Bermuda
Health Council

OVERSEAS CARE

A Synopsis of Trends For the Islands of Bermuda

Overseas Care: A Synopsis of Trends For the Islands of Bermuda

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OVERSEAS CARE

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Foreword

For the premature infant that needs specialized neo-natal care, the teenager with a complex eating disorder, the road traffic accident victim who needs urgent treatment for a brain injury or the middle-aged man who needs open heart surgery, medical treatment is only a 2 hour plane ride away from Bermuda. For decades Bermuda's residents have enjoyed the benefits of receiving specialised medical, dental and mental health treatment in other countries around the world.

Overseas Care: A Synopsis of Trends for the Islands of Bermuda shares a part of Bermuda's healthcare puzzle; it summarizes how we use the resources we have, the strategic partnerships we form with other countries, and the reasons we leverage our health systems' strengths to empower our residents through access to overseas care.

As the Health Council reviews the role that overseas care has played within Bermuda's health system we pause to say thank you to those who have assisted each and every one of the 7,526 individuals who left Bermuda to travel overseas for healthcare in 2015/16. The intense collaboration between individuals, families, the medical community, charities and insurers has not gone unnoticed.

The Health Council also acknowledges the hard work of the staff who developed this report and the peer reviewers who guided its refinement.

We hope that *Overseas Care: A Synopsis of Trends for the Islands of Bermuda* contributes to a collective conversation about our shared future as we empower our residents to live happier, healthier lives.

Tawanna Wedderburn
Chief Executive Officer
Bermuda Health Council

Summary

BETWEEN 1st APRIL 2015 AND 31st MARCH 2016

7,526 individuals

= 1000 individuals

FROM BERMUDA RECEIVED CARE IN

5,000 different overseas providers, departments or entities

41 different US states

29 different countries

MORE THAN 50%

on the eastern seaboard of the US; specifically in the metropolitan Boston Massachusettes region

DURING THIS PERIOD

154,275

health insurance claims were submitted for a total amount of

$108 million

146,379

or 95% of submitted claims were paid for a total amount of

$84.5 million

7%

or $6 million of claims paid were for transportation and accommodation

The primary category coded by overseas providers as a justification for care was for “general symptoms”

Methodology

The Bermuda Health Council analysed all local and overseas healthcare claims submitted from 1st April 2015 through 31st March 2016 from data submitted by all licensed insurers (public and private) and approved schemes[1] in Bermuda. A total of 7,526 unique insured Bermuda residents received overseas treatment and supporting services. There were 154,275 health insurance claims incurred as a result. Trends in treatments were noted based on volume, costs and location. Further to data analysis, a literature review was conducted to determine comparative measures with other international jurisdictions. All data reviewed was analysed using the Stata software package, version 13.1[2] .

1 "Approved Schemes" in Bermuda are self-insured group health plans. Here the employer assumes the financial risks of providing healthcare benefits to its employees. In practical terms, self-insured employers pay for each claim as incurred instead of paying a fixed premium to an insurance carrier. Typically, a self-insured employer will set up a special trust fund (corporate and employee contributions) to pay incurred claims.

2 StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP.

Background

In supporting quality and comprehensive access to healthcare for its residents, Bermuda sends patients to overseas facilities for specialised medical, dental, and mental health care (assessment and treatment) primarily due to gaps in access locally. Access to overseas care for Bermuda's residents is often offered through insurance-brokered partnerships or based on provider/patient preference. Most residents have access to health insurance; approximately 79% of the estimated 61,695[3] island residents have health insurance coverage enabling access to overseas care.

For providers and insurers, clinical referrals to overseas entities for care, and the subsequent costs that are incurred, are based on a combination of medical and non-medical reasons. For many insurance products in Bermuda, coverage for overseas care is subject to prior approval. Typically, all overseas care must be directed by referral from local specialist physicians, the treatment must be medically necessary, and the treatment or equivalent must not be available in Bermuda. Some products and their associated carriers have removed annual and lifetime maximum restrictions on coverage of overseas major medical treatments and also eliminated exemptions regarding pre-existing conditions from overseas medical care.

According to Bermuda's *2016 National Health Accounts Report*, which covers fiscal year 2015 (1st April 2014 – 31st March 2015), approximately 13% of total health expenditure is used on overseas care for Bermuda's residents ($84.5M). In addition to claims reimbursed through health insurance, Bermuda's residents may utilise out-of-pocket funds and charitable donations to support overseas care expenses. Such expenditures are not captured within claims data. Over time, globalisation and technological advancements have facilitated cross-country trade in health services. For Bermuda, health service trade is mostly aligned to current air travel routes (see Figure 1) and required when the complexity of the case outweighs the human, technological, and clinical resources available in the local market.

