

PNS12 CAN A REUSABLE SURGICAL FACE MASK BRING HEALTH ECONOMIC AND ECOLOGICAL BENEFIT TO A HEALTH SYSTEM UPON THE OUTBREAK OF AN EMERGING PATHOGEN?

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Objectives: Triggered by the prevention of the spread of COVID-19, two types of surgical masks became available to health systems: disposable and reusable. The purpose of our study was to assess whether there is an economic and ecological difference in the application of reusable surgical masks versus disposable surgical masks. **Methods:** We developed a de novo model that took into account the characteristics of the Belgian hospital market: 52000 beds, 2 healthcare FTE per bed, and the ability to rely on a disposable surgical mask versus a reusable surgical mask that could be reused up to 35 times. We considered the following costs: product cost, medical waste, logistics, and washing. **Results:** From an ecological and supply chain point of view the implementation of reusable masks could result in a reduction of 92.000 Kilograms of medical waste and 90% less warehouse space required. From an economic point of view when the cost per disposable mask goes above 0.10 € per unit, material economic savings were identified. As from 0.15 € per unit of disposable masks, economic savings varied between 1.5 million and 10 million € per year. The critical factors that define the possible economic savings include: the base price of the reusable mask, the cost of washing, as well as the number of times that a mask could be reused. **Conclusions:** Health systems may benefit from the inclusion of reusable surgical masks versus disposable surgical masks. This benefit is fourfold. Gains could be achieved from an ecological, supply chain risk mitigation, warehousing optimization, as well as from an economic perspective.



PNS13 COMPARATIVE NETWORK EFFICIENCY ANALYSIS OF BRAZIL RESPONSE TO COVID-19 AT STATE LEVEL

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Objectives: Efficiency analyses of health systems are often limited to hospital applications or macroeconomic evaluations considering a single production process. This application using a two-stage prevention and cure network perspective highlights nonparametric frontier estimations more coherently with the current COVID-19 pandemic scenario. **Methods:** This two-stage Data Envelopment Analysis methodology estimates cost efficiencies of preventing an increasing propagation of COVID-19 using the Federal Government COVID-19 expenditures as input and the inverse rate of cases as output (standardized by population) in the first stage. The second stage for the technical efficiency (cure model) has the number of ICUs, ventilators and medical staff (nurses, assistants and physicians) as input and success rate (the difference between the number of infected and deaths) as output. **Results:** Two efficient states on both prevention and cure models (Acre and Roraima). Pernambuco is deemed efficient in preventing COVID-19 (3 states total), and São Paulo, Mato Grosso, Amapá, Santa Catarina and Rio Grande do Sul (7 states) in cure. About 1400 ICU admissions, 590 ventilators and more than 100 thousand medical staff can be spared directed by best practices from these seven efficient states. The most inefficient states in preventing the pandemic are São Paulo (0.028), Bahia (0.076), Rio Grande do Sul (0.087) and Paraná (0.098), also reporting low social isolation. The most inefficient states in cure are Rio de Janeiro (0.231), Pernambuco (0.277), and Rio Grande do Norte (0.439). **Conclusions:** The proposed methodology offers an interesting framework combining both public health perspectives as responses to the COVID-19 pandemic. Brief comments can be made on Pernambuco's mapping technologies available for the general population; the cooperation between the government and NGOs in Roraima for providing EPIs, tests, food and hygiene items for indigenous districts (reducing potential propagations without expanding governments expenditures); and Acre's campaigns for basic hygiene, and pandemic control.



PNS14 DIRECT MEDICAL COSTS RELATED TO COVID-19 IN COLOMBIA

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Objectives: We aimed to estimate the direct medical costs due to COVID-19 hospitalizations in Colombia. **Methods:** We carried out a retrospective cost-of-illness study of COVID-19 confirmed patients treated at health facilities in 23 municipalities of 12 Colombian departments. We included third payer perspective: Colombian



