peculiarities and commonalties with other medicines discussed (2). Price regulation has been also analysed from a regulatory viewpoint and in one paper (3) pricing criteria for orphan drugs were suggested, including the prevalence and disease severity, level of unmet need, quality of the evidence at market launch, level of uncertainty of effectiveness, level of impact on condition / disease modification. There is also some evidence on the trade-off between orphan drugs prices and volumes / dimension of the target population (4, 5). However, empirical studies of the determinants of orphan drugs prices are still very few (6) and no evidence was found for Italy.
Objectives. The objective of this paper is to investigate the determinants of the price of orphan medicines in Italy.
Methodology. We integrated and adapted to the Italian context a study carried out in France (6) and performed univariate, multivariate and cluster analyses. The dependent variable was the orphan medicine yearly unit cost per patient (unit cost and log of unit cost). This cost was computed net of (hidden) discounts and/or the effects of managed entry agreements. The explanatory variables are (i) the prevalence of the disease as it was reported by the pharmaceutical companies in the Price and Reimbursement Dossier and included in the model as Boolean variable (high/low prevalence if over/below the median value), with an hypothesis of negative correlation, because of the expected trade-off between unit price and volumes (4/5); (ii) a list of variables detecting the quality of the pivotal studies, including whether they are designed as Randomised Clinical Trails and the phase in clinical development; (iii) the added therapeutic value as it was graded by the French Transparency Commission: a higher added value was expected to bring higher prices (we could not rely on the Italian appraisal of added therapeutic value, since it is appraised, graded and reported only for medicines which marketing authorisation holder has applied for innovativeness status).
Results. 63 orphan medicines / indications were priced in the last 4 years: Antineoplastic and immunomodulating agents account for 55% of them, and alimentary tract and metabolism ranked second (15%). The unit cost ranges from 3.9k euros to 1.1 million euros. 51% were approved with Phase III evidence and 65% with an RCT. The target population ranges from 0.09 to 9.7 per 100k population. Our preliminary results from univariate and multivariate regressions shows that the added therapeutic value is positively correlated with the unit cost per patient, as it was expected. The prevalence was negatively correlated only with the unit cost (and not its log). The quality of the study influences positively the costs if the drug is directed to a disease with low prevalence.
Discussion: Our empirical findings were consistent with expectations and partially in line with the evidence coming from the French analysis (6), confirming that the added therapeutic value plays a major role in determining the unit cost per patients. Interestingly, it emerges an interaction between the disease prevalence and the quality of the study, i.e., the cost increases in case of drugs for low prevalence disease and high quality of the study. The study has one main limitation: some variables that may have influenced the price negotiation (disease severity and clinical relevance of the surrogate endpoints used in pivotal studies) were not included, since they were not easy to measure. Notwithstanding we have shed lights on orphan drugs pricing, showing that (added) value and budget impact (dimension of the target population) counted.

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Title
Human costs of major influenza outbreaks since the 1950sat the subnational level in Italy: evidence from life expectancy evolution in Italian provinces

Authors
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Abstract
Quantifying the human costs of past influenza pandemics is extremely valuable for informing pandemic preparedness and response plans. Existing studies on epidemic and pandemic influenza mortality rely overwhelmingly on country-level statistics (Murray et al., 2006; Viboud et al., 2016). If transmission is highly clustered in nature, though, country-level analyses are likely to yield dampened estimates of the mortality impact of major influenza episodes. Preliminary evidence from Italy based on the first wave of the Covid-19 pandemic suggests, indeed, that the demographic consequences of this major health shock will be mostly felt at the sub-national level (see Figure 1). Still, studies which seek to quantify and compare the mortality impact of major past influenza outbreaks by accounting for the spatial nature of epidemic waves are rare (Chowell et al., 2014). In this work, we contribute to address this gap by quantifying the human costs of major influenza outbreaks since the 1950 sat the subnational (provincial) level in Italy. To the best of our knowledge, this study represents the first attempt to estimate the mortality impact of major past influenza outbreaks since World War II, including the 1957-1958 and the 1968-1969 pandemics, at the local level within an affected country. Estimating the human costs of such events presents a number of empirical challenges. First, data on diagnosed cases and related fatalities may not be available or be imprecisely collected, both at the national and subnational level. Historical and geographical comparison can be particularly problematic as public authorities may have different collection, recording and reporting policies regarding influenza cases and casualties. Furthermore, influenza-specific mortality data, when available, fail to capture the effect of influenza epidemic waves on other causes of deaths. As a solution, previous studies have relied on vital registry data to estimate excess all-cause mortality, which avoids recording issues and allows to capture indirect deaths. This approach has been adopted to estimate the global mortality burden of the 1918-1920 pandemic (Murray et al., 2006) and, more recently, to quantify both the mortality impact of the first wave of the Covid-19 pandemic (Ghislandi et al., 2020; Krieger et al., 2020). Second, to assess the overall human costs of such disruptive demographic events, one needs to translate mortality figures into a reliable measure of years of life lost which allows for comparison across time and place. In this regard, period life expectancy stands as a highly suitable candidate (Sen, 1988; Noymer and Garenne, 2000; Ghislandi et al., 2019). Still, while period life expectancies at the national level are available for some countries, including Italy, since the 19thcentury, small-area estimates are often lacking. In the case of Italy, official life table sat the provincial level produced by the National Statistical Institute of Italy (Istat) are available starting from 1982 only. With these considerations in mind, we plan to estimate age-and sex-specific mortality rates at the provincial level in Italy from 1952through 1981.For this purpose, granular data on deaths and resident population are needed. We will rely on a compendium of archival sources made available by Istat, including census population data and yearly statistics on births, deaths and migration at the provincial level, which allow to track yearly changes in the age structure of the local population and to derive intercensal population estimates. We will then use estimated mortality rates to build life tables and obtain life expectancy estimates at the provincial level for each year between 1952 and 1981, integratingthe1982-2018 series produced by Istat. We will further complement these data through projections of provincial life expectancies for year 2020, accounting for the impact of the first wave of the Covid-19 pandemic following the methodology detailed in our recent work (Ghislandi et al., 2020). In the end, we will be able track the evolution of life expectancy at the provincial level in Italy over nearly 70 years. We will thus be able to detect, quantify and compare local deviations from historical paths of mortality improvement associated to major influenza epidemic and pandemic episodes.

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Title
Hospital Closure and Patient Outcomes: Evidence from Italy

Authors
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Abstract
Background: In Italy, there have been a substantial number of hospital closures in the past decade as a result of cost containment strategies enacted by the Ministry of Finance with the aim of restoring financial stability in regions that ran into severe deficits [1]. Moreover, the risk of hospital closures are more likely to increase with higher chances of further cost containment strategies given the pandemic induced current economic situation in Italy. The question on if we should prevent such hospital closures needs to be debated. Hospital closures have been said to be advantageous if the closed hospitals are inefficient or underutilized. Such closures may actually improve patient outcomes [2,3,4]. On the other hand, closures could potentially harm population health through congestion in nearby hospitals and increased travel time in accessing care [2,3,4].
Objectives: To investigate the net impact of hospital closures on patient outcomes and to identify possible mechanisms such as increased travel time or congestion which might explain some of the consequences of hospital closures on patient outcomes.
Methodology
Data challenges: We use hospital discharge records. We manually identify hospitals over the years by matching them on hospital address in the first stage and the trend of the admission volume in the second stage. We use previous literature on hospital closures in the context of other countries to define closures [4,5]. We consider hospitals to be closed when either (a) AMI admissions in a hospital go down to zero (strict closure) and (b) when the admission reduces by 90% compared to previous year (relaxed closure) and stays constant. The list on hospital closures were then reconfirmed using several official documents and newspaper articles. A total of 45 and 65 hospitals were identified to be closed respectively during 2008-2015 as per the strict and relaxed closure definitions.
Treatment: The hospital discharge data from the Ministry of Health with information on patients admitted for AMI during 2008-2015 in Italy is merged to several data sets that provide the final dataset with information at hospital and municipality level. The outcome variables include in-hospital mortality, 30-day readmission and length of stay. Controls include age, gender, marital status, length of stay, education level, elixhauser comorbidities index [6] and type of hospital (public/private). Municipality, regional and year fixed effects are used in all regressions. Following previous literature on hospital closures, we first define a home hospital for each municipality. A home hospital is the modal hospital to which most of the residents of the municipality were admitted to that year [4]. We consider a municipality to be treated if the municipality of residence experiences at least one home hospital closure.
Empirical Strategy. Given the variation in timing of hospital closures, we use a "staggered" DID or DID with multiple time periods [7]. We look at both individual and municipality level outcomes. The baseline specification at the individual level reads as follows:
$Yihjt = \alpha 0 + \alpha 1\ Treat\ Postjt + \alpha 2\ Xihjt + \alpha 3\ Hht + Mj + Tt$
Where Treat Postjt Indicates whether an admission is from an affected municipality j and occurs in the post closure period. The same analysis is repeated at municipality level. Second, to bring in the evidence on travel time and congestion as a possible mechanism that is affected by closures and thereby affecting patient outcomes, we combine the above staggered diff-in-diff with IV approach. Specifically, we instrument travel time using the difference-in difference estimator, and we then estimate the impact of exogenous change in travel time due to hospital closure on AMI outcomes.

Results: At the individual level, using a staggered diff-in-diff methodology, we find that individuals belonging to municipalities that had a home hospital closure compared to those who did not, had an increased likelihood of experiencing an in-hospital death, reduced 30-day readmission and increased length of stay. Similar and stronger effects are observed at the municipality level. Second home hospital closures are associated with an increased travel time and in the second stage, we find that an increase in the predicted average weighted travel time worsens patient outcomes.

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Title
Allowed Yet Dangerous: Prenatal Exposure to Moderate Air Pollution and Early Life Health Impact

Authors
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Abstract
Matching satellite estimates of PM10 concentration to the universe of birth certificates, pharmaceutical prescriptions and hospitalization records of Tuscany, we quantify the short and medium-term health effects of prenatal exposure to moderate levels of air pollution and its monetary costs. Estimates from a two-way fixed effect model with controls for weather and economic activity show that PM leads to lower Apgar, lower birth-weight, birth-length and head circumference, and lower incidence of breastfeeding. In the medium-term, we document higher pharmaceuticals consumption and hospitalization costs in the first 11 years of life. Results are robust to the inclusion of mother FE, and neither fertility rates nor geographical mobility of parturients respond to air pollution in our setting.
Objectives. This paper aims at quantifying medium term (up to eleven years of age) health consequences of in utero exposure to PM10. Our analysis focuses on a context where the concentration levels of PM are relatively low and legal under the current environmental regulations of the EU, making our results relevant in terms of policy implications for most of the developed countries.
Methods. Our analysis is based on administrative data from different sources on the universe of live births in Tuscany for the years 2006-2018. We combine birth certificates to information on filled prescriptions from pharmacies, to hospitalisation records, and to the regional civil registry of the resident population in the period. We employ satellite-based estimates of PM10 concentration levels. Our treatment variable is the average concentration of PM at mothers' municipality of residence from conception to (expected) delivery. We address endogeneity using a two-way fixed effect model, which, on top of the municipality of residence and date of conception FE, also controls for a large set of detailed characteristics of mothers and pregnancies.
Results. We find that PM leads to lower Apgar, lower birth-weight, birth-length and head circumference, and lower incidence of breastfeeding. In the medium-term, we document higher pharmaceuticals consumption and hospitalization costs in the first 11 years of life. Fertility rates and geographical mobility of parturients do not respond to air pollution in our setting. Results are robust to the inclusion of a rich set of controls for weather conditions and local economic activity during gestation. The inclusion of mother FE does not affect point estimates by much neither.
Discussion. We provide evidence that children exposed to higher concentration of PM during gestation suffer a persistent health loss even in a context where the concentration levels of PM are relatively low and considered acceptable by current environmental regulations. We contribute to the existing literature on several aspects. First, we employ a causal approach to investigate the effects at birth of in-utero exposure to particle pollution on a very large set of newborn's health indicators. Second, we evaluate whether these effects persist after birth, looking at pharmaceutical consumption and hospitalisation costs up to 11 years after birth. Third, we provide evidence that mothers do not avoid air pollution during gestation in our setting. Finally, we provide a back-of-the-envelope calculation of the associated aggregate monetary cost. Given its effect on individual health and the associated monetary costs, more effort is needed to reduce air pollution.

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Title
Cancer screening invitations in the developing world

Authors
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Abstract
Roughly 90 percent of cervical cancer deaths occur in low- and middle-income countries (LMICs), where the lack of adequate infrastructures hampers the organization of screening programs, while informational, cultural, and socio-economic barriers limit the participation in the few existing programs. We implemented a field experiment within the national cervical cancer screening program in the Republic of Armenia to test whether, in spite of these barriers, easily implementable and low-cost invitation strategies employed in high-income countries could enhance screening uptake in LMICs. We find that the dispatch of invitation letters enhances screening take-up, especially when followed by reminders. Different message frames have no impact on participation.