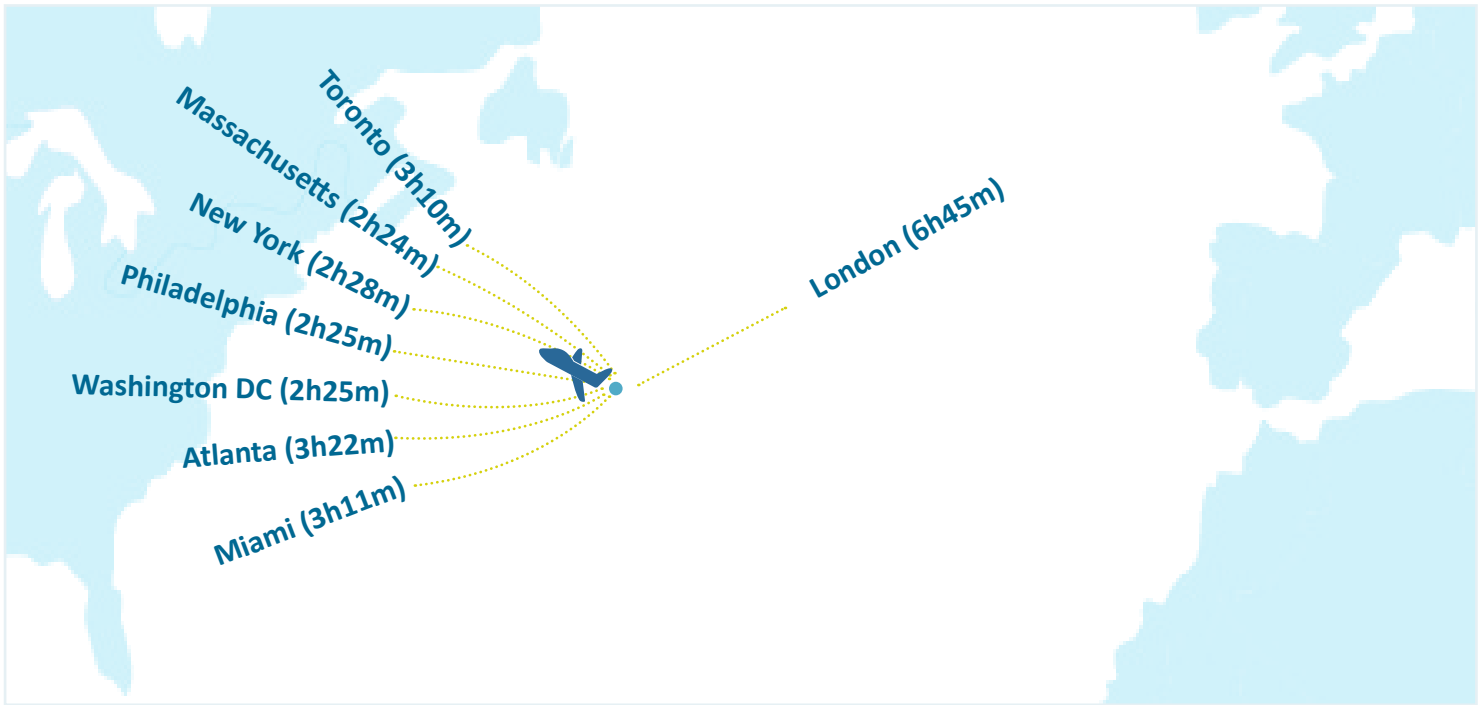


Figure 1: Bermuda's air travel routes

3 Based on Bermuda's Population Projections 2010-2020. Department of Statistics.

According to OECD's[4] *System of Health Accounts*[5] , when measuring healthcare expenditure for local residents, the trade in healthcare goods and services between Bermuda and other countries should be measured and compared across jurisdictions with similar trade in the rest of the world.

Although Bermuda spends a significant portion of current health expenditure on overseas care, the total spend has decreased each year from its peak in 2013 ($101M). The total number of paid claims were 166,396 in 2014, followed by 161,304 in 2015, and 146,379 in 2016. Unlike larger jurisdictions like Portugal or the United Kingdom, island jurisdictions such as Barbados, Dominica, Seychelles, and Bermuda have higher expectations of overseas care use due to limited capacity and segments of transient populations. Despite recent decreases in Bermuda's overseas care expenditure, when compared with OECD countries and jurisdictions with similar trade characteristics[6], Bermuda spends a relatively higher percentage of its healthcare funds on overseas care (see Figure 2).

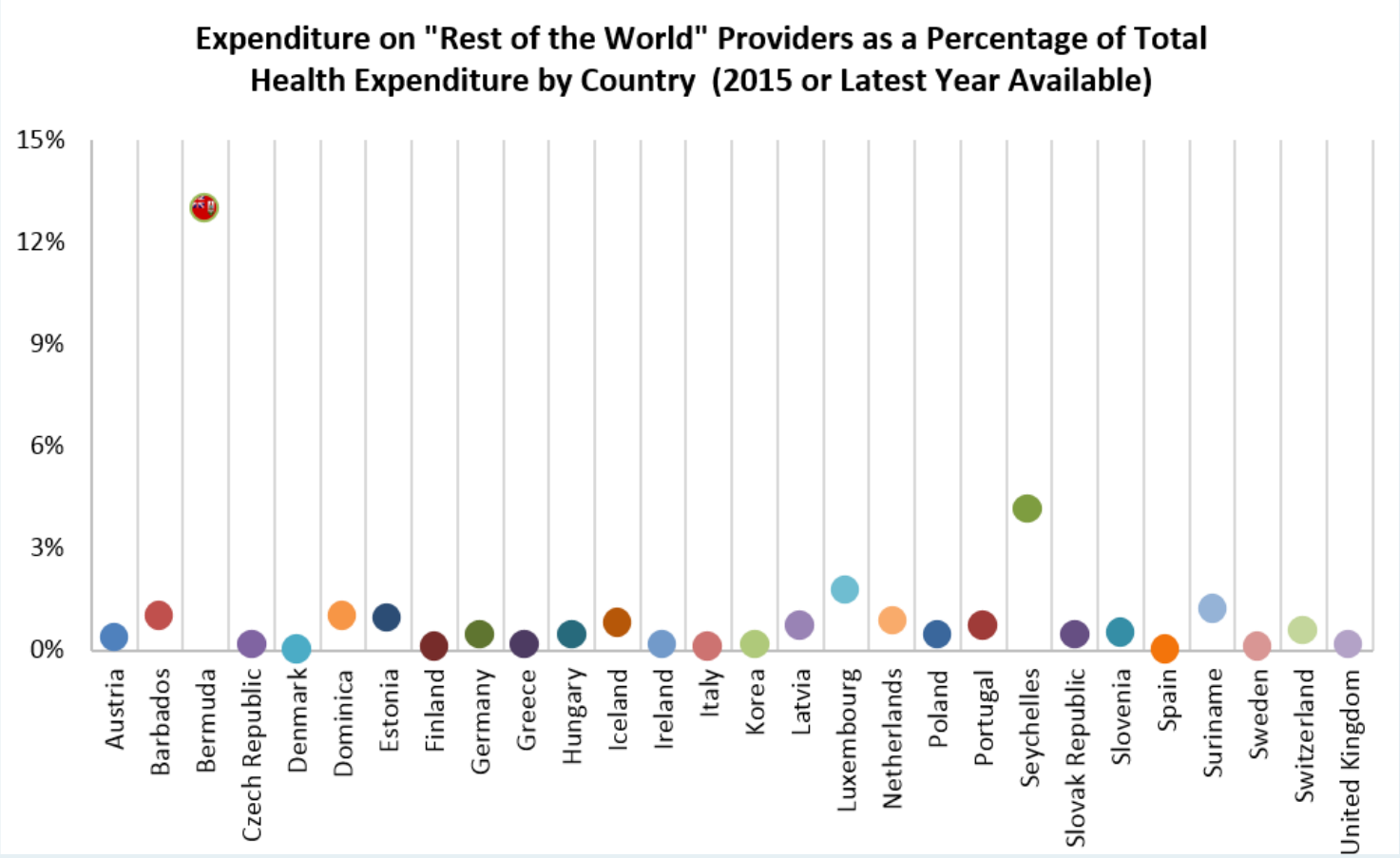


Figure 2: Measure of expenditure attributed to non-resident providers (Rest of the World) by local residents (Source: OECD 2015 or latest data available, Country specific National Health Accounts Reports 2015 or latest year available)

