

Health Systems: Economics

Chairpersons: R Maharaj, K Theodore

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Economic evaluation of laparoscopic versus open repair for elective unilateral primary inguinal hernia and prophylaxis antibiotic use

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Objective: The base-case analysis found total extraperitoneal (TEP) without antibiotic prophylaxis to be the leading cost-minimizing strategy. The incremental cost-effectiveness ratio for TEP with antibiotic prophylaxis was £61 768.90 per additional quality adjusted life year (QALY). The deterministic sensitivity analysis revealed that the results were mostly sensitive to the cost of hernia repair *via* TEP, cost of treatment of surgical site infection (SSI), and probability of death secondary to SSI. To determine whether laparoscopic TEP repair under general anaesthesia, with or without antibiotic prophylaxis, is cost-effective – as measured by cost per QALY gained – than open Lichtenstein technique (LT) using regional anaesthesia, with or without antibiotic prophylaxis, for elective unilateral primary inguinal hernia repair (PIHR).

Methods: After a literature search for guidance on a model structure and new evidence on the costs and effectiveness of TEP and LT with and without prophylaxis antibiotic use, *via* electronic bibliographic databases (Cochrane, Hinari, MedLine and PubMed electronic), a Markov model was built. The model was populated with data on male patients aged 18 years or older undergoing elective unilateral PIHR *via* TEP under general anaesthesia or LT under regional anaesthesia – with or without the use of antibiotic prophylaxis – in England. The model results were then used to appraise the cost-utility of the two interventions from a third-party payer perspective.

Results: The base-case analysis found TEP without antibiotic prophylaxis to be the leading cost-minimizing strategy. The incremental cost-effectiveness ratio for TEP with antibiotic prophylaxis was £61 768.90 per additional QALY.

The deterministic sensitivity analysis revealed that the results were mostly sensitive to the cost of hernia repair *via* TEP, cost of treatment of SSI and probability of death secondary to SSI.

Conclusion: Total extraperitoneal without antibiotic prophylaxis should be the first-line treatment for elective unilateral PIHR. Clinical and economic studies are needed to determine categories of risk of SSI and congruent cost-effective treatments.

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National alcohol survey of households in Trinidad and Tobago (NASHTT): An estimate of the hidden cost of alcohol's harm to households

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Objective: To estimate the hidden cost of alcohol's harm to households (HHs) in Trinidad and Tobago (TT).

Methods: A cross-section of HHs was surveyed in 2014 from a random sample of enumeration districts (ED) to identify a set of harms and outcomes associated with alcohol consumption, and the proportion of HHs reporting alcohol use. Extrapolating to the 2011 Census, the number of HHs using alcohol was estimated. The minimum and maximum costs of the series of harms and outcomes experienced by HHs using alcohol *versus* HHs not using alcohol were estimated.

Results: One thousand six hundred and ninety-five HHs (from 53 ED) responded, a response rate of 92%. All the harms and outcomes reported occurred with greater frequency among HHs that used alcohol. It was estimated that 251 842 HH (62%) used alcohol. Compared with HHs that did not use alcohol, HHs that consumed alcohol were more likely to report in the last 12 months HH members falling sick (38 703 more episodes), HH members calling in sick to work (10 553 more episodes), involvement in a motor vehicular accident (8351 more episodes), police involvement in domestic disputes (2811 more episodes), among others. The cost associated with the elements in our model

was estimated to be between 78 million and 499 million TTD annually.

Conclusion: In TT, compared with HHs that reported not consuming alcohol, HHs that consumed alcohol experienced harms and outcomes, associated with the elements in our model, to a maximum cost of 0.5 billion TTD annually (0.3% of GDP (2014)).

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An online, distributed community of practice for antimicrobial resistance in Caribbean Community member states

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Objective: To propose an online, distributed community of practice (CoP) for antimicrobial resistance (AMR) in Caribbean Community member states.

Methods: The CoP's domain will include well defined issues related to AMR. The community will consist of residents of the Caribbean Community and Common Market (CARICOM) member states and the shared practice will include an educational website, a Mendeley open group for research networking (www.mendeley.com/groups) with a database of regional AMR abstracts sourced during a scoping review, protocols for gathering scientific evidence for AMR and best practices for minimizing AMR.

Results: A preliminary search yielded abstracts from only 12 of the 15 CARICOM states (all except Suriname, Montserrat and The Bahamas) which span the years 1958 to 2017. The top three countries which were sole subjects of reports were: Trinidad and Tobago (94), Jamaica (73) and Grenada (29). The major topic of most reports was not AMR.