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Title
Costs for the management of patients with heart failure in the Covid-19 era

Authors
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Abstract
Background
The COVID-19 pandemic and the adoption of urgent measures for its containment have heavily affected, and could further affect, the routine practice of healthcare providers especially in terms of follow-up of chronic patients. For few months at the beginning of 2020 the fight against COVID-19 has left behind non-COVID patients, firstly for dynamics related to the serious health emergency underway and next for the fears of patients to visit healthcare centers, i.e. the locus of infection. However, the manifestation of diseases has not stopped, and it is very much likely that healthcare centers will have to face more severe clinical situations of patients than the pre-COVID period. Late or loss follow-ups of cardiovascular patients are certainly amongst the unintended consequences of COVID-19 epidemic. A national study of the Italian Society of Cardiology showed that fear of contagion tripled mortality from heart attack from 4.1% to 13.7%. The causes range from the lack of treatment, with a reduction in hospitalizations of 60%, to treatment and visits delays, with increased times of 39%. Another study showed a 48.4% reduction in admissions for acute myocardial infarction compared with an equivalent week in 2019 and an increase in ST-segment elevation myocardial infarction case fatality rate during the pandemic compared with 2019 (risk ratio = 3.3, 95% CI 1.7–6.6; P < 0.001). If this trend will persist and the cardiology network will not be completely restored, the situation could be very dangerous for people's health.
Objectives
The aim of the present study was to estimate the clinical and economic implications of delays due to COVID-19 in the management of patients with cardiovascular diseases, in particular heart failure (HF), in order to provide recommendations to decision makers on best management strategies for these patients in the future. More specifically, this study estimated the unintended consequences of COVID-19 on HF patients in terms of mortality and economic impact on the public healthcare expenditure from the National Healthcare System perspective in the next year.
Methodology
A systematic literature review has been performed in May 2020 through Pubmed database to retrieve the clinical outcomes of patients with cardiovascular diseases. In particular, the search started considering three main clinical disease areas (heart failure, ischemic heart disease, coronary artery disease) and focused on mortality considering patients with and without cardiological follow-up. Studies were considered if published in English and if they referred to an adult population. No restrictions were imposed on time of publishing and on types of studies. Study and participants' characteristics together with mortality rates were extracted from the retrieved studies through a customized template developed in Microsoft Excel. Separate meta-analyses have been performed in order to combine data for the different studies on mortality rates for both categories of patients, with and without cardiological follow-up. The analyses have been performed using Stata software (metaprop command). A random-effect model was applied assuming that the true effect size varies among the studies. A test on the summary effect measure has been reported, as well as a test for heterogeneity quantified by I2 (range 0%-100%, higher values representing higher heterogeneity among the studies). Concerning the economic evaluation, the healthcare spending of HF patients in their last year of life, including DRG tariffs and cost of drugs, was quantified in 9,940€ per patient (10,238€ uplifted to 2020), as reported by a study conducted in Italy in 2016.
Main results
Starting from 2,362 identified papers, the analysis focused on 4 of them reporting data on mortality at 1 year for HF patients. Follow-up duration after first HF-related hospitalization ranged from 30 days in two studies to 1 year in the other two. Mortality at 1 year was 19.3% (CI95% 17.1-21.6%, I2=85%) and

27.5% (CI95% 21.8-33.6%, I2=97%) for patients with and without cardiological follow-up, respectively. Heterogeneity among the studies has been confirmed. Taking into account only the difference in mortality, the estimated additional cost for the management of a patient with HF with delayed follow-up was 840€ (range 20-1,689€) over a time horizon of 1 year. The analysis focused only on HF mortality and did not take into account the extra costs due to additional visits and hospitalizations for patients with delayed follow-up and still alive and for this reason our results are conservative estimates. The present study showed that the restoration of an adequate cardiological follow-up for HF patients after the COVID-19 period may reduce mortality and costs over 1-year time horizon. In this context, the development of remote monitoring systems may be very useful to improve patients' follow-up by replacing/integrating in-office visits, also in case of new emergencies.

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Title

Has Autonomy and Fiscal Decentralization Increased the Disparities Across Regions in Cancer Mortality? Evidence from Italian Longitudinal Data

Authors

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Abstract

Background & Objectives

In Italy, the southern advantage in tumor mortality is known in literature1-3and the latest evidence confirmed the existence of a North-South gradient in cancer incidence and prevalence at the Northern disadvantage4. However, there is also evidence that trends over the past years have been less favorable in Southern Italy than in the North for many types of tumors, such as breast, colon-rectal and ovarian cancer, and 5-year survival is lower in Southern Italy4. This project intends to shed light on why improvements in cancer survival and mortality has not been experienced evenly by Northern and Southern regions, investigating whether the NHS decentralization may have contributed to disadvantage Southern regions. An economic and social divide between Northern and Southern Italy has existed for many years and has increased over time. Southern regions have less economic, social and human capital resources as well as poorer infrastructures, and this inevitably affects their ability and capability to administer and invest in the healthcare. For this reason, they may not be able to benefit from decentralization and greater autonomy may cause allocative and managerial inefficiency and waste of resources. We hypothesize that the NHS decentralization may have widened the regional divide in health outcomes through a worse management of healthcare resources and less and lower quality inputs in the healthcare system.

Methodology

We created a region-based panel dataset combining data collected from multiple sources (Health for All, ISTAT, 2019; and the Italian Registry of Tumors –AIRTUM) so to cover a time horizon of about 30 years, from the 90s to current time. Age-adjusted cancer-mortality rates were obtained from ISTAT historical time series for all-cancer, stomach cancer, colorectal cancer, lung cancer, breast and prostate cancers. Cancer survival will also be included, given itis considered a more meaningful indicator to interpret progress in cancer care and measure progress achieved by primary prevention, early detection/screening, and therapy. Data will be obtained from the Italian Registry of Tumors (AIRTUM). In order to identify the time point(s) in which the trend significantly changes, we used join point regression model which allowed us to ascertain the significance of potential join-points in cancer mortality using a piecewise linear regression model. Then we assessed trends accounting for regional demographics, socio-economic and behavioral time-varying factors, including percentage of smokers, of foreigner population, unemployment rate, regional GDP per capita, hospital beds per 1000 inhabitants, rate of hospital bed use. We fit a linear model with regional and time fixed effects and allow for their interaction.

Results

Age-adjusted all-cancer mortality rates provided by the Italian National Institute of Statistics (ISTAT) show a declining trend, for each region and both sexes. Northern regions presented higher rates at all points in time, but the regional gap reduced from 1990 to 2015. When we looked at trends controlling for regional demographic, socio-economic and behavioral indicators, we found that trend slopes vary across regions and are flatter in Southern regions, suggesting a slower mortality decline in the South. Planned analysis Finally, we will explore the main hypothesis of the research, by examining whether the resources (inputs) available to each regional government, both via equalization grants and own revenues, as well as their healthcare activities (outputs) are related to health outcomes (i.e. cancer mortality and survival), such that health_outcomest=f(inputst, outputst, Xt), where Xtis a set of regional time-varying controls. This relationship was similarly conceived by Costa-Font and Turati5Example of region's input and outputs include health care deficit per capita, per capita public health expenditure,

percentage of public health expenditure on total health expenditure or proportion of private hospitals on total hospitals.

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Title
The spillover effects of diabetes diagnosis on partners' behaviour: Using HbA1c and fuzzy regression kink design

Authors
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Abstract
Objectives: This study aims to investigate the potential spillover effects of a diabetes diagnosis on the health behaviours of constituent household members. We also aim to estimate potential heterogeneities in these effects.
Methods: Using blood sample data from the Health Survey for England, we use a regression kink design and a seemingly arbitrary cutoff of diabetes risk to causally estimate the effect of a diabetes diagnosis on health-related behaviours. Specifically, we analyse the effect on physical activity, drinking, smoking and diet. The Health Survey for England additionally allows for the identification of other members of the household, and therefore we are also able to estimate the potential spillover effects of partners' diagnosis on own behaviour. We also analyse the difference in this effect across observable characteristic sand use the regression kink design to estimate heterogeneous treatment effects.
Results: We find that individual have a higher probability of undertaking physical activity if they have ever been diagnosed with diabetes. In addition, there is also evidence to suggest that individuals are less likely to currently be a smoker if they have ever been diagnosed with diabetes. However, we find little evidence that individuals consume more fruit and vegetables, or decrease their alcohol consumption as a result of a diabetes diagnosis. Partners' of individuals diagnosed with diabetes also have a higher probability of undertaking physical activity, but we find limited evidence on impacts of diet, alcohol consumption and smoking behaviour. We also estimate these effects to be stable over time, suggesting habit formation behaviour. However, we find no evidence to suggest a heterogeneous impact by socio-economic characteristics, either for the person with diabetes or their partners.
Discussion: We find that there is substantial spillover effects from diabetes diagnosis. Our claim is that this effect is a combination of joint household decision making and health-related information transfer between partners. Further research decomposing these effects would be useful in further understanding the individuals decision making. From a public health perspective, it is reassuring to note that there is compliance to diabetes treatment in terms of physical activity. Our findings should also be of interest to policy makers as we show that there are substantial benefits, in terms of increased physical activity, from early diagnosis of diabetes, beyond what would be usually considered in economic evaluations. However, more work should be done in promoting healthy diets in diabetics and their partners.

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Title
Defining a quality and multi-output adjusted measure of efficiency in primary care in England

Authors
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Abstract
Background: Each year there are approximately 300 million primary care (PC) consultations in England. The Baumol cost-disease model predicts that the productivity of the National Health Service in England (NHSE) workforce will lag the non-service sector due to its labour-intensive nature. In PC this problem is exacerbated as the number of general practitioners per capita has declined over the past decade. Despite NHSE announcement to recruit additional medical workforce in PC, it is important that there is continual improvement in general practice efficiency to ensure that this investment can meet the needs of a growing population and increasingly complex and multi-morbid patients.
Objectives: Using routinely collected data, this study aims to develop a theoretically grounded, pragmatic new measure of labour productivity in PC, as well as examine its variability and determinants, with a focus on the role of skill mix, technology, and patient mix. Overall, the project aims to improve PC efficiency by providing instruments to assess current performance, recommendations on how to improve productivity, as well as a metric for measuring improvement. This oral session will focus on the results of the first project stage: the definition of a new measure of PC efficiency that can account for both quality of care and multiple dimensions of PC output.
Methods: A systematic literature review of peer-reviewed papers was conducted with twin objectives: (1) review existing definitions and measures of efficiency in PC, and (2) identify measures of effectiveness in PC. This approach enables us to determine whether measures of PC efficiency that are suitable to the English context exist and, if not, identify relevant indicators of PC outcomes that can be used to adjust for the quality and multidimensionality of the output. Searches were performed in Ovid and EconLit following the PRISMA guidelines for systematic reviews.
Main results: A total of 2590 non-duplicate records were retrieved. After screening, 42 papers met the inclusion criteria for objective (1). Among the 38 papers that we finally included in the analysis, 65% are from European health systems and 55% focus on general practice or comparable settings (i.e. PC centres). However, no study was analysing PC efficiency in England after the year 2016. Overall, no suitable measure of efficiency for PC in England could be identified. The main limitations of the literature relate to the output definition, which is often expressed in terms of 'volume of activities' (71% of the studies). Among the 18 studies that feature quality adjustments, indicators relating to quality of care processes appear in 72% of the cases. These indicators proxy quality by adjusting for factors (e.g. access, continuity, comprehensiveness, coordination, patient satisfaction) which are known to have a good/ bad impact on health, i.e. intermediate outcomes. However, quality indicators reflecting the achievement of health-related outcomes (i.e. the final outcomes of interest) are only used in 38% of the cases. These limitations are most often a consequence of the lack of appropriate data. To define a vector of quality indicators that can suitably reflect PC output in England, we examined the literature on PC effectiveness. Among the 476 records meeting the eligibility criteria for objective (2), we searched for studies describing frameworks of PC effectiveness. Three frameworks were identified as relevant to our objectives for the following reasons: recent publication date (period 2015-2019); selection of the effectiveness indicators based on sound methodology (i.e. desk-based research and input from multiple stakeholders); the majority of the indicators involve a quality component; the frameworks are relevant and applicable to PC in England. In the next stages of the research, we will analyse these frameworks and extract the effectiveness indicators that best reflect the quality of PC output. The most relevant indicators will be selected in consideration of the objectives of health care in England (i.e. improvement of health) while ensuring that all the relevant areas of PC activity are covered, including undiagnosed cases. A programme of interviews with PC stakeholders will also be run to validate that the selected outcome indicators comprehensively capture efficiency in PC and

reflect appropriately and closely the quality of PC output. The new definition will then be tested in practice using routinely collected patient level data from the Royal College of General Practitioners Research and Surveillance Centre dataset.

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Title
The effect of minimum wages on health in China

Authors
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Abstract
Objectives
Since 2004 the employment regulations in China require that nominal minimum wages should be adjusted at least once every two years in all the provinces of this country. Previous literature mainly focuses on the effects of minimum wages on the employment conditions and income, however the possible effects on the health of workers have received little attention so far. A minimum wage increase might have a positive impact on health through the channel of income or income distribution. However, it might also be adversely linked to health due to a worsening of working conditions (such as the request of higher productivity and/or more working hours). Thus, a priori, the net effect of minimum wages on health is uncertain. By using data from the Wave 1 of the World Health Organization's Study on Global Aging and Adult Health in China (2007-2010), in our study we estimate this net effect.
Methods
We use ten health and well-being domains (mobility, memory, learning, sleep, vision, pain, discomfort. depression and anxiety) as the dependent variables. Since such domains are self-reported and measured on a 5-point categorical scale, the issue of reporting heterogeneity might bias the results of our analysis (King et al. 2004). In order to address this issue, on the top of estimating standard Ordered Probit (OPROBIT) models, we exploit the "vignettes" questions which are provided in the WHO dataset and we estimate Hierarchical Ordered Probit (HOPIT) models. We regress each of the aforementioned health and well-being domains on the real minimum wage, by controlling for standard socio-demographic characteristics, employment and working conditions and characteristics of the living environment (such as safety of the neighbourhood and population density). We also control for unobserved residual heterogeneity by including province level fixed effects and year fixed effects
Results
Results from the OPROBIT suggest that the real minimum wage is negatively and significantly related to several health outcomes. When we consider the results from the HOPIT model, the negative effect of minimum wage appears even larger. As an example, a 100 RMB increase in minimum wage decreases the likelihood of having mental health issues by 6.22%, pain by 13.22% and cognition problem by 15.63%. These negative effects are mostly found for men, for employee in the private sector and with a full time contract.
Discussion
The negative effect of minimum wage on health might be explained by the worsening of working conditions (increase of working days or working effort) which workers experience in response to the increase of minimum wage. To prevent such negative effect, the Chinese Government should pay more attention in regulating the working conditions of workers.