4 The Organisation for Economic Co-operation and Development

5 OECD, Eurostat, WHO (2011), A System of Health Accounts, OECD Publishing. DOI: 10.1787/9789264116016-en

6 2014 Rankings of Size of Export Economy (Bermuda - #192; Dominica - #188; Barbados - #164, Seychelles - #165; Suriname #138). Source United Nations Statistical Division (COMTRADE) via atlas.media.mit.edu

Findings

OVERSEAS CARE UTILISATION

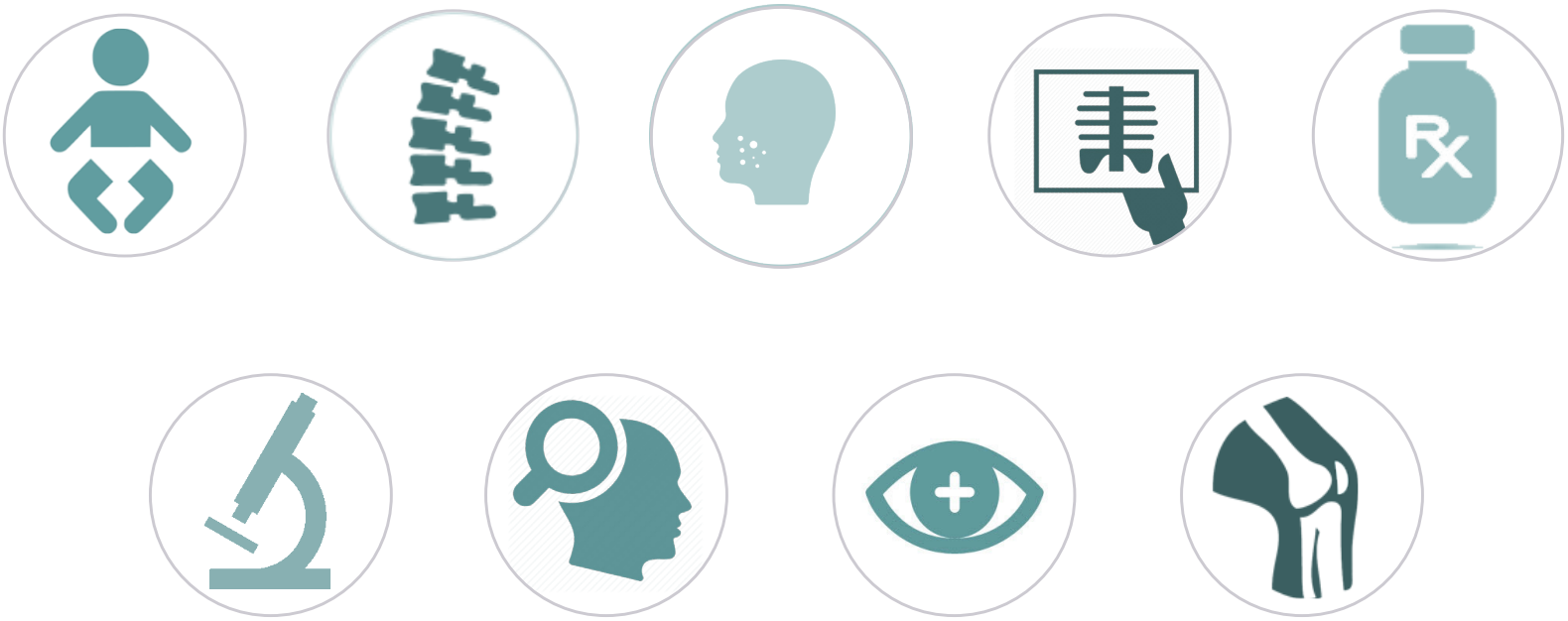
During fiscal year 2016, Bermuda utilised over 5,000 different overseas providers, departments or entities for care and ancillary services. These included large medical centres, university health services, family physician offices, commercial pharmacies, eye wear online retailers, pathology labs, paediatric centres, orthopaedic specialists, dermatology offices, mental health organisations, skilled nursing facilities, ground and air ambulance services, hotels, and many more. These services spanned over 41 different states and 29 countries. Of the 70 different locations, 28 of them saw revenue of greater than $100,000 from Bermuda residents (see Figure 3). The majority of these services were completed on the eastern seaboard of the United States; specifically in the metropolitan Boston, Massachusetts region (more than 50% of all overseas care annually ~$40M – excluding online patient services, travel, and lodging).

FY16 OVERSEAS CARE USE

- **7,526 unique individual received overseas care accounting for 154,275 claims**
- **$84.5 million of claims were paid on overseas services**
- **Ratio of male to female claims was 51% and 49% respectively**

When reviewing the names of the centres where care is being delivered in these locations, the top ten facilities Bermuda's residents received overseas care in alphabetical order are Boston Children's Hospital, Brigham and Women's Hospital, Dana Farber Cancer Institute, Eastern Regional Medical, Griffin Hospital, Johns Hopkins, Lahey Clinic Hospital, Massachusetts General, Mayo Clinic Hospital and New England Baptist Hospital.

Further, the most overseas provider types used (outside of hospital services) were paediatric care, spinal care, dermatology, radiology, pharmacy, pathology, psychology, ophthalmology and orthopaedic medicine.