Conclusion: A distributed online CoP is flexible, can operate across geographical boundaries and address relevant issues if design is user-centric. Preliminary scoping review results suggest that further research on AMR is needed, especially, in states in which no medical or veterinary schools are located. A CoP can prove useful for evidence-based decision-making regarding this threat to health.

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Cost-effectiveness analysis on the introduction of human papillomavirus vaccines in Guyana

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Objective: The main objective was to conduct a cost-effectiveness analysis (CEA) of the introduction of human papillomavirus vaccines (HPV) in Guyana.

Methods: This study employed the use of CEA to determine the effectiveness of the introduction of HPV vaccines in Guyana. The tool used to measure cost-effectiveness was the Papillomavirus Rapid Interface for Modelling and Economics (PRIME) tool which is a Microsoft Excel-based model that estimates the health and economic effectiveness of vaccination of girls against HPV before sexual debut. This tool is supported by the World Health Organization.

Results: The results from PRIME yielded a cost for \$9.9 for a fully vaccinated female for 2017–2018, the total number of deaths prevented would be 123 and 218 cervical cancer prevented and 2060 life years saved. The DALYs Stage I a, was estimated at \$513 per DALYs averted, Stage II b or II a was estimated to be \$1171 DALYs, Stage II b, III or IV a \$857 DALYs and Stage IV b \$400 per DALYs. One-way sensitivity analysis showed a price of \$17.6 for a fully vaccinated female for 2019 to 2021, the total number of deaths prevented would be 123 and 218 cervical cancer prevented and 2060 life years saved.

Conclusion: Human papillomavirus vaccines were cost-effective because the DALYs averted was three times less than the GDP per capita. Therefore, there is a need to implement prevention measures for cervical cancer such as the HPV vaccination campaign for girls aged 10 years.

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Fostering of a sustainable health system through direct engagement for health insurance benefit design

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Objective: To engage public feedback as indicators for perceived needs for healthcare and to inform potential inclusion of health insurance benefits in a national standard package.

Methods: A mixed method survey was developed and deployed to healthcare providers and the public at large to obtain their attitudes towards the importance and need for coverage of suggested health benefits by free response texts. Responses were analysed and shared in a public forum to continue discussion of gaps and solution identification as well as cited in further stakeholder discussions for health financing reform.

Results: Surveys were collected from 704 respondents and used for analysis, surpassing the nationally statistically significant threshold, based on prior studies. Of the 704 survey responses received, 208 (29.55%) were healthcare workers within over 30 different specialties and 496 (70.45%) were non-healthcare respondents from over

29 fields of employment. In each of the five domains, a range of scores per benefit were identified between 3.34 and 4.86 out of 5.00, with 5.00 being the most important and necessary to include for all health insurance holders in Bermuda. Qualitative feedback analysis identified themes surrounding increased variety of covered services, advocating for vulnerable populations, balancing health costs with access, and restructuring of regulation for fee-for-service. The survey themes were corroborated by a follow-up public forum.

Conclusion: A patient-centred, comprehensive healthcare approach that affords flexibility and increased access was favoured as being the most sustainable for the foundation of the national standard health insurance benefits.

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A localized approach to sustaining Guyana’s paediatric cardiology programme

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Objective: To assess if localized treatment of paediatric cardiology based on collaboration with international charities and non-profit organizations was more sustainable and effective than subsidizing interventions overseas.

Methods: The analysis was based on a comparison between actual aggregated cost, patient and access from six localized interventions through collaboration with an international medical charity (Baby Heart Foundation) against those under the alternative (subsidizing overseas intervention) approach between May 2015 and September 2016. A comparison of per patient cost and out of pocket expenditure under the two approaches was also conducted.

Results: The average per patient cost under the localize approach was estimated at \$765 047 as opposed to \$1 050 000 per patient under the subsidy approach. Additionally the collaborative approach would eliminate about \$1 613 640 of out of pocket expenditure associated with overseas travel incurred under the alternative approach. Patients with fragile conditions *eg* Tetralogy of Fallot (hole in heart), may not be able to travel overseas to access intervention (required under subsidies approach) and therefore, would be better served under the localized approach.

Conclusion: The localize approach to paediatric cardiology was more financially sustainable to both the Ministry of Public Health and patients. Additionally, it improved local capacity to develop a fully localized paediatric programme by building on infrastructure and skills attained through the localized process.