health system. Medical records are stored in a hospital management database that details the consumptions of each hospitalized patient, inventorying the health technology consumption of the patients selected for analysis. Patients were hospitalized from March 15 and May 29, 2020. Absolute and relative frequencies, averages, medians, and interquartile ranges (IQR) were used to characterize the population and estimate the direct medical costs. We stratified the cost analysis by sex, age groups, comorbidities, and type of hospitalization (general ward and intensive care unit - ICU). Costs were reported in American dollars (USD) (1USD = 3,903 Colombian pesos - COP). **Results:** We studied 113 patients hospitalized by COVID-19, 51.3% men. On average, the hospital length of stay for COVID-19 hospitalized patient was 7,3 (\pm 6,2) days with a median cost of \$1,688 (IQR 788-2,523). In women, the median direct medical cost of hospitalization was \$1,328 (IQR \$463-\$2,098), while in men was 1.4 times greater. Being 60 years of age or older triggers hospitalization costs almost twice as high as those under this age (\$1,813 vs. \$2,994), and when the cost is compared by type of hospitalization, this difference is more than three times (ICU: 4,118; general ward: \$1,312). **Conclusions:** Costs incurred by COVID-19 patients generate a considerable impact for health system. Other studies in Colombia reported significantly lower hospitalization costs for infections such as influenza (\$ 484 general ward and 3,044 in ICU). However, the costs of our study were much lower than those reported in COVID-19 in other countries.

PNS15 COST-EFFECTIVENESS ANALYSIS OF PHARMACOGENETIC TESTING IN OPIOID ANALGESIA IN PEDIATRIC POPULATION UNDERGOING SURGERY

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Objectives: For pediatric patients deemed ultra-rapid metabolizers (UMs), genetic variability in CYP2D6 increases codeine's risk of respiratory depression and death. As the cost of pharmacogenomics (PGx) testing decreases and the sensitivity and specificity of PGx testing improves, pain management may benefit from greater PGx-testing adoption. The objective of this study is to determine the cost-effectiveness of PGx testing to guide short-term post-surgical codeine therapy in pediatric patients. **Methods:** We developed a TreeAge-based decision analytical model to compare opioid analgesia with and without PGx testing using a payer's perspective. For PGx-guided opioid analgesia, we restricted the use of codeine to non-UMs only and considered alternative opioids among patients deemed UMs. We measured the effectiveness as (i) reduction in the hospital length of stay (LOS) due to opioid-induced adverse drug reactions (ADRs) related to the respiratory system, and (ii) averting respiratory depression, a severe opioid-induced ADR. Model parameters were taken from published literature. **Results:** Compared to non-PGx testing, PGx testing resulted in approximately 0.0441 fewer LOS days with an incremental cost of \$362, resulting in TreeAge reported incremental cost-effectiveness ratio (ICER) of \$8,214. PGx testing also resulted in approximately 0.0055 fewer respiratory depression events with an incremental cost of \$404 compared to non-PGx testing. The TreeAge reported ICER value was estimated at \$73,177 to avert a severe respiratory depression event with PGx testing. The results were robust in probabilistic sensitivity analyses for LOS outcomes. However, for the respiratory depression outcome, 71.8% of iterations resulted in an ICER value exceeding the common \$50,000 willingness to pay threshold. **Conclusions:** This analysis suggested that PGx guided opioid analgesia with codeine is a cost-effective strategy for pain management in pediatric patients. As the availability and cost of PGx testing improve, policymakers may want to reconsider the benefit of PGx guided pain management, including codeine.



PNS16 CAPTURING THE COMPLEXITY OF MEDICARE'S PHARMACY BENEFIT STRUCTURE IN A BUDGET IMPACT MODEL

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Objectives: Budget Impact Models (BIMs) are used to estimate the financial impact to a health plan of adding a new drug. ISPOR's Guidelines for BIMs call for addressing the costs associated with current relevant therapies and new therapies. The US Medicare Part D benefit structure spreads liability across stakeholders: (1) private Part D insurers, (2) patients, (3) federal government, and (4) brand manufacturers. Stakeholder liability also changes as patient pharmacy spending increases and is based on the patient's income status. Therefore, traditional assumptions used in most BIMs (e.g. 10% coinsurance / 90% plan liability; "simplistic approach") will produce inaccurate results for Medicare Part D stakeholders. A more refined methodology using Part D claims should be utilized ("claims-based approach"). **Methods:** Medicare Part D claims for patients were adjusted for new Brand Drug A and applied the Medicare Part D benefit structure. This simulation added Drug A scripts without replacing other drugs. Each Drug A price was simulated as price impacts patients' total pharmacy spend. Assumptions used in all scenarios: 0% rebate, 0% discount, 12 scripts, 10% coinsurance (simplistic approach), and the 2021 Part D