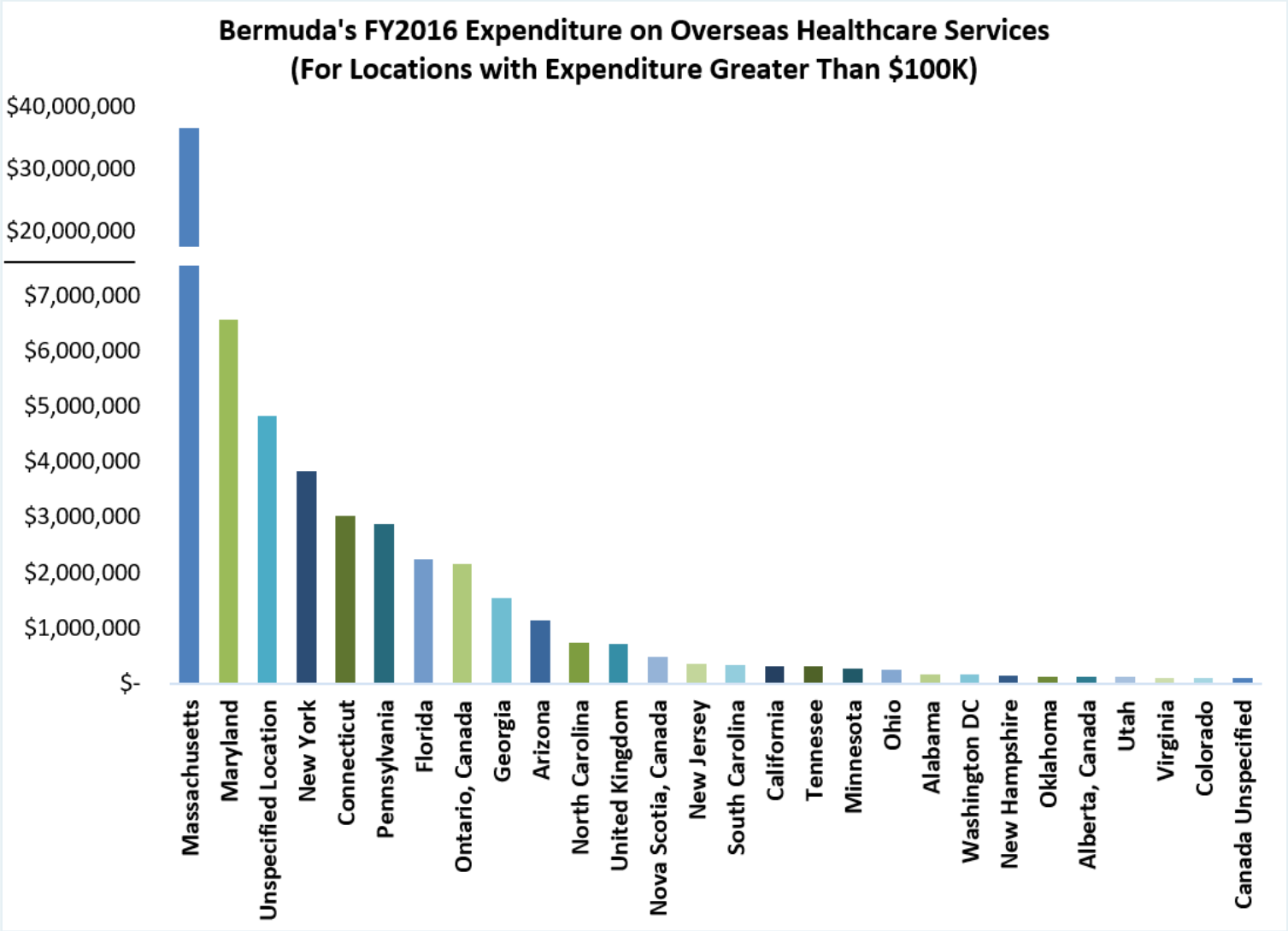


Figure 3: Location-based expenditure on overseas healthcare services

Massachusetts, the most frequently visited location for Bermuda's residents to receive overseas care, has a logistical advantage based on its existing direct flight route from Bermuda with a flight time of 2 hours 24 minutes. This compares to direct flights to Washington, DC (2 hours 25 minutes), Philadelphia (2 hours 25 minutes), New York (2 hours 28 minutes), Toronto (3 hours 10 minutes), Miami (3 hours, 11 minutes), or Atlanta (3 hours 22 minutes).

Despite uncertainty about why individuals seek care at different locations, whether locally or overseas, it is apparent that the use of overseas care by Bermuda's residents differs by age (see Figure 4) and choice may be impacted by the inability to use government managed patient subsidy funding for Standard Health Benefit services outside of Bermuda[7] (shaded areas represent local subsidy age ranges for youth and seniors).

7 The legislation to allow use of Standard Health Benefit overseas was abolished during FY2014/15. This includes use of government subsidy dollars overseas. An individual's overseas care would be covered under their insurance policy's supplemental benefits. If the supplemental coverage does not include payment for overseas services, or the individual does not have health insurance, the services are paid for out-of-pocket, through loans and through charitable donations.

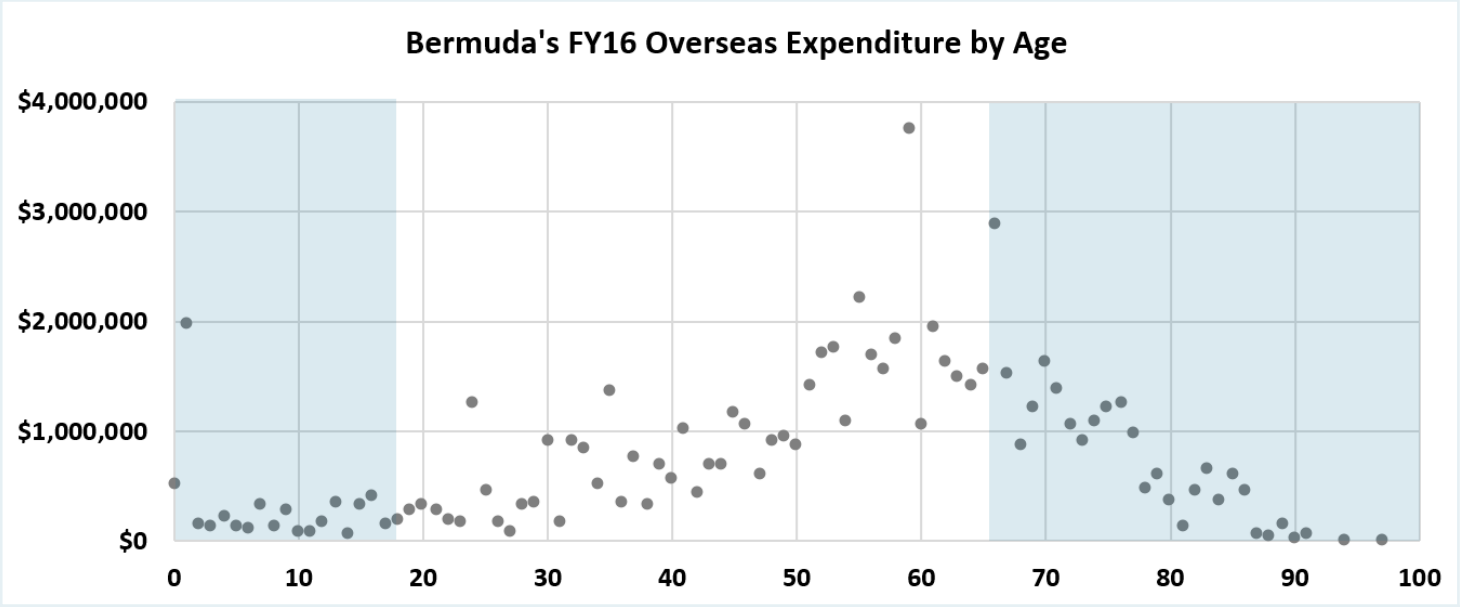


Figure 4: Bermuda's overseas expenditure correlated to age

In addition to direct healthcare services, total overseas treatment costs also include transportation and lodging expenditures with Bermuda spending over $6 million on these services. There were over 8,800 claims for transportation and lodging and more than 150 air ambulance claims (See Figure 5).