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Title

Demographic, Socio-Economic, and Healthcare Variables Associated with the Rapidity of COVID-19 Spread in Northern Italy: An Ecological Study

Authors

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Abstract

Background: COVID-19 rapidly escalated into a pandemic, threatening 213 countries, areas, and territories the world over. Several variables seem to influence the disease propagation, but there is still uncertainty. For example, social distancing can reduce physical interaction and lowers the chances of spreading illness between people, especially communicable respiratory diseases. Another study evidenced that the number of confirmed cases of SARS-CoV-2 infection is higher in countries with lower yearly average temperatures, higher economic openness, and more robust political democracy.
Objectives: We aimed to identify demographic, socioeconomic, and healthcare factors with a potential impact on virus's dissemination, which could explain between-province differences in the speed of its spread, based on early data from 36 provinces of Northern Italy.
Methodology: This is an ecological study. We included all confirmed cases of SARS-CoV-2 reported between February 24th and March 30th, 2020 in 36 provinces of Northern Italy. For each province, we calculated the trend of contagion as the relative increase in the number of individuals infected between two time endpoints, assuming an exponential growth. Pearson's test was used to correlate the trend of contagion with a set of healthcare-associated, economic, and demographic parameters by province. The virus's spread was input as a dependent variable in a stepwise OLS regression model to test the association between rate of spread and province-level indicators.
Main Results: Contrary to expectations, the present study found that the propagation of SARS-CoV-2 was less pronounced in provinces with the oldest populations, probably due to fewer social contacts. In fact, multivariate analysis showed that the spread of COVID-19 was correlated negatively with aging index (p-value=0.003). On the other hand, factors enhancing the mobility of individuals and their exposure to close social contacts favored the spread of the disease, specifically: employment rate; public transportation usage (p-value=0.012); in-house density; and population density. Also, we found a positive association, albeit to a lesser extent (p-value=0.070), with the % of private long-term care hospital beds, and more strongly with the % of private acute care hospital beds (p-value=0.006). Our findings suggest that specific demographic, socioeconomic, and healthcare factors can reduce or increase the spread of SARS-CoV-2 among the population, and could help in dealing with the pandemic in at least two ways. First, knowing these factors, stakeholders could direct their interventions to specific areas and populations in order to mitigate the risk of contagion. Second, analyzing how these indicators interact with forecasted contagion rates could help disease modeling in better predicting contagion and healthcare resources utilization curves. For example, an aging population seemed to naturally contain social contacts and must be informed early during pandemics to stay at home. Moreover, the availability of healthcare resources and their organization and coordination could play an important role in spreading infection, thus advocating for an early activation of regional and national coordination frameworks, as per Sendai Framework for Disaster Risk Reduction 2015-2030 recommendations.

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Title
Immigration and utilisation of preventive healthcare in Europe: Results from SHARE Job Episodes Panel

Authors
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Abstract
Access to preventive healthcare is particularly important as it is a crucial determinant of future risk of chronic diseases. However, immigrants' utilisation of preventive care may differ from that of non-immigrants/natives for various, interrelated factors, such as: familiarity with the health care system in the host country, needs for care, demographic, socioeconomic, regional and cultural factors, and their interaction with relevant institutional dimensions. Using the latest release of the Survey of Health, Ageing and Retirement in Europe (SHARE), we estimate the effect of migration status and number of years since migration (a proxy for an assimilation effect) on the utilisation of major preventive healthcare services (including dental, blood pressure, and gynaecological check-ups, mammograms, blood, and vision tests) in Europe. We find a statistically significant and negative effect of migration on the utilisation of major preventive care services, except for dental check-ups, indicating that migrants are less likely to use preventive health care services. However, the probability of utilisation of preventive care increases with an increase in the number of years since migration and diminishes after a certain point, suggesting the presence of a possible assimilation effect. Moreover, cultural differences, referral habits in the country of origin, language barriers, and discrimination are possible factors that should not be overlooked. Since the heavy burden (both individual and social) of chronic diseases can be reduced significantly through a proper, more frequent, use of preventive care, our analysis suggests that future studies should try to disentangle these dimensions to design more prudent policy measures.

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Title
Immigration and utilisation of preventive healthcare in Europe: Results from SHARE Job Episodes Panel

Authors
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Abstract
A debate in health economics is if economic downturn affects health, and how it does. Whereas the effect in some health aspects, such as mental health, is well established in the literature, the relationship between economic status and some health outcomes remains unclear. In this paper, we exploit the particular case of Spain, where the unemployment rate almost tripled after the Great Recession. We estimate the effect of an unemployment spell, and the effect of the economic downturn on unemployeds self-evaluated health status. In addition, we look at the effects on health related outcomes, such as risky behavior, medical attendance and objective health measures. Whereas we find an impairment of self-reported health, we find a mixed evidence of the effect on health determinants.

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Title
Technological progress and health convergence: the case of penicillin in post-war Italy

Authors
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Abstract
Throughout history, technological progress has transformed population health, but the distributional effects of these gains are unclear. New substitutes for older, more expensive health technologies can produce convergence in population health outcomes, but may also be prone to "elite capture," leading to divergence. This paper studies the case of penicillin using detailed historical mortality statistics and exploiting its sharply-timed introduction in Italy after World War II. We find penicillin reduced both the mean and standard deviation of infectious diseases mortality, leading to substantial convergence across disparate regions of Italy. Our results do not appear to be driven by competing risks or confounded by mortality patterns associated with World War II.

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Title
Analysis of social deprivation and health conditions of the elderly people in Italy: evidence from SHARE

Authors
Martina Celidoni, Silvia Coretti, Chiara Dal Bianco, Vincenzo Rebba, Lorenzo Rocco

Abstract
Introduction and aim. This piece of research is part of the HAPPY (Health Accessibility transport Public Policies for elderlY) project concerned with understanding which suitable public transport policies could contribute to increase positive social connections and health conditions of the ageing population by considering different Italian contexts, such as densely populated (urban) and more remote (inner)areas. At this stage, we focus on the potential health needs of the elderly over 65s , across the national territory and within Veneto and Lombardia, that are the regions of interest for the core part of the HAPPY project.
Methods.We analyze selected items of the Survey of Health, Ageing and Retirement in Europe (SHARE) to study the social deprivation index in Italian geographical areas and its correlation with several measures of health. Moreover, we analyze several items of the Survey of Italia n Households conducted by the Italian National Institute of Statistics in 2017, to describe the general health status and access to health care services by individual ls aged 65 and over in Lombardia and Veneto regions.
Results. The social deprivation index is higher in southern and central regions. For Veneto and Lombardia, itis lower than the national average. Health deterioration and social deprivation are strongly positively correlated, with individuals in poor health showing higher levels of social deprivation on average. The average social deprivation for individuals having no limitations is lower compared to individuals having at least one limitation in the Activities of Daily Living (ADL) or the Instrumental Activities of Daily Living (IADL). Finally, the average social deprivation index tends to be higher for individuals at risk of developing sarcopenia. In Lombardia, 45% of individuals between 65 and 74 years of age reports good or excellent health. The share drops to 32% in the older population group (over 75). The most common chronic conditions are arterial hypertension, osteoarthritis, high blood pressure and myocardial infarction. In Veneto, more than 40% of individuals aged 65-74 reports good or very good health. This percentage drops to 32% in the older age cohort. The most common chronic conditions are arterial hypertension and osteoarthritis. In both regions, patients most often access the NHS (National Health Service) services for blood sampling and diagnostic services.
Conclusions. These results provide us with useful information in order to ascertain the health care and mobility needs of the elderly and will inform the next stages of the HAPPY research project.

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Title
Unverifiable quality in healthcare sector: relational contracts and political stability

Authors
Bernardino Cesi, Silvia Coretti, Luca Salmasi

Abstract
Background. The evaluation and definition of quality in health care service is a major concern since it involves several aspects like appropriateness of the service, the productive process and the structural characteristics of the hospitals. The quality of services provided by hospitals, for example is determined by both hotel services (i.e. convenience, comfort, quiet and privacy) and professional assets (i.e. knowledge, technical abilities and interpersonal skills of doctors).
Aim. We study a repeated interaction between the purchaser of an health service and a non-altruistic provider when the aspects of the service are both unverifiable and verifiable.
Methods .We theoretical formalize a Pay-for-Performance Relational Contract (P4P-RC) inducing the provider, though non-altruistic, to deliver positive unverifiable quality. Then, we empirically test the association between the C-section rate and the permanence in charge of the Italian regional governments looking at regional data from 1996 to 2016. We run a standard OLS approach and control for health, socioeconomic, supply and contractual factors.
Results .In the theoretical model, with respect to the first best scenario where all quality components are verifiable (then contractible), the P4P-RC induces no distortion on the condition for the optima l price but distortions on the conditions for both levels of quality. The incentive of the provider to cheat on the unverifiable quality because its nature of non-contractibility makes the purchaser less willing to substitute a way unverifiable with verifiable quality. Moreover, we find that the higher the stability of the interaction between them the higher the willingness to deliver the first best level of unverifiable and verifiable quality. The empirical analysis confirms the predictions of the theoretical model: we find that the C-section rates decreases in contexts where regional governments are more stable.

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Title
Birth Volume and Maternal Health: Evidence from Italy

Authors
Martina Celidoni, Silvia Coretti, Luca Salmasi

Abstract
Background. The practice-makes-perfect (PMP) and selective-referral-patterns (SRP) hypotheses generally are presented in the literature as leading explanations of the volume-outcome relationship. Under PMP, the more cases of a specific diagnosis are treated, the better the clinical outcomes are; under the SRP hypothesis, patients self-select into higher quality hospitals. Thus, only PMP supports policies based on minimum volume standards, as recently proposed in many countries.
Aim. We estimate the effects of birth volume on severe maternal complications for caesarean sections and normal deliveries in Italy using maternity ward data.
Methods . We use data from the National Outcome Evaluation Programme on the universe of Italia n maternity wards for 2008-2017merged with information about Italian hospitals location, type of ownership and first opening. Finally, we collected data by province and year about mothers' average age at first child, total fertility rate (TFR), real GDP per-capita, unemployment rate and share of immigrants from the Italian Statistical Institute (ISTAT).The outcome of interest is maternal post-partum complications within 42 days from delivery. We adopt a DD model to account for time-invariant differences across maternity wards that could influence both birth volume and the outcomes. In addition, we investigate whether severe maternal post-partum complications are affected by birth volume positive or negative variation, or by both and whether a North-South gradient exists.
Results . We estimate significant, negative effects of birth volume on severe maternal post-partum complications , with a 10% increase in birth volume generatinga1.01 percentage-point decrease in the probability of complications after normal deliveries and a 6.5 percentage-point decrease after C-Sections. Findings are heterogeneous across geographical areas (Northern, Central or Southern Italy) and by hospital ownership (public or private). We did not find significant effects of closures on birth volume, implying that remaining wards were not heavily affected by changes in demand composition following the reallocation of patients after closures.
Conclusions. Differentiated thresholds by type of delivery may be considered in order to minimize the risk of severe maternal post-partum complications. In order to maintain high standards of quality of care a maternity ward should see at least 1,000 births per year.

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Title
Unverifiable quality in healthcare sector: relational contracts and political stability

Authors
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Abstract
Background. The evaluation and definition of quality in health care service is a major concern since it involves several aspects like appropriateness of the service, the productive process and the structural characteristics of the hospitals. The quality of services provided by hospitals, for example is determined by both hotel services (i.e. convenience, comfort, quiet and privacy) and professional assets (i.e. knowledge, technical abilities and interpersonal skills of doctors).
Aim. We study a repeated interaction between the purchaser of an health service and a non-altruistic provider when the aspects of the service are both unverifiable and verifiable.
Methods .We theoretical formalize a Pay-for-Performance Relational Contract (P4P-RC) inducing the provider, though non-altruistic, to deliver positive unverifiable quality. Then, we empirically test the association between the C-section rate and the permanence in charge of the Italian regional governments looking at regional data from 1996 to 2016. We run a standard OLS approach and control for health, socioeconomic, supply and contractual factors.
Results .In the theoretical model, with respect to the first best scenario where all quality components are verifiable (then contractible), the P4P-RC induces no distortion on the condition for the optima l price but distortions on the conditions for both levels of quality. The incentive of the provider to cheat on the unverifiable quality because its nature of non-contractibility makes the purchaser less willing to substitute a way unverifiable with verifiable quality. Moreover, we find that the higher the stability of the interaction between them the higher the willingness to deliver the first best level of unverifiable and verifiable quality. The empirical analysis confirms the predictions of the theoretical model: we find that the C-section rates decreases in contexts where regional governments are more stable.

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Title
What is the monetary cost of cognitive decline in Europe? Evidence from the SHARE and ELSA dataset

Authors
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Abstract
Cognitive impairment and, in its most severe form, dementia, are a major cause of disability and need of Long Term Care (LTC) for older people. While it affects around 10 million people in Europe, its prevalence is expected to double by 2030, placing a substantial economic costs for governments, communities, families and individuals, and to loss in productivity (WHO, 2017). Projections of future shares of individuals affected by cognitive situations are increasing and, according to the recent OECD report (Oliveira Hashiguchi & Llena-Nozal, 2020), the demand for LTC is expected to increase and likely double by 2070 across all EU Members. But a comprehensive measure for LTC is difficult to estimate given the several dimensions included (such as the opportunity cost of informal care or the unplanned admissions associated with LCT necessities), so the mere national government expenditure on LTC seem to be only a fraction of the real societal cost. However, there is very limited knowledge on the costs of cognitive decline for older individuals in Europe, while a recent analysis from the US found that the monetary cost of dementia will more than double from 2010 to 2040, passing from 109 to 259 billion dollars in terms of care purchased in the marketplace. These costs represent a financial burden similar to the one for heart disease and cancer (Hurd & al., 2013). Therefore, our analysis has a particular interest as it will allow to compare the European context to the US context described by (Hurd et al. 2013). The findings will shed some light about how different institutional and cultural backgrounds reflect on individuals affected by mental problems and how this might influence the ageing process.
Exploiting comparable data from the Survey of Health, Ageing and Retirement in Europe (SHARE)and the English Longitudinal Survey of Ageing (ELSA), we aim at quantifying the total individual costs of major cognitive decline as determined by its impact on the use of formal and informal care. Our datasetprovideshigh-qualitylongitudinaldataonolderindividualsaged50andabove for the period 2002-2017, including information about current and retrospective health status (including childhood health). We also employ information on costs and use of LTC in terms of out of pocket expenditure, doctor visits, hospitalizations, and home-care received from formal and informal caregivers. These surveys follow individuals overtime, including their transition to nursing home: this enable us to take advantage not only of the pre-existing conditions of the respondents, but also of the situation in terms of care and costs of individuals affected by mental health shocks. We define cognitive decline by exploiting two sources of information: first, the self-reported diagnoses of dementia, senility and Alzheimer disease; and second, we consider as affected by cognitive decline those individuals which experience a drop of at least 20% (or alternatively, 50%in alternative specifications) in the memory skill tests from the previous interview (Celidoni et al., 2017).The analysis will follow the methodology introduced by Hurd et al (2013): first, we will estimate the probability of having dementia using a statistical prediction model which exploits information about the cognitive index and demographic characteristics. Second, we will estimate a multivariate regression models regressing the individual cost of LTC as a function of the probability of dementia, and comorbidities such as coexisting chronic conditions (e.g., diabetes, hypertension, heart diseases); and demographic characteristics. As measures of LTC costs we will employ the out of pocket expenditure, the individual's hospitalization, formal home-care utilization, and informal home-care use. We will compute a monetary value for hospitalization, formal and informal care use, using either existing public tariffs (for hospitalization and formal care) or the market-value of an equivalent service form informal care (the so-called "replacement cost"). After obtaining the individual's cost, we will calculate the total societal annual cost of cognitive decline and dementia, by taking into account the prevalence and future predictions of mental decline. From a preliminary analysis, the prevalence of dementia cases is spread heterogeneously across European countries, with a prominent diffusion in Spain, Austria, Portugal, Slovenia, Poland and Hungary. Prevalence of

dementia shows a socio-economic gradient, with lower educated and low-income individuals are more affected than those in higher socioeconomic status. Moreover, widow(er)s or individuals never married seem more at risk than married or separated/divorced respondents. Finally, gender disparities emerge with women being more likely to report such diagnoses. From these initial findings, it is straightforward to notice that the categories at risk of cognitive decline are those already found more exposed to job losses and wage pay gap, social isolation and marginalization, as well as risky conducts such as smoking and drinking, potentially evolving in the onset of chronic conditions. The aforementioned categories are those more likely to request social protection and calling for the intervention of welfare systems.