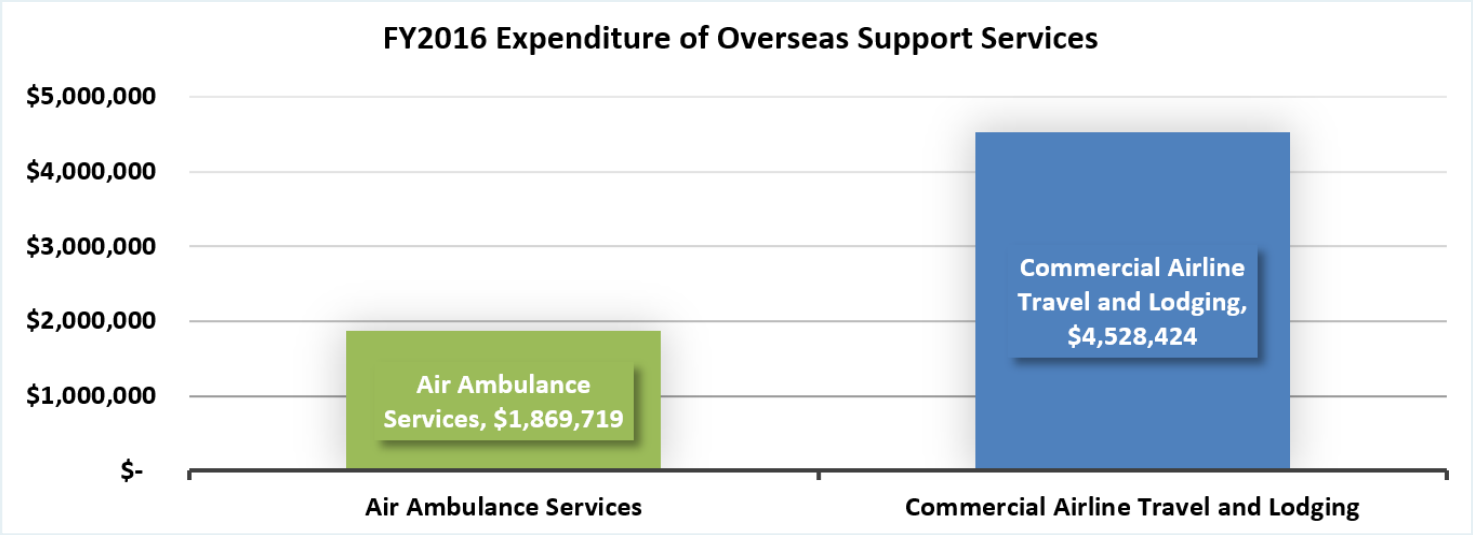


Figure 5: Expenditures on support for overseas care

Expenditures on overseas care, such as those described above, have more than doubled since 2004. With a population estimated at 61,695, and within a constrained land mass, Bermuda must always balance its healthcare supply chain (local and overseas) with patient demand and need of healthcare services. In addition, population health education should be used as a driver for healthcare demand including services for wellness and disease prevention. Over the last 5 years, policy changes, population changes, and increased regulation have led to changes in overall health expenditures, and are observed in a decrease in overseas expenditure over the past two years, with additional decreases expected in FY2016 (see Figure 6).

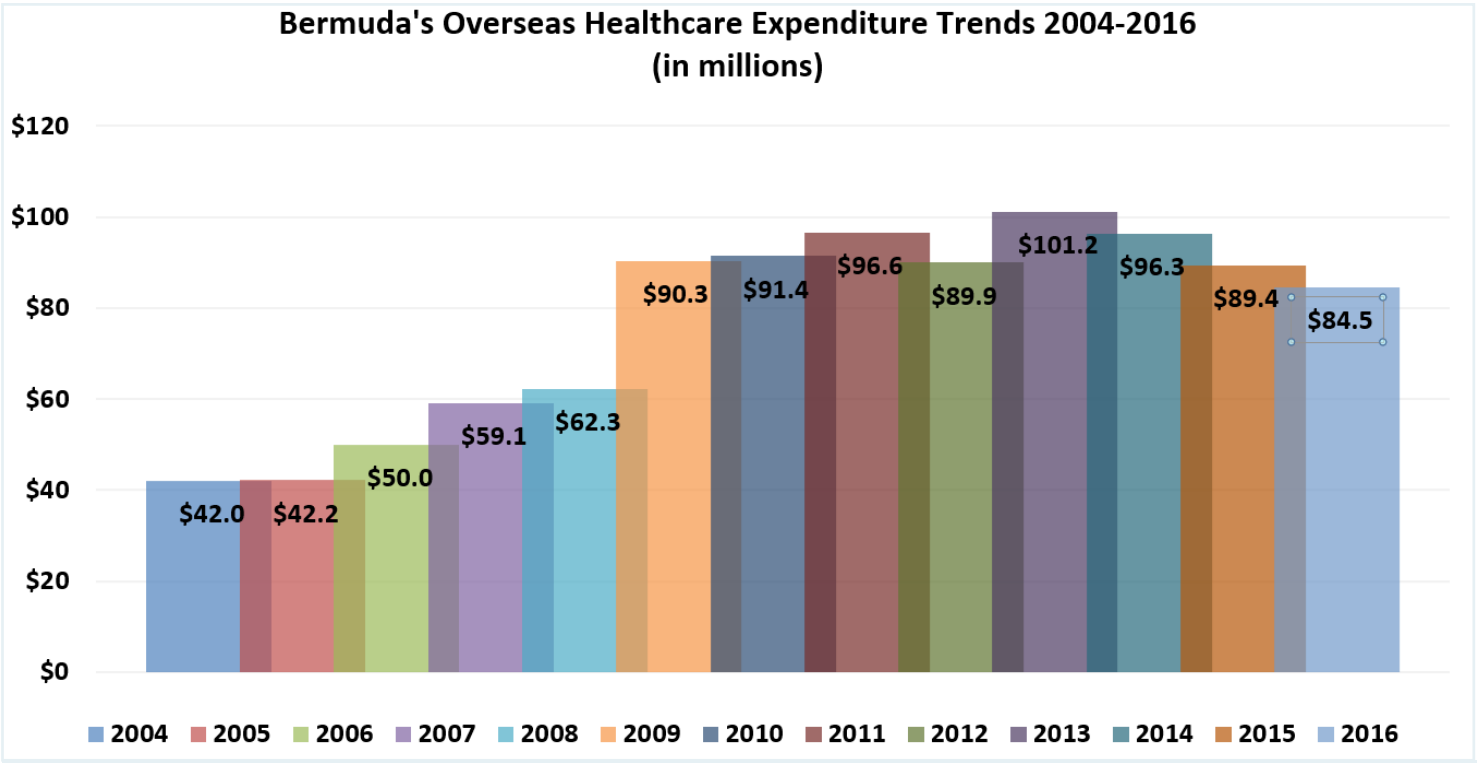


Figure 6: Trends in overseas healthcare spend by local residents between 2004 and 2015. FY2016 is preliminary.

Expenditure for overseas care trade can represent a substantial economic burden to Bermuda in terms of lost spending in the local economy and increased catastrophic health spending by households. Conversely, if a system can properly organise overseas treatment options, it may gain cost savings by sending patients to use services abroad strategically when the costs are lower versus developing or sustaining in-country services.[8]

*Assumptions: A travelling party may consist of a full-time employed male or female patient and a travel companion, at least two 7-hour days are taken off from work and there are a total of 1,820 hours in a work year. (*Average Annual Salary information was obtained from Bermuda Department of Statistics)*

8 Suzana et al. The Economic Burden of Overseas Medical Treatment: A Cross Sectional Study of Maldivian Medical Travellers. BMC Health Services Research (2015) 15:418.

PATIENT DEMAND AND CHOICE

Medical reasons for overseas treatment are often aligned to patient condition. In FY2016, the primary condition most seen by international providers was one of "General Symptoms" (see Table 1). These are symptoms that are not aligned with a specific diagnosis, such as hypertension or cardiac arrhythmia, prior to review by the overseas physician. General Symptoms as a medical coding category, may include alterations of consciousness, hallucinations, syncope and collapse, convulsions, dizziness and giddiness, sleep disturbances, fever and other physiologic disturbances of temperature regulation, malaise and fatigue, and general hyperhidrosis.

Table 1: Top Primary and Secondary Diagnoses Overseas Care Participants

Primary Diagnosis (Top 15)

1. 780 - General Symptoms
2. 185,C61 - Malignant Neoplasm of Prostate
3. 174.9 - Malignant Neoplasm of Female Breast
4. 367 - Disorders of Refraction and Accomodation
5. V42.0 - Kidney Transplant
6. V58.0 - Radiotherapy Encounter
7. V70.0 - Routine Medical Exam
8. V72.83 - Other Specified Pre-Operative Exam
9. 585.6 - End Stage Renal Disease
10. 191.9 - Malignant Neoplasm of Brain
11. V58.11 - Encounter for Antineoplastic Chemotherapy
12. 414.01 - Coronary Atherosclerosis of Native Coronary Artery
13. 162.9 Malignant Neoplasm of Bronchus and Lung
14. 427.31 - Atrial Fibrilation
15. 272.4 - Other and Unspecified Hyperlipidemia

Secondary Diagnosis (Top 15)

1. I10, 401.9, 401.0 - Essential Primary Hypertension
2. E785, 272.4 - Hyperlipidemia
3. C61, 185 - Malignant Neoplasm of Prostate
4. 174.9 - Malignant Neoplasm of Female Breast
5. 427.31 - Atrial Fibrilation
6. Z510 - Encounter for Entineoplastic Radiation Therapy
7. 780.79 - Other Malaise and Fatigue
8. E119, 250 - Type 2 Diabetes Mellitus Without Complications
9. 198.5 - Secondary Malignant Neoplasm of Bone and Bone Marrow
10. 585.6 - End Stage Renal Disease
11. 286.9 - Other Specified Coagulation Defects
12. 285.9 - Unspecified Anemia
13. 162.9 - Malignant Neoplasm of Bronchus and Lung
14. 403.91 - Hypertensive Chronic Kidney Disease
15. V58.69 - Long Term Use of Medications

A regression analysis comparing the costs of care received locally and overseas demonstrates an economic impact to location choice for care. Looking at the macro cost of care locally compared to that overseas shows that on average, claims paid overseas are $345 more expensive than claims paid locally. General office visits, diagnostic imaging, diabetes care, and cardiovascular care costs were also higher at overseas entities. In addition, laboratory and pathology tests are paid more locally. (See Table 2).

Table 2: Regression analysis on insurance claims paid for select services comparing local services to overseas costs

Select Service Claims (Procedure Code)	Number of Claims	Paid Difference Overseas ($)	P Value	Confidence Interval ($)
All Claims	1,834,697	344.95*	P<0.001	(337.88, 352.01)
General Office Visit Claims	120,905	42.43*	P<0.001	(41,80, 45.05)
Surgical Pathology, Level 4 Claims (88305)	1,446	($89.67)*	P<0.001	(-127.47, -51.87)
All Dialysis	26,981	(235.46)*	P<0.001	(-277.56, -193.26)
All Diagnostic Imaging Claims	140,563	52.10*	P<0.001	(42.07, 62.12)
All Laboratory Test Claims	501,206	(10.40)*	P<0.001	(-11.86, -8.93)
Therapeutic, prophylactic, or diagnostic Injections (96372)	1,551	926.82*	P<0.001	(729.61, 1124.04)
Emergency Services – Level 1 Claims	2,711	(35.83)*	P<0.001	(-53.01, -18.65)
Emergency Services – Level 2 Claims	1,540	(123.66)*	P<0.001	(-141.36, -105.96)
Emergency Services – Level 3 Claims	12,484	(134.63)*	P<0.001	(-146.48, -122.77)
Emergency Services – Level 4 Claims	7,638	(121.57)*	P<0.001	(-140.82, -102.31)
Emergency Services – Level 5 Claims	7,614	(17.89)	P=0.312	(-52.61, 16.83)
Patients with Cancer (various) Claims	54,697	552.29*	P<0.001	(250.55, 322.18)
Primary Chronic Kidney Disease (various) Claims	47,039	(262.46)*	P<0.001	(-305.84, -219.07)
Primary Obesity Claims	9,265	92.11*	P<0.001	(55.75, 128.47)
Primary Stroke Claims	5,420	(132.73)	P=0.602	(-632.12, 366.65)
Primary Diabetes Claims	48,792	620.59*	P<0.001	(539.01, 702.16)
Primary Heart Disease Claims	4,390	716.92*	P<0.001	(537.54, 896.29)
Primary Myocardial Infarction Claims	3,037	1556.10*	P<0.001	(1256.66, 1855.55)

* Statistical significance (p<000.1)

RECEIVING VALUE FOR MONEY

Assessing the potential for cost savings also requires an understanding of the complexity of care delivered at various facilities and where services and products can be procured at the best prices and at equitable quality. Accordingly, where a procedure is completed impacts the resulting cost to a health system. The vast majority of overseas care for Bermuda's residents is delivered within the United States.