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Title
Provider Quality and Patient Mobility: Is There a Neighbourhood Effect in Hospital Choice

Authors
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Abstract
Free healthcare provider choice as an indicator of system responsive-ness is not only a policy goal of itself, but can potentially raise the quality of the public healthcare sector, as under fixed prices, hospitals are incentivized to compete on quality. This is especially relevant for elective procedures such as hip replacements, where patients can carefully select their providers based, amongst others, on quality indicators. While there is evidence that quality is a relevant driver of patient choice, this paper us particularly interested in identifying a potential neighbourhood effect in the information flow regarding provider quality. We exploit a dataset of all Italian patients over 65 who underwent hip replacement surgery from2010 to 2015. We split the quality indicator (in-hospital mortality, revision and surgical complication rates) into one that is based on the global information and one based on local information. The former is the overall quality as experienced by all the elderly patients in Italy, while the latter is the quality as it was experienced by patient's from the same municipality. Based on the theoretical and empirical literature on patient choice, we build our analysis on a patient-level additively separable utility function to obtain the random utility choice model, which we estimate using both conditional- and mixed- logit models. We control for all observed hospital characteristics, patient volume, case-mix and travel time, and standard errors are clustered at the municipality level. All our quality indicators are lagged, with the local quality indicators calculated as the average of the three years prior to the observed year in order to reduce the noise from low number of observations at the municipality level. We also split the population into urban and rural residents, and calculate the patients' willingness to travel for the different quality indicators. The patient choice model showed that there is significant neighbourhood effect of the choice of hospitals, while the role of local quality in influencing the patient choice is less pronounced than the global quality of the hospital.

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Title
The future of the elderly population health status: filling a knowledge gap

Authors
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Abstract
The ageing process in OECD countries calls for a better understanding of the future disease prevalence, life expectancy and patterns of inequalities in health outcomes. In this study we present novel results obtained from combining different FEM-like models for twelve OECD countries (Austria, Belgium, Denmark, France, Germany, Italy, Spain, Sweden and Switzerland, Korea, Mexico and US), with the aim of reproducing for the first time comparable long- term trends in individual health status. The FEM is a multi-risk and multi-morbidity state-transition dynamic microsimulation model for projecting the health status of the population, aggregated from projecting individual lives. Given the dynamic structure of the model, we allow individual health status to evolve over time according to individual characteristics. Our model provides forecasts of the evolution of life expectancy and prevalences of major chronic conditions and disabilities, overall, by gender and by education. We find a catch-up of the considered European countries main chronic conditions prevalence with the US and a relevant and persistent educational gradient in the health status of elderly patients. Our findings represent a valid contribution to support policy makers in designing and implementing effective interventions in the healthcare sector.

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Title
Mobility during the COVID-19 pandemic in Italy: the role of contagions and social connectedness

Authors
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Abstract
The crucial consequences of mobility on the spread of the Coronavirus (COVID-19) have been extensively studied, with specific focus on the Italian situation. Aim of our project is to study what are the determinants of mobility itself, so to understand why traffic flows exist, and are substantial, even when lockdown measures are active. We study mobility within and between Italian provinces using the daily movement flows provided by Facebook, with the dyadic nature of such data allowing us to exploit spatial and network analysis methodologies. Together with a set of province-specific demographic and economic characteristics, we focus on the effect played by three potential drivers of mobility during the pandemic. We use Facebook social connectedness index in order to control for the level of social interactions within and between Italian provinces. Furthermore, we control for the number of positive cases announced in order to check whether spreading (bad) news on the pandemic has a detrimental effect on mobility. Lastly, we focus on the prevalence of specific working sectors and distinguish between activities that were deemed essential and therefore were not stopped during the lockdown.

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Title
Health Status and the Great Recession. Evidence from Italian Electronic Clinical Records

Authors
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Abstract
In virtually all societies, health status is directly related to socio-economic conditions and those with high incomes are usually healthier and generally live longer. Also people with better employment prospects are likely to enjoy better mental, physical and social health.
In this paper we estimate the effect of the surge in unemployment on the incidence of chronic disease during the GR. In an event study setting, we exploit the heterogeneity in the province level unemployment rise occurred in 2008 and analyze how the slump in economic conditions affected individual level incidence of disease, which in our baseline setting concentrate on cardio-vascular (CVDs), liver, pulmonary and mental disease. We employ a longitudinal dataset collected by general practitioners (GPs) between 2004 and 2017 for a large nationally representative sample of the Italian population, which traces patient level clinical history and allows us to control for individual specific fixed effects. We are thus able analyze individual evolution of disease in response to different extent of unemployment growth due to the GR. In particular, however, the effects of economic conditions are likely to differ substantially according to various health measures: insurgence of specific diseases may be a more timely short-run indicator than mortality.
Our results point to a sharp and significant impact of unemployment on the incidence of two major disease groups, namely CVDs and depression. We also find that the health effects of the GR are disproportionately distributed in the population, with women and older individuals (aged 46 and older) more affected by CVDs. For depression, we find that men and individuals close to the retirement age (56-64) are more affected by the GR, which is plausibly driven by worse employment prospects in case of displacements for this age group. We find no effects of the GR on pulmonary and liver diseases incidence. In a series of robustness check, we also test the short-run effects on cancer, we run placebo regression changing the reference year and study incidence for people aged more than 65 and, as expected, we detect no statistically significant results. Our findings point to specific channels through which economic downturns might affect health. Policy makers should bear in mind that prolonged economic downturns constitute an additional external risk factor for individual health, and not a temporary benefit as suggested by several studies analyzing the effect on mortality.

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Title
Vax populi: social costs of fake-news on childhood vaccines

Authors
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Abstract
The main goal of media policies nowadays is to ensure high quality and reliability of information from different sources. The increasing number of “free of charge” information sources can affect the ability of consumers to discriminate “good” from “fake” news, generating substantive social costs. The link between vaccines and autism continues to be one of the most spread false news, in spite of recent outbreaks of measles and other vaccine-preventable diseases. A growing share of parents not only opts out from children vaccinations, but also spreads the fake news, reinforcing the cascade of misinformation. The purpose of this project is to measure the impact of anti-vax propaganda on healthcare costs related to vaccine-preventable diseases among non-target population (i.e. newborns, pregnant women and immunosuppressed individuals). To the best of our knowledge, our project might be the first one to use detailed data on the geographical distribution of the no-vax fake news diffusion in relation costs derived from micro data on daily hospitalizations for vaccine-preventable problems. We identify pro and anti-vax Italian tweets that are potential targets for the intensity of the news diffusion from Twitter through web-scraping at municipality/day level. We will subsequently link the data at the municipality/year level to hospital admission data relative to the universe of Italian patients and vaccine coverage data. In an IV setting we will assess the effect of anti-vax network on the decreasing level of herd immunity in order to estimate the excess costs due to adverse vaccine-preventable episodes in the non-target population. We will conduct several falsification tests and robustness checks to support the reliability of the results. Finally, we will conduct placebo exercises exploiting the recent Lorenzin’s decree on the compulsory set of vaccines.

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Title
The side effects of COVID-19: the impact of lock-down on the use of health care services by older patients

Authors
Cinzia Di Novi, Lucia Leporatti, Marcello Montefiori

Abstract
Background
The worldwide crisis due to COVID-19 had an impact on almost every aspect of our society, including patients' health care utilization behaviours. In the Italian context, in the face of an increase in patients within the intensive care of many hospitals, there has been a collapse in the demand for health services for diseases other than COVID-19. There are two determining factors: on the one hand the fear of contagion, which has pushed a large part of the population to "give up treatment", on the other the adaptation of health services to the emergency COVID-19, which resulted in the postponement of all deferred specialist services and non-urgent interventions. A first study on the French reality (Marijon et al., 2020) found a clear correlation between pandemic and incidence of cardiac arrest cases in the out-of-hospital setting. The risk is that the reduction in the use of health services is the cause of medium and long-term effects with heavy repercussions both on citizens' health and on public health costs. This risk is amplified in countries characterized by particularly old demographic structure. The elderly population is in fact the one most at risk of complications related to COVID-19 [Chen et al, 2020], but, at the same time, often suffers from chronic pathologies (Istat estimates that more than 85% of the over 74 years old suffer from a chronic pathology) and therefore needs to use health services. Self-isolation, lockdowns and restrictions on people's movement have represented a major problem for patients with chronic diseases requiring healthcare services and prescription refills since access to health facilities and their attending physicians have been often denied.
Objectives
In this paper we analyze how the demand for health services has changed in response to the lockdown. The goal of the paper is to identify the risk factors (socio-demographic and clinical) associated with the failure to use health and pharmacological services during lockdown. The "profiling" of patients "excluded" from health services is in fact a fundamental step for the definition of guidelines and good practices aimed at limiting the indirect relapse of the virus. To date, there are no exhaustive scientific studies able to describe how the COVID-19 emergency has changed the use of health services and to predict what will happen in the near future.
Methodology
In detail, the Real World Evidence study aims to compare a pre-COVID period and a COVID period in terms of use of medical services. The data refer to the population of the San Martino Polyclinic Hospital, Genoa (Liguria)and include the following administrative flows: Emergency Department (ED) Registry, Hospitalizations, Specialized Visits. Liguria is the oldest region in Italy and today presents demographic scenarios which, according to Eurostat forecasts, will take place in most European countries in more than 20 years. Since chronicity and demographic aging are closely related, Liguria represents a natural laboratory of great interest for analyzes related to the COVID emergency.
Expected Results
The results of the analysis have important policy-implications; the long duration of the COVID-19 emergency (as well as its possible exacerbation), could have significant repercussions on the health of people affected by serious or chronic diseases. The sharp contraction of specialist visits, the renunciation of access to the ED, the increase in non-compliance with drug therapies, the loosening of attention to prevention, can all have effects, direct and indirect in the medium-long term. This risk is clearly "increased" for the most fragile and / or elderly patients.
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Title
The side effects of COVID-19: the impact of lock-down on the use of health care services by older patients

Authors
Cinzia Di Novi, Lucia Leporatti, Marcello Montefiori

Abstract
Background
The worldwide crisis due to COVID-19 had an impact on almost every aspect of our society, including patients' health care utilization behaviours. In the Italian context, in the face of an increase in patients within the intensive care of many hospitals, there has been a collapse in the demand for health services for diseases other than COVID-19. There are two determining factors: on the one hand the fear of contagion, which has pushed a large part of the population to "give up treatment", on the other the adaptation of health services to the emergency COVID-19, which resulted in the postponement of all deferred specialist services and non-urgent interventions. A first study on the French reality (Marijon et al., 2020) found a clear correlation between pandemic and incidence of cardiac arrest cases in the out-of-hospital setting. The risk is that the reduction in the use of health services is the cause of medium and long-term effects with heavy repercussions both on citizens' health and on public health costs. This risk is amplified in countries characterized by particularly old demographic structure. The elderly population is in fact the one most at risk of complications related to COVID-19 [Chen et al, 2020], but, at the same time, often suffers from chronic pathologies (Istat estimates that more than 85% of the over 74 years old suffer from a chronic pathology) and therefore needs to use health services. Self-isolation, lockdowns and restrictions on people's movement have represented a major problem for patients with chronic diseases requiring healthcare services and prescription refills since access to health facilities and their attending physicians have been often denied.
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Title
The role of food insecurity and home ownership in income-related inequalities of dental care use and access. The case of Canada

Authors
Margherita Giannoni, Michel Gringon

Abstract

Background and objectives

In this study, we assess the contributions of food insecurity and home ownership to income-related inequalities in dental care use and access. It has been documented that income is a strong determinant of dental care use in Canada, mostly due to the lack of public coverage for dental care. As a result, Canada shows a strong pro-rich inequity in dental care use. Moreover, income per se, rather than other determinants linked to income (such as education or private insurance coverage) is the main contributor to this inequity. In this study, we propose to add two determinants of dental care use, that correlate with income but add information on purchasing power that is not entirely captured in income: food insecurity, and home ownership. The former, reflecting how likely it is that a household cannot afford the required quantity and quality of food, is a measure of purchasing power, and we posit that food insecurity may vary across households with similar income levels, especially in Canada where food prices vary across geographies (prices are higher in northern, rural communities or in rapidly expanding provinces such as Alberta than in the rest of the country. Also, home ownership can affect purchasing power for a given level of income, especially in Canada and after a decade of rapidly increasing housing prices in some urban centers. It has already been shown that these two variables influence oral health status, and dental care utilization but their impact on income-related inequities in dental care use and access to dental care (measured as not having encountered unmet need for dental care) has not been studied yet. We will add to the literature by testing if introducing these two variables modifies the effect of other socioeconomic determinants on equity in dental care use and access to dental care.