Globally, United States pricing tends to be higher than other jurisdictions (see Figures 7 and 8). Proximity to Bermuda is a significant driver of care selection, and as global trade in health continues to expand, alternative cost-effective options may be available especially for non-acute care provision.

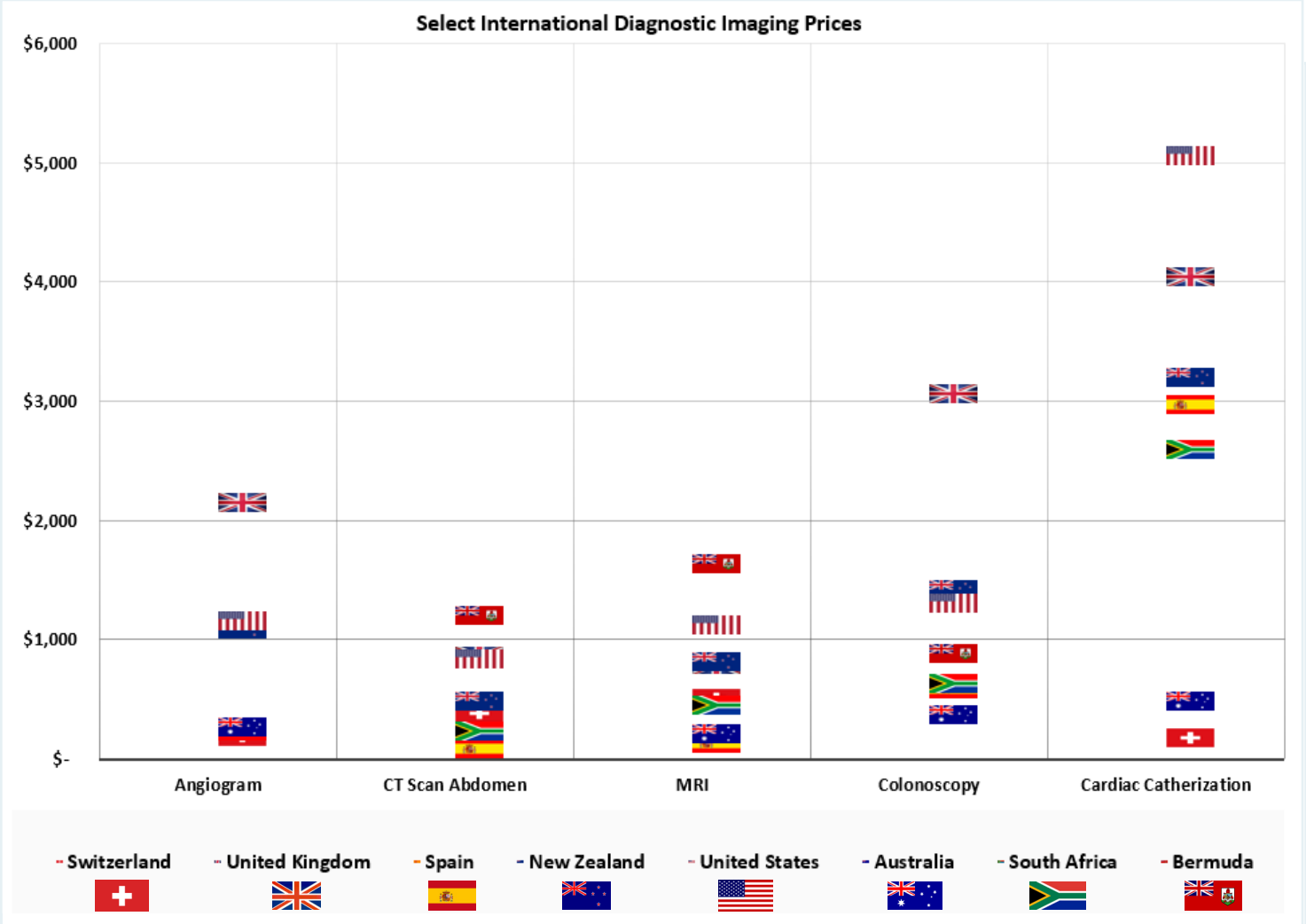


Figure 7: International Federation of Health Plans Sample Review of Diagnostics Prices (2015 Price Report)