Data and methods

The analysis is based on data from the 2013-2014 Canadian Community Health Survey (CCHS), conducted by Statistics Canada. CCHS is a large survey, representative of the Canadian population. We estimate the income-related Health Inequity (HI) indexes for: a) the probability of visiting a dentist or orthodontist in the last 12 months before the interview and b) the probability of never having visited a dentist or orthodontist in the three years before the interview, as a proxy for lack of access to dental care. Self-reported unmet need is our measure of access (or lack thereof). We conduct the analyses for the country as a whole, and within each of its main regions (Territories, Atlantic, Quebec, Ontario, Prairies, British Columbia). Last, we re-estimate the two models with an enriched set of variables for dental care available only for Ontario. All models are estimated on weighted observations, the bootstrapped weights being provided by Statistics Canada.

Results

There is pro-rich inequity in the probability of visiting a dentist or an orthodontist. Similarly, the rich are less likely to report unmet need to dental care in Ontario. Inequities vary across jurisdictions. Housing tenure and food insecurity contribute importantly to both use and access to dental care.

Conclusions

Home ownership and food insecurity add information to the variation in utilization and access to dental care that is not captured by income and other standard socio-economic determinants. We cannot interpret this as a causal relationship, from food and housing insecurity to dental care use, as these two variables can be caused by unobservable characteristics that also affect dental care use. The links

between income, food insecurity, housing insecurity and dental care need to be explored further. However, our study suggests that redistributing income may not be enough to reduce inequities in dental care use and access to dental care. What matters is redistributing purchasing power, which varies substantially for a given income level.

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Title
Valutazione economica di strategie diagnostiche prenatali non invasive (NIPT-contingente) in Regione Friuli Venezia Giulia

Authors
Michele Cuccaro, Elena Pizzo

Abstract

[Background] Ad oggi, il calcolo del rischio che il feto possa essere affetto dalle aneuploidie cromosomiche più frequenti (T_{21}, T_{18} e T_{13}), è offerto a tutte le donne nel primo trimestre di gravidanza mediante il test Combinato del primo trimestre (FTC, *First Trimester Combined Test*). L'ecografia della translucenza nucale oltre ad essere un importante indicatore nella stima del rischio di aneuploidie fetali, è un valido metodo per identificare i feti a rischio per altre anomalie cromosomiche. Nel caso in cui il Test Combinato suggerisca un rischio elevato di patologia cromosomica nel feto, valore soglia di rischio ≥1/300 è offerta la possibilità di eseguire una diagnosi prenatale invasiva per analizzare il cariotipo fetale (amniocentesi e villocentesi). In Italia l'introduzione e la commercializzazione dal 2011 del test prenatale non invasivo (*Non invasive Prenatal Testing* - NIPT), ha di fatto cambiato il modello tradizionale di screening del primo trimestre, basato sul test combinato. Il nuovo test di screening ha un'elevata sensibilità e specificità, ed è stato raccomandato per l'identificazione delle principali aneuploidie, come la trisomia 21 (sindrome di Down), la trisomia 18 (sindrome di Edward), e la trisomia 13 (sindrome di Patau). In NIPT valuta il rischio di aneuploidie fetali attraverso l'analisi quantitativa del DNA libero fetale attraverso un semplice e non invasivo prelievo di sangue materno. L'implementazione del test NIPT nella pratica clinica può essere realizzata con due modelli alternativi: (i) NIPT come test di prima scelta, anche definito "*Universal* NIPT", a partire dalla 10° settimana di gestazione, e in sostituzione dell'attuale test combinato. (ii) NIPT come test di seconda istanza "*Contigent* NIPT", riservata ad una determinata sotto-popolazione, individuata "a rischio" con il test combinato. In questo caso, il *cut-off* di rischio è definito apriori secondo criteri di performance globale dello screening e, ovviamente, secondo criteri clinici comprovati dalla letteratura scientifica. Attualmente il test NIPT è offerto alle donne in ambito privato, in un regime deregolamentato ed estremamente difforme da un laboratorio all'altro. In Italia alcune Regioni hanno adottato diversi DGR per regolamentare e implementare il test NIPT nel percorso di diagnosi prenatale, basandosi sulle valutazioni di appositi tavoli tecnici regionali. La regione Toscana è stata la prima in Italia ad implementare il test NIPT contingente (*risk cut-off* tra 1:301 – 1:1000), mentre la Regione Emilia Romagna ha avviato una fase pilota di offerta dei NIPT come test di screening universale. Attualmente, in Regione Friuli Venezia Giulia il percorso di diagnosi prenatale prevede come test di screening il test combinato. L'evidenza scientifica internazionale e nazionale attualmente disponibile dimostra una ampia variabilità dei risultati tra i diversi studi, a cui si aggiunge una incertezza legata alla trasferibilità *tout court* dei risultati nel contesto italiano e regionale. Non è pertanto chiaro quale sia, ad oggi, la migliore strategia di screening prenatale in Regione Friuli Venezia Giulia. **[Obiettivi]** Questo lavoro ha l'obiettivo di identificare il costo, l'efficacia e il rapporto costo-efficacia di diversi percorsi di screening prenatale in Regione Friuli Venezia Giulia. **[Metodi]** È stata condotta un'analisi di costo-efficacia utilizzando un modello decisionale ad albero per confrontare strategie alternative di test prenatale: a) Test NIPT modello Universale (U-NIPT) b) Test contingente 10 (TC+NIPT 1:10); c) Test contingente 100 (TC+NIPT 1:100); d) Test contingente 300 (TC+NIPT 1:300). I parametri utili ai fini dell'analisi, incusi i dati demografici, di prevalenza della malattia, la sensitività e specificità dei test, probabilità, dati di costo e outcomes sono stati ricavati da fonti regionali, nazionali o dalla letteratura. L'orizzonte temporale del modello é quello di durata media della gravidanza e non è stato applicato il tasso di sconto in quanto l'orizzonte non supera un anno. La prospettiva dello studio per la valorizzazione dei costi é quella del Sistema Sanitario Regionale della Regione Autonoma Friuli Venezia Giulia. I costi inclusi nello studio comprendono i costi dei test diagnostici, invasivi e non invasivi, e le procedure richieste in ciascun percorso. Le misure di outcome considerate nello studio sono: a) numero di casi

T21 diagnosticati; b) numero di falsi positivi e falsi negativi; c) numero di test diagnostici invasivi eseguiti; d) numero di aborti dovuti alla procedura invasiva. Per tenere conto dell'incertezza incorporata in alcuni dei parametri é stata condotta una analisi di sensitivitá univariata, variando il costo del test. **[Risultati]** I risultati dimostrano che, rispetto alla strategia attuale (test combinato), il modello contigente (test combinato associato al NIPT) è più costo-efficace: Su una popolazione di riferimeno di circa 8000 gravidanze singole, consente un risparmio di risorse (tra €10,000 e €13,000 risparmiati) a fronte di una maggiore efficacia nel diagnosticare casi di T21 (22 versus 20), evitare casi di falsi negativi (1 versus 3) e falsi positivi (da 7 a 64 versus 341), con un risparmio in termini di test diagnostici invasivi evitati (tra 43 e 91 versus 298). La tipologia di test più efficace tra le tre strategie (1:10, 1:100, 1:300) varia in base al tipo di outcome di interesse: la terza opzione è la più costo-efficace sia in termini di diagnosi corrette che di test invasivi evitati. L'analisi di sensitivitá univariata condotta variando il costo del test NIPT conferma i risultati descritti. In conclusione, i risultati di questo studio raccomandano l'utilizzo del test diagnostico NIPT modello contingetne con valori soglia 1:300.

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Title
Improving health performances: To what extent patient satisfaction may influence quality?

Authors
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Abstract
[Background] Patient satisfaction constitutes an objective to achieve in the provision of qualitatively adequate health services; it relies on patient involvement that is obtained through surveys aimed at letting patient to express their opinion on the health care received. Patients may provide the best source of accurate information, primarily on issues such as clarity of explanations given by physicians or barriers to care, accessibility and cleanliness of health structures. The possibility that data collected from patients may be biased, however, is a risk to deal with, and many factors may influence the kind of feedback obtained. [Objectives] This analysis summarises the experience of a sample of patient interviewed at the University Polyclinic in Messina (Sicily, Italy) and provides a detailed assessment of the satisfaction of patients who experienced health services at different Departments. This study enriches the existing literature on patient satisfaction and is aimed at rethinking the organization of the health assistance offered at University Polyclinics, with the primary objective to guarantee the highest patient satisfaction. [Methodology] Information collected through a specific survey is used to build a dataset with more than 350 observations. Regressors are carefully selected and compared through a radar chart. A rigorous empirical methodology, based on the estimation of a logistic model, is then applied. [Results] Results outlines how factors relevant for patient satisfaction are related both to the ambulatory where the health care is provided and its characteristics (availability of parking, cleaning of waiting rooms), together with the judgement about the quality of care received by physicians and nurses. A low odd ratio value emerged from the analysis, for the Department of Emergencies; it may reveal the criticities in organizing the activities of this department, because of the high number of patients who access it yearly (27.6% of the total number of patients in the sample) and an insufficient number of health professionals. Other crucial factors in determining a higher satisfaction were the availability of parking lots, the cleaning of structures and the judgment on physicians, the latter endorsing the high probability of being highly satisfied when expectations on physicians' competences and professionalism are confirmed. The "Contact details", *i.e.* the indications of the people to contact in case of need, strengthen the overall positive experience of patients.

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Title
Should I care or should I work? The impact of working in older age on caregiving and outcomes

Authors
Ludovico Carrino, Vahé Nafilyan, Mauricio Avendano

Abstract
[Background] Ageing societies face an important policy trade-off: increasing demand for long-term care (LTC) require Governments to tighten access to formal-care services, transferring care-responsibility to family and friends. Concurrently, governments have also raised the State Pension age to increase the labour supply of older workers, particularly women. In this study, we examine how increased labour supply due to increases in the State Pension age affects the amount of care provided by women to dependent family members and friends in the UK. This question has wide policy relevance, as informal care represents the largest source of care in OECD countries, with substantial economic value. In the UK, more than 30% of caregivers are aged 55 to 65 and are predominantly female. Economic models predict that increasing the state pension age reduces informal care provision, as the opportunity costs of caring increases for those that postpone retirement. However, if the caregiver is altruistic, she may not reduce care supply as doing so might decrease overall utility. Crucially, a decline in the supply of informal care may lead to a net loss of care availability, and therefore of wellbeing for older people, unless it is compensated by an increase in care supply by other formal or informal providers. Establishing the causal effect of employment on caregiving is empirically challenging, due to endogeneity of the choices of care and work. Only a few recent studies have looked at this relationship, yet they do not focus on older caregivers, and rely on strong assumptions about the exogeneity of employment decisions. **[Methods and preliminary results]** We use State Pension eligibility status as an instrumental variable for working hours, as becoming eligible to receive the State Pension is a strong exogenous incentive to retire. First, we estimate a two-part model where the dependent variable is either the probability to provide care (extensive margin), or the number of care-hours provided (intensive margin, among caregivers). Since 2010, the State Pension age increased from 60 to 65 years for women born after 1949, increasing their labour supply by around 10 percentage points. The reform generated variation in pension eligibility for women of the same age, based on birthdate. As individuals who are above the SPA are older than those below SPA, which could directly influence the propensity to provide care, we add fixed effects for both age and year. Conditioning on age, being above the SPA is unlikely to directly affect caregiving other than through employment. We use data from the Understanding Society (2009-2018) for women aged 55-65, who engaged in paid work at some point in life. We use information on respondent's work and caregiving hours, and other socio-demographic information. Overall, we find that an increase in working hours due to being below the State Pension age because of the reform, leads to a reduction in the intensity of extra-household caregiving. An increase of 10 working hours per week results in a reduction of 2.1 care-hours per week, amounting to just over 110 "foregone" care-hours, valued around £2000 (£17.2/hour). We also find evidence of significant reductions in the probability of providing both intensive (20+ hours/week) and meaningful care (5+ hours/week). Conversely, we find no effect for in-household care provision. We also find that this reduction in caregiving is not compensated by an increase in the partner's provision of care. Moreover, using an external validated index of job-demand, we show that the decrease in caregiving is driven by women in high-demand jobs. Second, we use data from the English Longitudinal Study of Ageing, focusing on older parents having daughters aged 55 to 65 before and after the onset of the pension reform (2006-2017). We estimate the effect of having all daughters below SPA on care use, in an individual fixed-effects model controlling for respondent's age, eldest daughter's age, and time controls. The model relies on the same identification strategy described above. Our results indicate that having all daughters below-SPA due to the pension reform reduces total care intensity, as measured by the total number of tasks that older people get help with: while daughters' help-intensity decline, there is no substitution in the care provided by other informal or formal/paid helpers.

This may worsen the health and well-being of older adults in need of care, by increasing their unmet needs and, in turn, increase healthcare costs in older age.

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Title
Maternal Postpartum Depression Effects on Child's Health

Authors
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Abstract
According to the World Health Organization, 13% of mothers who have just given birth suffer of a mental disorder, primarily diagnosed as depression. It represents a relevant public health issue affecting women and their families. Mothers provide the largest share of human contact with the infants and mediate their contact with the external world. The family environment is the primary source of experience of a child and it is characterized by its own social and economic resources, including: parenting skills and education, cultural practices and approaches, intra-familial relations and the health status of family's members indeed. Several studies indicate that children, whose mother experienced postpartum depression, are at greater risks of emotional, behavioural, cognitive and interpersonal problems later in life. However, the maternal postpartum depression might influence child's development by affecting her/his health outcomes. Early child health and development (ECD) is important for health in later life. Inequalities in health, as well as in cognitive development and socio-emotional functioning, emerge early in life. Actions taken in order to reduce the social gradient in child development, might have an impact on later social gradients in health. The aims of the present study are to investigate whether maternal postpartum depression has an impact on (i) child's health outcomes at ages of 3, 5, 7 and 11 years, (ii) and on the number of injuries or accidents occurred at the child, for which s/he was taken to the hospital. We want to assess whether any effect exists and if it persists as the child grows up. Moreover, we want to ascertain if having older siblings, makes the new-born less vulnerable to the negative consequences of maternal postpartum depression given the previous acquired experience of the mother in taking care of the offspring. In our analysis, we use the UK-Millennium Cohort Study (MCS), a longitudinal birth cohort study administered by the Centre for Longitudinal Studies and available through the UK Data Service. On one hand, we can define our estimation model for child health outcomes with the following equation:

$$CH_{i,t} = \alpha + \beta_1 PPD_{j,t=0} + \beta_2(OlderSib_{i,t=0} * PPD_{j,t=0}) + \gamma_1 h_{i,t=0} + \gamma_2 X_{i,t} + \\ + \gamma_3 LN(Y_{i,t=0}) + \gamma_4 X_{j,t} + \zeta_{i,t}$$

where $CH_{i,t}$ is the child health outcome, i and t denote respectively the child and her/his age in years, $PPD_{j,t=0}$ is postpartum depression of the mother of child i; $OlderSib_{i,t=0}$*$PPD_{i,t=0}$ is the interaction between maternal postpartum depression and having older siblings, that is to say not being the firstborn; $h_{i,t=0}$ is the initial child health endowment (e.g. born preterm, underweight); X_{it} is a set of child characteristics only; $Y_{i,t=0}$ is the family income considered in its logarithm form; $X_{j,t}$ is a set of variables including mother, family and environmental characteristics which are risk factors for both maternal postpartum depression and child's health; and $\zeta_{i,t}$ is the error term. In order to avoid reverse causality between maternal postpartum depression and child health status, we did not consider as dependent variables child health outcomes at the time that postpartum depression is detected but we included them as control variables. On the other hand, we can express the impact of maternal postpartum depression on the number of accidents occurring to a child with the following equation:

$$ACC_{i,t} = \alpha + \beta_1 PPD_{j,t=0} + \beta_2(OlderSib_{i,t=0} * PPD_{j,t=0}) + \gamma_1 h_{i,t=0} + \gamma_2 X_{i,t} + \\ + \gamma_3 LN(Y_{i,t=0}) + \gamma_4 X_{j,t} + \nu_{i,t}$$

where $ACC_{i,t}$ is the number of accidents occurring at time t for individual i; $PPDj,t=0$ is maternal postpartum depression; $OlderSib_{i,t=0}$*$PPD_{j,t=0}$ is the interaction between maternal postpartum depression and having older siblings; $h_{i,t=0}$ is the initial child health endowment; $Y_{i,t=0}$ is the family income considered in its logarithm form; $X_{j,t}$ is a set of variables including mother, family and environmental characteristics which are risk factors for both maternal postpartum depression and child's health; $v_{i,t}$ is the error term. Our findings show a non-negligible impact of maternal postpartum

depression for first-born children on those health issues enhanced by a stressful environment: wheezing (throughout childhood) and hay fever (at early ages). At later ages (7 and 11 years), children with a mother who experienced postpartum depression are also more likely to suffer from asthma. Furthermore, results indicate a significant strong effect of maternal postpartum depression on the accident rate at the ages of 3 and 5 years (the incidence-rate ratios are of 1.205 and 1.289 respectively).

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Title
The Socioeconomic Status Gradient in Pain: A Cross-Country Analysis

Authors
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Abstract
Chronic pain has an important impact on peoples' lives and is a fundamental dimension of wellbeing. Pain is one of the most common reasons people seek medical care and take medications. It also complicates the treatment of other diseases and limits one's ability to work and function in the society. At the individual level, it is associated with a series of negative outcomes, including depression, job loss, reduced quality of life, impairment of function and disability. At the societal level, it imposes considerable costs on the health care system and the economy. Taking into account both the direct costs of medical treatment, and the indirect costs associated to the loss in productivity, the Institute of Medicine has recently estimated that chronic pain affect approximately 100 million U.S. adults at a cost of $560 - 635 billion every year. These figures are greater than the annual costs of heart disease, cancer, or diabetes (IOM, 2011). Our current understanding of people's pain experiences has been largely limited by data availability. Most research so far has focused on the US, where chronic pain has been deeply intertwined with the opioid crisis (Case and Deaton, 2015, 2017), but little is still known about pain in Europe. In this paper, I investigate the existence of sex disparities in chronic pain and the extent to which chronic pain is associated with socioeconomic status in mid-life in fourteen European countries (Luxembourg, Switzerland, the Netherlands, Austria, Denmark, Sweden, Germany, Belgium, France, Italy, Spain, Czech Republic, Slovenia, and Estonia) and the United States. Specifically, I exploit newly available data from SHARE and HRS to study 3 whether (i) sex-based differences in pain are relatively similar across countries, (ii) countryspecific characteristics matter the most for people in the bottom of the income distribution (Chetty et al., 2016), and (iii) greater use of pain medication reduces aggregate pain. HRS has been asking questions about pain since its first wave, while SHARE started in wave 5. Therefore, I use the three available waves of SHARE (wave 5, 6, and 7) and the Corresponding author HRS waves. To measure chronic pain, I rely on two questions. Both surveys ask respondents whether they are troubled with pain, and if they are, the questionnaires then ask how bad the pain is most of the time (and give the options: mild, moderate or severe). I consider respondents answering "yes" to the initial question as individuals experiencing chronic pain (e.g. Dionne, 2010) and I combine responses to both questions to create a 4-category "pain intensity" variable for each survey: no pain, mild pain, moderate pain, and severe pain. In the preliminary analysis conducted so far, I find that pain is part of life for two out of five midlife individuals, with wide heterogeneity across countries, from 23% of Swiss to 53% of French (Figure 1). Perhaps surprisingly, the prevalence of pain in the US seem to be in line with the prevalence in other European countries (38%). In every country, more women are bothered by pain than men, with noticeable differences in the gender gap across countries: in Slovenia and the Mediterranean countries (Italy and Spain) the gender gap is quite large, compared to the US and some other countries (Figure 2). While reporting styles may explain some of these differences, some patterns are consistent across countries and the disparities are fairly large. That markers of socioeconomic status, such as education and income, are associated to health outcomes is by now quite well established (e.g. Cutler and Lleras-Muney, 2008). The association between socioeconomic status and pain, however, has only been recently receiving attention among researchers, and so far, the focus has been mostly on education in the US (e.g. Atlas and Skinner, 2010, and Case and Deaton, 2017). SHARE and HRS allow me to go beyond education and consider additional dimensions of socioeconomic status, such as income and occupation. I first document the existence of dramatic differences in the prevalence of pain by educational attainments in Europe as well as in the US: In every country, individuals with less than high school are much more likely to be troubled by pain than those that have completed secondary education, and these two categories are more likely to report pain 4 than those who have higher educational attainments (Figure 3).1 Next, I provide evidence that the reporting of pain shows a strong

gradient also according to income quintiles, across all the countries in the sample. Arguably more importantly, I find that that there is more country-level variation in the lowest income quintile (Figure 4) as well as in the lowest education group (Figure 3), suggesting that country-specific characteristics matter the most for people at the bottom of the income distribution. This finding is similar to Chetty et al. (2016)'s results for the association between income and life expectancy. Not only the less educated are more likely to be in pain, they are also more likely to experience more severe pain levels than the rest of the population (Figure 5), suggesting similar overall rates of pain, which arguably may be surprising given the widespread use of opioids and the "death of despair" in the US. What can explain this strong association between pain and socioeconomic status and the observed disparities? A possible explanation for these differences is that people with lower socioeconomic status are more likely to have worked in manual jobs, or to suffer from poor health. In the multivariate analysis, I plan to control for such differences using controls for occupation and industry and for several dimensions of health status, that may be associated with pain at older ages. I estimate probit regressions for the prevalence of pain and ordered probits for the intensity of pain.

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Title
The Health of Disability Insurance Enrollees: An International Comparison

Authors
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Abstract
Rising costs of disability insurance (DI) programs are putting increased strain on central government budgets across nearly all developed economies. Yet little is known about how well countries target those in the poorest health across countries, or within a country over time. In this paper, we use the Survey of Health, Ageing, and Retirement in Europe (SHARE) and the Health and Retirement Study (HRS) in the United States during 2004-16 to measure (a) the average health of people aged 50-64 receiving DI, and (b) the effectiveness of the DI safety net in covering those in poor health. Using these two measures, we find that U.S. and Danish DI programs appear successful at targeting benefits to those in the worst health, with France and Belgium less so. We also demonstrate how these measures can be used to evaluate changes over time in DI policies, for example by measuring secular changes in targeting effectiveness following large reductions in DI enrollment (as in the Netherlands and Denmark) or expansions (as in the U.S.). This research was supported by the U.S. Social Security Administration through grant #1DRC12000002- 01-00 to the National Bureau of Economic Research as part of the SSA Disability Research Consortium. We are also grateful to the National Institute on Aging (PO1 AG019783) and to the SHARE consortium for data use (see Footnote 2). We thank Steven Venti and David Wise for providing programming code for the PVW health index, and Dana Blumin, Lans Bovenberg, Dimitris Christelis, Joseph Doyle, Jr., Maarten Lindeboom, Erzo Luttmer, Juergen Maurer, Ellen Meara, Erik Meijer, Kathleen Mullen, Stephen O'Neill, Thomas Rapp, Michael Schoenbaum, Douglas Staiger, Steven Venti, David Wise. Luca Gerotto and Kathy Stroffolino provided valuable research assistance. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the US Federal Government, or the NBER.

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Title
Implications of carbon policies on the quality of UK consumers' diet and health

Authors
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Abstract
[Background] There is increasing recognition that food markets should be regulated to reduce the environmental impact of diets. For instance, food prices could be increased by carbon consumption taxes that incorporate the level of greenhouse gas (GHG) emissions associated with food production. However, environmental impact and nutritional quality are not perfect substitutes in foods: while fresh fruits and vegetables are low in fats and have lower GHG emissions compared with red meat, they can be low in other essential nutrients. Therefore, a diet which has a lower environmental impact may be nutritionally imbalanced. This paper seeks to extend our present understanding of food policies by exploring the link between environmental regulation of food markets and the health quality of the resulting diets. The aim of the paper is to model the effects of hypothetical carbon consumption reforms on the prices of foods and drinks and how these affect household consumption and individual health. [**Methodology]** To analyse how food consumption changes with environmental policy, we follow a two-step approach. Firstly, an Almost Ideal Demand System was applied to UK's Living Cost and Food Survey data, combined in two different types of aggregations: the first in line with the the UK Government's *Eat Well* guidelines; and the second by considering similar carbon footprints and nutritional content among the food products. The estimates of the substitution, own-price and expenditure elasticities were then used to simulate variations in consumption patterns generated by changes in food and drinks prices due to taxation. We tested two price interventions: a simple tax (scenario A), taking into account only the price increases due to the carbon tax; and a funded reform, namely a *Bonus Malus* tax (scenario B), where carbon tax revenues are recycled into the economy by reducing all the prices by the same amount as household expenditure increased during the first scenario. Using data from the UK's National Diet and Nutrition Survey it was then possible to compare diet composition before and after the hypothetical reforms of the food market. The parameters obtained from these regressions were then used to simulate individual health changes in both scenarios, such as changes in body mass index (BMI), glycated haemoglobin (HbA1c), and blood cholesterol. **[Results]** Preliminary results show high substitution between food categories, even if there are differences across aggregation type. This suggests environmental policies can lead to more sustainable food consumption patterns, especially when subsidies are introduced simultaneously to the carbon taxation. Interestingly, this change in diet composition has the potential to have some beneficial health effects, though the analyses requires further investigation to accurately estimate the changes in outcomes.

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Title

Lessons learnt from the early phase of SARS-CoV-2 pandemic in Lombardy

Authors

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Abstract

[Background] In the night of February 20, 2020, the first case of novel coronavirus disease (COVID-19) was confirmed in the Lombardy Region, Italy. In the week that followed, Lombardy experienced a very rapid increase in the number of cases, with heterogenous impact across different provinces and municipalities and among different risk groups in the affected population. **[Methods]** Epidemiological data collected through standardized interviews of confirmed cases and their close contacts were analysed real-time in order to provide support to policy making. In particular, the following information were collected: demographic backgrounds, dates of symptom onset, clinical features, respiratory tract specimen results, hospitalization, contact tracing. Estimates of the reproduction number and serial interval were generated and adjusted over the course of the epidemic. Infection fatality rates, proportion of symptomatic and critical cases and survival analyses of hospitalized patients were performed. Mathematical models were developed in order to make projections about the outcome of the pandemic in the absence of control measures. **[Results]** The epidemic in Italy started much earlier than February 20, 2020. At the time of detection of the first COVID-19 case, the epidemic had already spread in most municipalities of Southern-Lombardy. The median age for of cases was 69 years (range, 1 month to 101 years). 47% of positive subjects were hospitalized. Among these, 18% required intensive care. The mean serial interval was estimated to be 6.6 days (95% CI, 0.7 to 19). We estimated the basic reproduction number at 3.1 (95% CI, 2.9 to 3.2). We estimated a decreasing trend in the net reproduction number starting around February 20, 2020. Model results showed that the outcome of the pandemic would have been unsustainable for the healthcare system were the interventions not being put in place. **[Conclusions]** The transmission potential of COVID-19 was very high and the number of critical cases was going to become largely unsustainable for the healthcare system in a very short-time horizon. We observed a slight decrease of the reproduction number, possibly connected with an increased population awareness and early effect of interventions. Aggressive containment strategies were required to control COVID-19 spread and catastrophic outcomes for the healthcare system.

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Title

Chronic Kidney Disease in adults aged 18 years and older in Chile: Findings from the cross sectional Chilean National Health Surveys 2009-10 and 2016-17

Authors

Magdalena Walbaum, Shaun Scholes, Elena Pizzo, Melanie Paccot, Jennifer S. Mindell

Abstract

[Background] Chronic kidney disease (CKD) is a leading global public health problem, with a substantial burden on healthcare systems; decreased quality of life; and poor prognosis for patients. In Chile, much attention has been paid to patients with ESKD, who are in need of renal replacement treatment (RRT) such as dialysis or renal transplant, with well-documented registries of the population being treated under these regimes. These registers have shown a significant increase in the use of dialysis, with more than 20,000 individuals having dialysis in 2017. However, there is insufficient evidence in Chile on individuals at the earlier stages of the disease. International studies suggest that given the trends and natural history of CKD, there is a significantly higher prevalence of CKD at the earlier stages, affecting around 35% of individuals aged 70 years and over, with a high burden for healthcare systems. Moreover, there is evidence of increases in the comorbidities for CKD in the Chilean population, such as hypertension, diabetes mellitus and obesity, therefore suggesting a probable increase in the current and/or future prevalence of CKD. Although most studies in Chile to date have estimated the economic burden of RRT for ESKD, the increase in healthcare resource utilisation for the earlier stages of CKD is also significant, namely an increase in the use of emergency departments and outpatient visits, hospitalisation, medical expenditure and pharmacy costs, with increasing costs as the disease progresses. The limited data on CKD prevalence and its distribution across population subgroups is an important gap in the evidence, that impedes effective decision-making in the healthcare sector. Therefore, it is important to study both the early and end-stages of CKD in the general population (i.e. not just those patients who are known to the Chilean healthcare system), in order to have accurate information to help guide strategies for prevention, diagnosis and treatment of CKD in Chile. **[Objectives]** This study estimates the prevalence of chronic kidney disease (CKD) among Chilean adults and examines its associations with sociodemographic characteristics, health behaviours, and comorbidities. **[Methodology]** Analysis of cross-sectional data from the two most recent large nationally representative Chilean Health Surveys (Encuesta Nacional de Salud, ENS) 2009-10 and 2016-17. We considered adults aged 18+ years with serum creatine data (ENS 2009-10: n=4583; ENS 2016-17: n=5084). Reduced kidney function (CKD Stages 3a-5) based on the estimated glomerular filtration rate (eGFR <60 mL/min/1.73 m^2) was the primary outcome measure. Using the urine albumin-to-creatinine ratio (ACR ≥30mg/g), increased albuminuria was ascertained among adults aged 40+ years with diabetes and/or hypertension. Both outcomes were analysed using logistic regression with results summarised using odds ratios (OR). CKD prevalence (Stages 1-5) among adults aged 40+ years was estimated including participants with an eGFR of >60 mL/min/1.73 m^2 but with increased albuminuria (Stages 1-2). **[Results]** Overall, 3.2% (95% CI: 2.4 to 3.8%) of adults aged 18+ in ENS 2016-17 had reduced kidney function. After full adjustment, participants with hypertension (OR 2.37; 95% CI: 1.19 to 4.74) and those with diabetes (OR 1.66; 1.03 to 2.66) had significantly higher odds of reduced kidney function. In ENS 2016-17, 15.5% (13.5% to 17.8%) of adults aged 40+ years with diabetes and/or hypertension had increased albuminuria. Being obese versus normal-weight (OR 1.66; 1.08 to 2.54) and having both diabetes and hypertension versus having diabetes alone (OR 2.30; 1.34 to 3.95) were significantly associated with higher odds of increased albuminuria in fully-adjusted analyses. At least 15.4% of adults aged 40+ years in ENS 2016-17 had CKD (Stages 1-5), including the 9.6% of adults at CKD Stages 1-2. **[Conclusions]** Prevention strategies and Chilean guidelines should consider the high percentage of adults aged 40 years and older at CKD Stages 1-2.

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Title

Costs and health effects of Chronic Kidney Disease in the Chilean adult population.

Authors

Magdalena Walbaum, Shaun Scholes, Jennifer S. Mindell, Rubén Rojas, Elena Pizzo

Abstract

[Background] Chronic Kidney Disease (CKD) is a leading global public health problem, with substantial burden for healthcare systems and for the individual's survival and quality of life. In Chile, the prevalence of CKD Stages 1 to 5 in people aged 40 years or older is around 15.4%, with an increasing rate of adults receiving RRT. The and rising prevalence of comorbidities for CKD in the Chilean population such as diabetes and obesity are a national emergency. **[Objectives]** The aim of this study is to adapt Schlackow and colleagues' CKD-CVD policy model to estimate the health and economic burden of CKD for adults 40+ years from the Chilean public healthcare system perspective. **[Methods]** A dynamic Markov model was developed to simulate CKD in the adult Chilean population from the perspective of the Chilean public healthcare system, up to the year 2050. Key parameters of the model, such as prevalence of CKD by stages, prevalence of hypertension and diabetes, mortality rate, growth of the adult population and direct costs of treatment, were extracted from nationally representative Chilean data. Incidence of the disease and progression rates were simulated based on the most relevant international evidence. The CKD-CVD model was built based on the CKD and cardiovascular disease (CVD) data from the Study of Heart and Renal Protection (SHARP). The model included six states replicating the natural progression of the disease: from CKD Stage 3a through to Stage 5, ESKD with need of RRT, and death. The progression of CKD was assumed in 1-year cycles and was categorised as slow and fast progression (decrease in the estimated glomerular filtration rate (GFR) of 3ml/min/year or 8ml/min/year, respectively). At the end of each cycle, a proportion of individuals remained in the same health state, a proportion progressed to the next CKD stage, a proportion began RRT and a proportion died. Only direct costs of treatment were included due to limitation of data. Quality Adjusted Life Years (QALYs) were calculated based on the UK EQ-5D-3L tariff. A 3% discount rate was applied to costs and outcomes after the first year, according to Chilean guidelines. We calibrated the model based on international evidence and the exploration of uncertainty was undertaken with one-way sensitivity analyses and probabilistic sensitivity analysis with 1,000 Monte Carlo iterations. We used Stata V15.1 (StataCorp, College Station, Texas, USA) to estimate the model parameters and Microsoft Excel Office 365 V2001 was used to construct the Markov model using Visual Basic for Applications (VBA) macro and was fully parameterized to allow for the inclusion of different values of input parameters, to conduct the OSA and PSA. **[Results]** By the year 2050, there is an expected increase in the number of patients with CKD Stages 3a to ESKD, ceteris paribus, from 452,198 (95% CI (328,472-575,924)) in 2020 to 782,588 (95% CI (673,065-892,111)) individuals. Therefore, an expected increase in direct costs of CKD stages 3a-5 from 221,143M CLP (£224.8M) (95% CI (146,290-314,562)) in 2020 to 496,041M CLP (£504.3M) (95% CI (290,685-701,396)) in 2050. A reduction in the proportion of fast progressors would decrease the number of individuals worsening to stages 5 and ESKD, with a reduction in the total costs of the disease from 496,041M CLP (95% CI 290,685-701,396) to 440,633M CLP (95% CI 264,696-616,596) in 2050. On average, individuals in CKD stage 3b have a survival time of 9.6 years, 7.2 QALYs. **[Conclusions]** These estimates show the significant decrease in QALYs and LY and increase in healthcare costs for advanced stages. This model emphasises the need to develop effective preventive and treatment plans to reduce incidence and delay the progression of CKD and thus reduce the burden of the disease in Chile.

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Title
Hang Up on Stereotypes: Domestic Violence and Anti-Abuse Helpline Campaign

Authors
Marco Colagrossi, Claudio Deiana, Andrea Geraci, Ludovica Giua

Abstract
We estimate the consequences of a Government-led anti-domestic-abuse campaign launched in the midst of the covid-19 pandemic on the number of calls to the Italian domestic violence helpline. In the week after the start of the campaign, we document a two-fold increase in the number of calls, which keep increasing throughout the lock-down. There is no evidence that the surge in the number of calls is associated with past levels of violence. Rather, we show that the effectiveness of the media campaign is hindered in areas where gender stereotypes are stronger, even when economic factors are accounted for. Policy-makers should then intensify efforts to break down gender stereotypes to successfully increase domestic violence reporting.

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Title
Analyzing inequalities in italy using frameworks and quadrant charts analysis

Authors
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Abstract
[Background] Social determinants of health (SDOH) - such as housing, education, neighbourhood and income - have increasingly entered health policy conversations as a growing body of researches, reveal the direct relationship between these so called social determinants and health outcome. In fact, the recent literature is moving from the traditional model that focus on how health affects economic status, to a new view that economic status affects health. **[Objectives]** To investigate the principal conceptual frameworks for action on social determinants of health. Furthermore, our work provides the latest comparable data on trends over time on population health and health systems performance across Italian regions. So that, another aim of this article is to contribute on the ongoing discourse on a feasible measures which could be used to alert Italian regions to inequalities in the distribution of health consequent to the negative impact of public politics. **[Methodology]** Italian data are used as a demonstration. Quadrant charts illustrate basic associations between how much regions spend on health and how effectively health system functions. The relevant inequality measures are used to rank health inequalities. **[Main results]** Several social determinants of health frameworks have been presented to help communities, health professionals and others begin to better understand and address a variety of factors that affects health. Quadrant analysis technique shows the extent to which spending more on health, translates into better health outcomes, higher quality of care and improve access to care across the Italian regions, whilst also recognition the importance of major risk factors (smoking, alcohol and obesity variable). **[Conclusions]** The persistence of social inequalities in health in our regions and what this means for how we understand and reduce them, as not to date been compressively examined empirically. There is an urgent need to expand our knowledge with comparable data on health determinants and more refined health outcomes. Furthermore, there is a need for a feasible inequality measures in the health information systems.The measures used in this study, provide a first step alarm to inform and guide the uptake of equity-sensitive policies.

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PANEL SECTION

Title
Valutazione economica e Dossier di Prezzo e Rimborso (P&R)

Coordinator
Claudio Jommi

Speakers
Francesco Damele, Giovanni Fattore, Francesco Saverio Mennini, Francesca Patarnello, Pierluigi Russo, Aleksandra Torbica

Description
Recentemente sono state pubblicate sul sito di Aifa (Ufficio Valutazioni Economiche) le Linee Guida per la compilazione del Capitolo 9 del Dossier a supporto della domanda di rimborsabilità e prezzo ed il Format dello stesso Capitolo 9. Tale capitolo include le eventuali analisi di costo-efficacia e budget impact a supporto della proposizione di valore per la richiesta di rimborsabilità e la negoziazione del prezzo dei nuovi farmaci / nuove indicazioni di farmaci già disponibili sul mercato. Tali Linee Guida riportano esplicitamente il contributo che l'Associazione Italiana di Economia Sanitaria (AIES) diede diversi anni fa con una 'Proposta di linee guida per la valutazione economica degli interventi sanitari'.
Lo stesso sito riporta un sintetico resoconto sulle valutazioni economiche sottomesse dal primo novembre 2016 al primo settembre 2019. Tale documento riporta (i) 166 dossier con Capitolo 9 incluso, (ii) una maggiore presenza di analisi di impatto sul budget rispetto ad analisi di costo-efficacia; (iii) la rara messa a disposizione del modello di costo-efficacia o di impatto sul budget in formato aperto modificabile. Sono poi stati pubblicati due report tecnici relativi alle Car-T YescartaTM e Kymriah®, in cui vengono riportate le evidenze di costo-efficacia fornite dalla imprese, modificate dall'Ufficio Valutazioni Economiche di Aifa, e nello specifico: (i) un quadro sinottico delle principali caratteristiche degli studi; (ii) i risultati, nell'ipotesi più conservativa rispetto all'efficacia della nuova terapia (costi totali, esiti in termini di anni di vita salvati ed anni di vita salvati in ottime condizioni di salute, rapporto incrementale di costo-efficacia); (iii) i risultati dell'analisi di sensibilità nel format della 'curva di accettabilità'; (iv) una valutazione della qualità dello studio.
L'obiettivo del Panel / Tavola Rotonda, dopo una breve introduzione del moderatore ed una relazione da parte di Aifa è discutere i nuovi documenti messi a disposizione da Aifa e le implicazioni attese. I panelist, a seconda del ruolo ricoperto, discuteranno, tra gli altri, i seguenti aspetti.
E' questo l'effettivo segno di un rinnovato interesse per le analisi di costo efficacia e di impatto sul budget nella negoziazione delle condizioni di accesso (rimborsabilità e prezzo), che vada oltre al semplice effetto a tre anni sulla spesa per farmaci (Capitolo 8), aspetto che ha avuto un ruolo decisamente maggiore sulle negoziazioni? O è invece solo una volontà di definire degli standard nella presentazione degli studi, per aumentarne la qualità e/o facilitarne la lettura da parte degli uffici tecnici?

- Quali sono in generale gli elementi positivi e quelli critici delle linee-guida? Esistono aspetti rilevanti non coperti dalle linee-guida?
- E' prevista la pubblicazione di altri report tecnici? Verranno incluse anche le evidenze di impatto sul budget?
- Come potrà essere conciliata la permanenza di un approccio silos budget (tetti di spesa farmaceutica) ed un orizzonte temporale di valutazione dell'impatto economico tipicamente breve, con degli studi che utilizzano una prospettiva più ampia e, con riferimento alla costo-efficacia, un orizzonte temporale più lungo, esplicitamente previsto nelle Linee-Guida? Nello specifico alla luce delle novità introdotte dalle linee guida,
- verranno effettivamente presi in considerazione gli effetti dei farmaci nella prospettiva più ampia del Servizio Sanitario Nazionale e della società nel suo complesso?

- verranno effettivamente considerati orizzonti temporali più attinenti alla reale efficacia dei farmaci analizzati?
- Verranno identificati dei range di valore-soglia alla costo-efficacia?
- Quale potrebbe essere in futuro il ruolo di associazioni scientifiche come Aies, Centri di ricerca e singoli ricercatori nel processo di valutazione di impatto economico dei farmaci ai fini della negoziazione di P&R da parte di Aifa?
- Le principali revisioni da parte dell'Ufficio Valutazioni Economiche al dossier fornito dalle imprese riguardano la valorizzazione al prezzo effettivo ed una stima degli effetti di eventuali accordi di rimborso condizionato. Questo ha comportato che venisse nascosto il costo effettivo delle terapie messe a confronto, ma non la loro differenza. Verranno adottati dei criteri standard per la messa a disposizione o meno dei dati di input del Rapporto Incrementale di Costo-Efficacia?

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Title
Use of patient-reported outcome measures in the health technology assessment of treatments for rare disease

Coordinator
Elena Nicod

Speakers
Amanda Whittal, Michela Meregaglia, Elena Nicod

Description
IMPACT HTA is a project funded by the EU Horizon 2020 research and innovation programme looking at new and improved methods in Health Technology Assessment (HTA). Work Package 10is developing guidance on novel approaches to appraising medicines for rare diseases (RDs, i.e. affecting fewer than 1 in 2,000 people in EU) in HTA by integrating data from a range of sources and stakeholders. The specific objective of Work Stream 3 (WS3) is to provide recommendations on the use of Patient-Reported Outcome Measures (PROMs) in the HTA of rare disease treatments (RDTs). PROMs are the instruments used to measure patient-reported outcomes (PROs), which are defined as “any report of the status of a patient’s health condition that comes directly from the patient without interpretation by a practitioner or anyone else” (FDA2009). PROMs of all types can be used in HTA, but only few are equipped with a set of preference weights to provide health state utility values (HSUVs). These allow calculating quality-adjusted life years(QALYs), which is a standard metric to assess treatment benefits in several HTA systems. WS3 investigates the nuances around use of PROMs and estimation of HSUVs in RDs.

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Title
Pushing the Boundaries of Existing Methods for Cost and Outcome Analysis of Medical technologies: Final Results from H2020 EU Project COMED

Coordinator
Aleksandra Torbica

Speakers
Benedetta Pongiglione, Francesco Petracca, Carlo Federici

Description
The proposed session aims to discuss existing and propose new research streams for cost and outcome analysis of healthcare technologies-in particular medical devices-in Europe, within the Health Technology Assessment (HTA) and Health System Performance frameworks. All presentations are part of the Horizon 2020 EU funded project "Pushing the Boundaries of Existing Methods for Cost and Outcome Analysis of Medical Technologies" (COMED), involving 6universities and research centres in Europe. The COMED project started on January 2018 and will end on June 2021. The project overarching objective is to tangibly improve decision-making processes in European healthcare systems, establishing a rigorous evidence base for some of the most pressing issues on the health policy agenda. Among COMED's purposes, there are i)development of scientifically rigorous recommendations on what, when and how real world evidence sources can be used for the assessment of medical devices; ii) providing recommendations on the use of various sources and types of evidence needed to validate putative surrogate outcomes; iii) development of methods to assess Patient Reported Outcomes of mHealth and provide policy recommendations on how mHealth can reach its potential in terms of reducing costs of healthcare services delivery and improving patients' health outcomes; iv) providing a thorough analysis of the advantages and disadvantages of coverage with evidence development (CED) schemes and development of policy guidelines for the design and implementation of CED schemes in the future. In this session, the results achieved in four work packages, each covering one of the abovementioned purposes, will be discussed and policy recommendations based on these findings presented.

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Title
COVID-19: understanding the impact of policies and technologies

Coordinator
Francesco Paolucci

Speakers
Naomi Moy, Shannen Higginson, Josefa Henríquez, Chiara Berardi, Savannah Bergquist, Nader Mahmoudi

Description
COVID-19 has taken up the priorities of countries policy, and especially their health policy. This session will cover a range of country case studies, focusing on the impact of the policies and technologies adopted to address the pandemic, as well as understanding specific measures.

Paper 1: Conceptual framework
A number of government measures and interventions are implemented in response to viral outbreaks or declared global pandemics. To examine the impact government and non-government interventions and technological responses have on individual behaviour, epidemiology, and economic outcomes, we propose a conceptual framework that categorises policy directives and assigns a gradient indicating the severity or impact of the measure. In doing so we provide a measure that examines the effect of dominant policy initiatives on the outcomes. We demonstrate the value of the categorisation process using five countries affected by the SARS-CoV-2 pandemic.

Paper 2: Australian COVID-19 Policy and its Impact on the Economy and the Healthcare Sector; the need for an Economic Pandemic Response Plan
Pandemics pressure national governments to respond swiftly. Mitigation efforts inevitably create an imbalance between population health, capacity of the healthcare system and the economy itself. This paper reviews the Australian healthcare system and economic responses to the COVID-19 pandemic, in order to identify lessons learned for optimal preparedness. A qualitative approach in reviewing mixed sources of data applied to Australian reports, official government publications and COVID-19 data and publications was used to discern robust future responses, including foresight for a potential second wave. Attention was given to the Australian Health Management Plan for Pandemic Influenza (AHMPPI), used to inform the initial public policy response of the Australian government. Publicly available COVID-19 and economic data was utilised to provide quantitative insight into the impact of the pandemic on Australia's population, healthcare system, technological response, and economy. This paper proposes an economic response plan to guide Australian government policy makers in ensuring a holistic and robust solutions to a potential second wave and future pandemics. Australia endured strict yet efficacious health system responses to pro-actively mitigate COVID-19 impact. Absence of an economic pandemic response plan, despite fiscal response measures leave an economy vulnerable to long-term repercussions. Combined epidemiological and macroeconomic models aid in health and economic system preparedness, whilst a strong Australian economy and strategic planning will ensure resilience to future pandemics.

Paper 3: Spain
The COVID-19 outbreak has led to an unprecedented crisis in Spain. After Italy, the spread of the virus was quick and Spain became the second epicenter in Europe by number of cases and deceased. To tackle with the outbreak and contain the spread, the Spanish authorities undertook exceptional measure based on a generalized lockdown by which the majority of the economic activity ceased for several weeks. The goal of this paper is to examine the spread of COVID-19 in Spain as well as the public policies and technologies used to contain the evolution of the pandemic. In particular it aims to assess the effectivity of the policies applied within the different autonomous communities. Data was collected from various official sources, including government reports, press releases and datasets provided institutions at national and international level. In general, we show that the main measure to

contain the spread of the pandemic based on a stringent confinement policy enforced through fines, resulted also in a substantial reduction in the mobility and the economic activity. We also focus on the evolution of the pandemic at a regional level showing that the negative consequences of the crisis affected differently across regions.

Paper 4: Italy

Italy was the first Western country to experience a major coronavirus outbreak and consequently faced large-scale health and socio-economic challenges. The Italian government enforced a wide set of homogeneous interventions nationally, despite the differing incidences of the virus throughout the country. The paper aims to analyse the policies implemented by the government and their impact on health and non-health outcomes considering both scaling-up and scaling-down interventions. To categorise the policy interventions, we rely on the comparative and conceptual framework developed by Moy et al. (2020). We investigate the impact of policies on the daily reported number of deaths, case fatality rate, confirmation rate, intensive care unit saturation, and financial and job market indicators across the three major geographical areas of Italy (North, Centre, and South). Qualitative and quantitative data are gathered from mixed sources: Italian national and regional institutions, National Health Research and international organisations. Our analysis contributes to the literature on the COVID-19 pandemic by comparing policy interventions and their outcomes. Our findings suggest that the strictness and timing of containment and prevention measures played a prominent role in tackling the pandemic, both from a health and economic perspective. Technological interventions played a marginal role due to the inadequacy of protocols and the delay of their implementation. Future government interventions should be informed by evidence-based decision making to balance, the benefits arising from the timing and stringency of the interventions against the adverse social and economic cost, both in the short and long term.

Paper 5: COVID-19 Pandemic in the United States

The global SARS-CoV-2 (COVID-19) pandemic has placed unprecedented stressors on health care systems and exposed both critical weaknesses and strengths in government capacity to respond. In this paper we highlight US health policy and technology responses to the COVID-19 pandemic from January 1 – June 10, 2020. We review and summarize primary data sources to describe national and state-level trends in the spread of COVID-19 and in policy and technology solutions. The US policy response is best characterized by its federalist, decentralized nature. The national government has led in terms of economic and fiscal response and in creating more favorable regulations for the use of some technologies. State governments have been responsible for many of the containment, testing, and treatment responses, often with little federal government support. While all US states have begun to “re-open” economic activities, this trend is largely driven by social tensions and economic motivations than an ability to effectively tests and surveil populations and has important implications for both policy and research.

Paper 6: Cost-effectiveness Analysis of COVID-19 Case Isolation

Among the several pandemic intervention measures, two main strategies are proposed to isolate a COVID-19 patient with mild symptoms, isolating in the home which the patient may be sharing with other household members or isolating the patient in a hotel room to prevent his/her interaction with other householders. Australia practices home-isolation of confirmed cases with mild symptoms, suspected cases (people with symptoms awaiting laboratory results) and close contacts of cases, which ultimately increases the risk of infection of other household members regardless of their numerous hygienic actions. In this study, we use a decision tree model to compare the cost of these alternatives and provide insightful recommendations for policymakers and government members regarding the most cost-effective way of isolating a COVID-19 patient. Although, the cost of isolating a confirmed case in his/her home in an average Australian household, $1,248.00, is lower than the total cost of isolating a confirmed case in a hotel room, $4,069.80, we report that the decision should be reversed depending on the household size and the secondary household attack rate.

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Title
Prolonged exposure to stress in health care professionals during COVID pandemic. A real time simulation of a multidisciplinary mental health policy model of prevention and treatment
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Speakers
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Description
Background. The protection of mental wellbeing of healthcare workers during COVID-19 has been identified as imperative for the long-term capacity of the health workforce and the healthcare system. In addition to fears around COVID-19 exposure, anxieties related to shortages of personal protective equipment (PPE) the challenges of family support and childcare while they work, healthcare workers experienced irregular hours and higher workloads, coupled with emotional strain and physical exhaustion from the provision of care to growing numbers of patients who rapidly deteriorated. They were also exposed to critical illness or death of their co-workers and faced moral injury due to moral dilemmas in decision making around provision of care. Such psychological impact has also negative consequences for organizations; prior pandemics have demonstrated that organization culture has powerful effects on psychological outcomes for the workforce: leadership styles, and management are known to be key factors in worker stress. A public health approach should adopt a trauma-informed policy perspective to tackle both the societal and economic burden of secondary trauma, compassion fatigue, and burn out in healthcare professionals. The economic dimension of PTSD, secondary trauma and burn out is in general neglected, and especially in this situation the burden is supposed to be incredibly high. Understanding the economic impact of all the wider range of work-related psychosocial health issues is fundamental to understand the effect to the whole society caused by inadequate and poor working conditions for health personnel during the pandemic. For this reasons, a multidisciplinary effort to develop a novel model for service delivery should include appropriate economic models and smart e-mental health technologies in routine practice to create a longer-term solution to the problem of frontline healthcare professionals and to timely, cost-effectively, and adequately address their signs of stress and trauma.

Objectives. The panel addresses the impact of COVID on mental health of healthcare workers. In particular, an integrated model of prevention of chronic stress will be presented through a real time simulation of the model of care, which embeds all the phases of pandemic and their specific impact on mental health of professionals, the management principles of the Trauma-Informed-Care paradigm along with a projection of savings and a methodology to detect trajectories of risk when the use of smart technology is introduced into preventive interventions and psychotherapy. From an economic perspective, the available evidence examining the cost of PTSD, secondary trauma and burn-out for health care workers is taken into consideration to provide relevant insights on the magnitude of this phenomenon to the society.

Methodology. The methodology illustrates real time the pathway embedding e-mental health and trauma-informed-care policy, before, during and after the event to prevent and early intervene chronic stress, compassion fatigue, and secondary trauma in healthcare professionals. Such pillars include evidence-based guidance, support and signposting psychological wellbeing for all healthcare professionals including preventive and personalized self-care strategies, managing emotions and a structured brief e-intervention called HI TECH-NASTI. Evaluation includes assessment of fidelity and implementation qualities related to the normalization of psychological responses during a crisis, and encouragement of self-care and help-seeking behaviour and user satisfaction with content, usability and utility. The model involves the use of smart technology based on wearable sensors and mobile

applications to remotely and systematically monitor the psycho-physiological conditions of the users and to assess the impact and effectiveness of the interventions, including the principles of co-production (service user involvement) to ameliorate the perception of such intervention in terms of their usability, low cost and low burden. Data acquired by the sensors will also provide crucial and real time quantitative information to continuously adjust the interventions in conjunction with a tool to address the effectiveness of such a model based on a Trauma Trajectory Toolset (3T) approach, namely the development of 3 interconnected modules (Diagnosis, Prognosis and Treatment/interventions) for different traumatic events to support experts in monitoring trauma dynamics s and to deviate, with a correct use of treatment/interventions, the pathological pathway of trauma towards healthier levels. More in details, starting from the intensive use of artificial intelligence to extract the principal components of the health status of the patient mainly correlated with traumatic events, 3T makes a step further by envisioning a paradigm of post-traumatic reactions by following laws of classical physics, multivariate statistics, and sampling algorithms for classifying treatments and for defining post-traumatic and chronic responses as a pathway throughout a complex multidimensional landscape function of many variables. Such an approach will also inform the health economics model to be associated to address whether such a model of care is cost-effective and to showcase the potential gains for the healthcare system. The estimate of costs from PTSD will be produced from existing cost of illness studies (in the three approaches top-down, bottom-up and deductive) and other available studies examining this specific type of cost, without specific restrictions on the used approach and methodology. The consideration of all the cost components (direct, indirect and intangible costs) can provide a comprehensive and accurate estimate of the financial burden posed by the chronic stress induced by the pandemic and relative benefits if the model was implemented.

Expected outcomes. This novel model of care should enable the healthcare system to adopt a wider public e-mental health approach with a strong focus on prevention and on reaching professionals at risk for chronic stress consequences. The integration among Psychology, Telemedicine, Health Economics, Mental Health Policy and Artificial Intelligence-Based Statistics will enhance engagement and acceptability of the intervention, and when made available to general population, the proposed approach will contribute to emergency preparedness and response, leading to a crucial paradigm shift in the management of COVID-19 trauma-related consequences. Expected results should also clarify better the need for treatment development (for the psychological problems caused by coronavirus isolation), which is by far more rapid in the field of internet interventions than in traditional psychotherapy. Providing psychological treatment and support may reduce the burden of comorbid mental health conditions and ensure the wellbeing of professionals, avoiding grave consequences for individuals and organizations usually paying high costs in terms of increased employee absences and related sick leave and disability-related costs, increased employee turnover and related onboarding and training costs, increased employee conflict, decreased employee satisfaction, reduced productivity and lower client satisfaction. Expected estimates of costs, beyond complexity and comparability of different methodologies, can provide an approximation of the huge financial burden correlated to the pandemic in terms of post traumatic costs for the health care professionals, and therefore underline the relevance of preventive actions, as above defined. This would lead to great savings in terms of economic resources, as evidenced by other studies indicating the positive profitability of prevention programs in work-related stress environments.

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