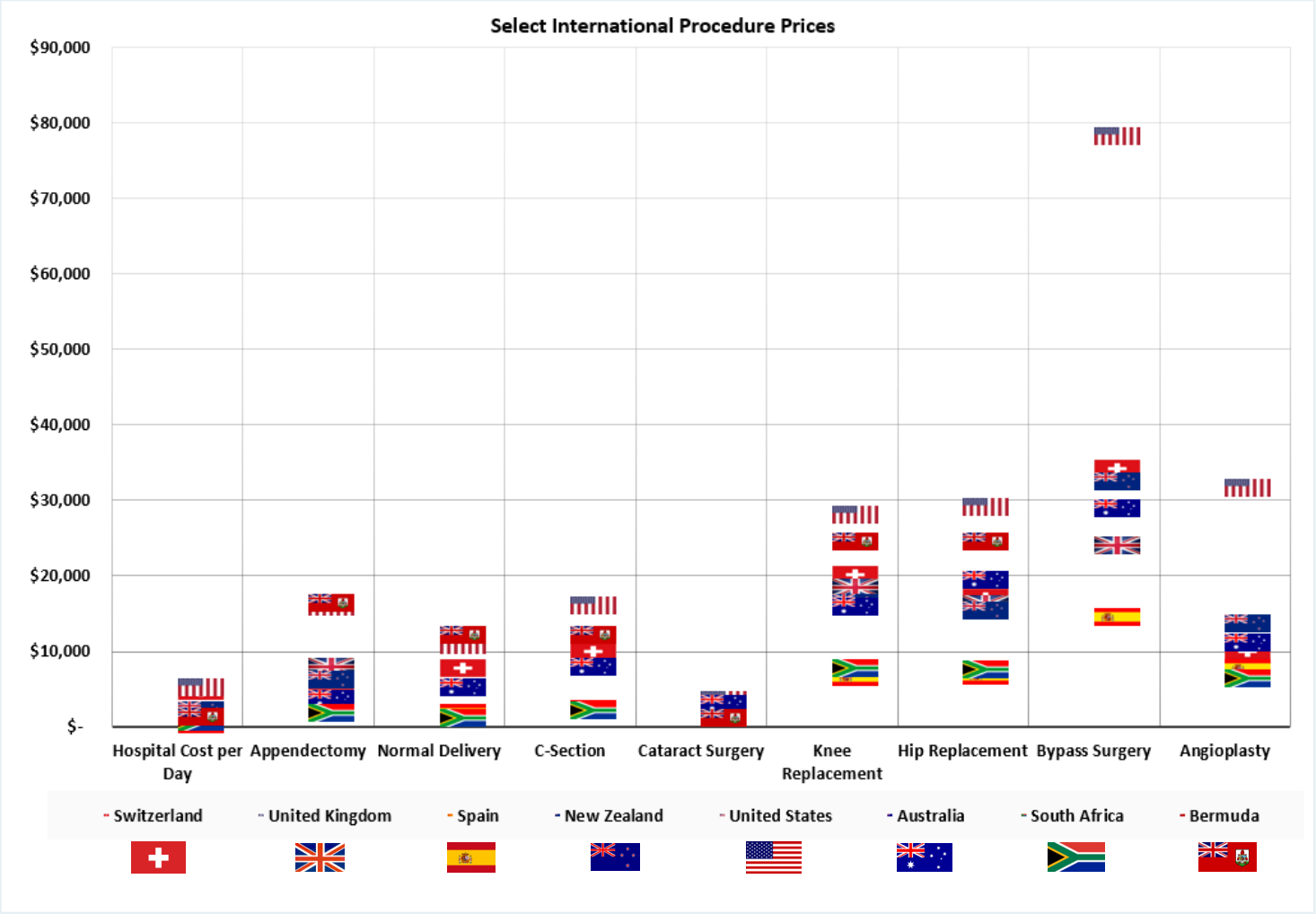


Figure 8: International Federation of Health Plans Sample Review of Procedures (2015 Price Report)

When analysing the actual locations where providers delivered greater than 10 units of treatments or drugs during the reporting period, it was found that the average cost of claims varied amongst the jurisdictions that served Bermuda's population (see Figure 9). Canadian locations tended to be higher in claims costs due to fewer procedures but greater complexity when procedures did occur (e.g., intensive care paediatric cases). Overall, claim differentials often relate to the type of service delivered within a jurisdiction or simply the cost differential of the area.

For example, average claims costs in Maryland is lower than in Massachusetts – Bermuda's two largest servicing areas. This may correlate to a cost of living index within Maryland that is 7.4% lower than Massachusetts. More review into potential value of using Canada as a primary jurisdiction is needed for broader services as the exchange rate can deliver better value for money under the appropriate circumstances (1 CAD = 0.74 USD).

9 http://www.cityrating.com/costofliving.asp

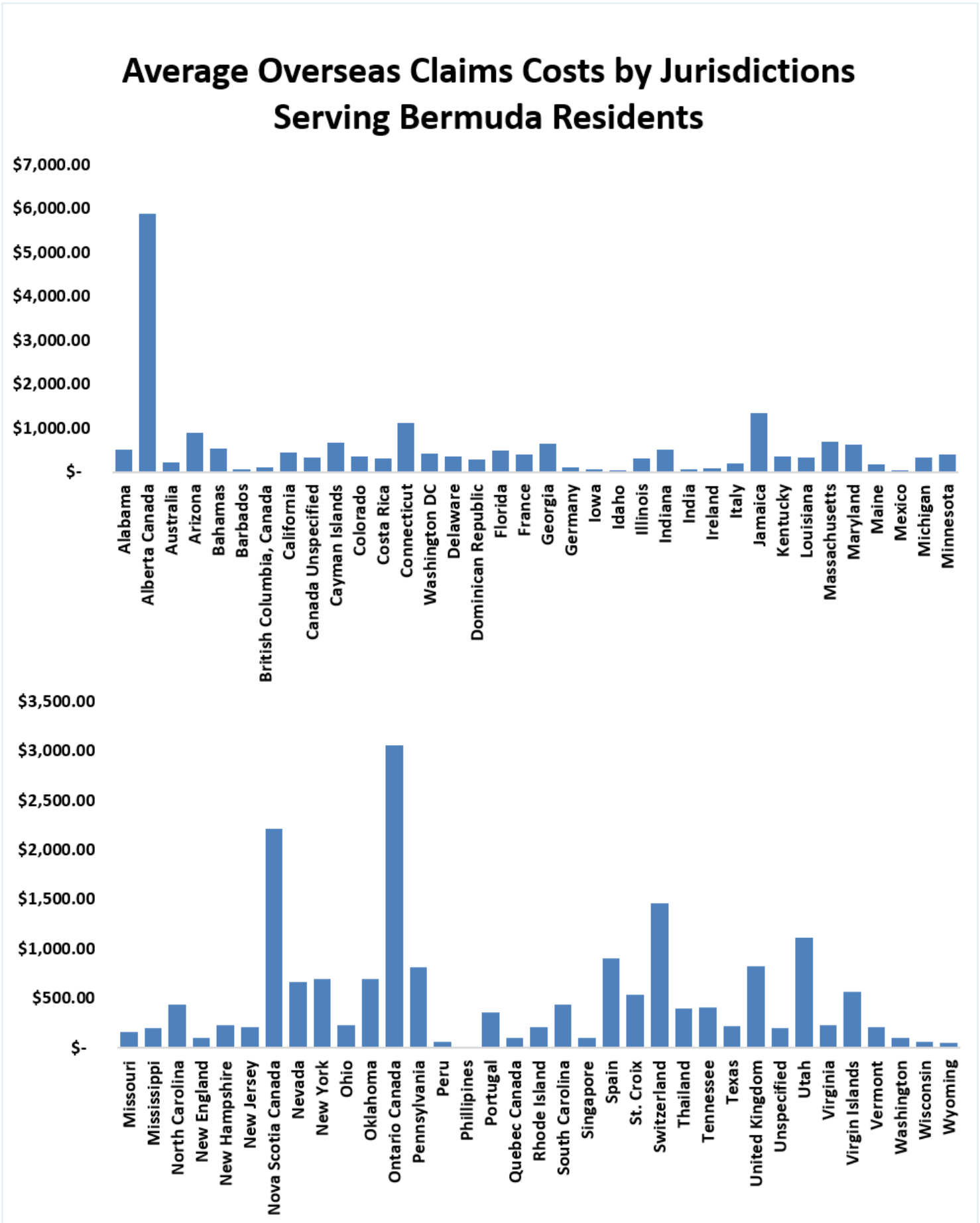


FIgure 9: Average payment per claim based on location (claims n > 10)

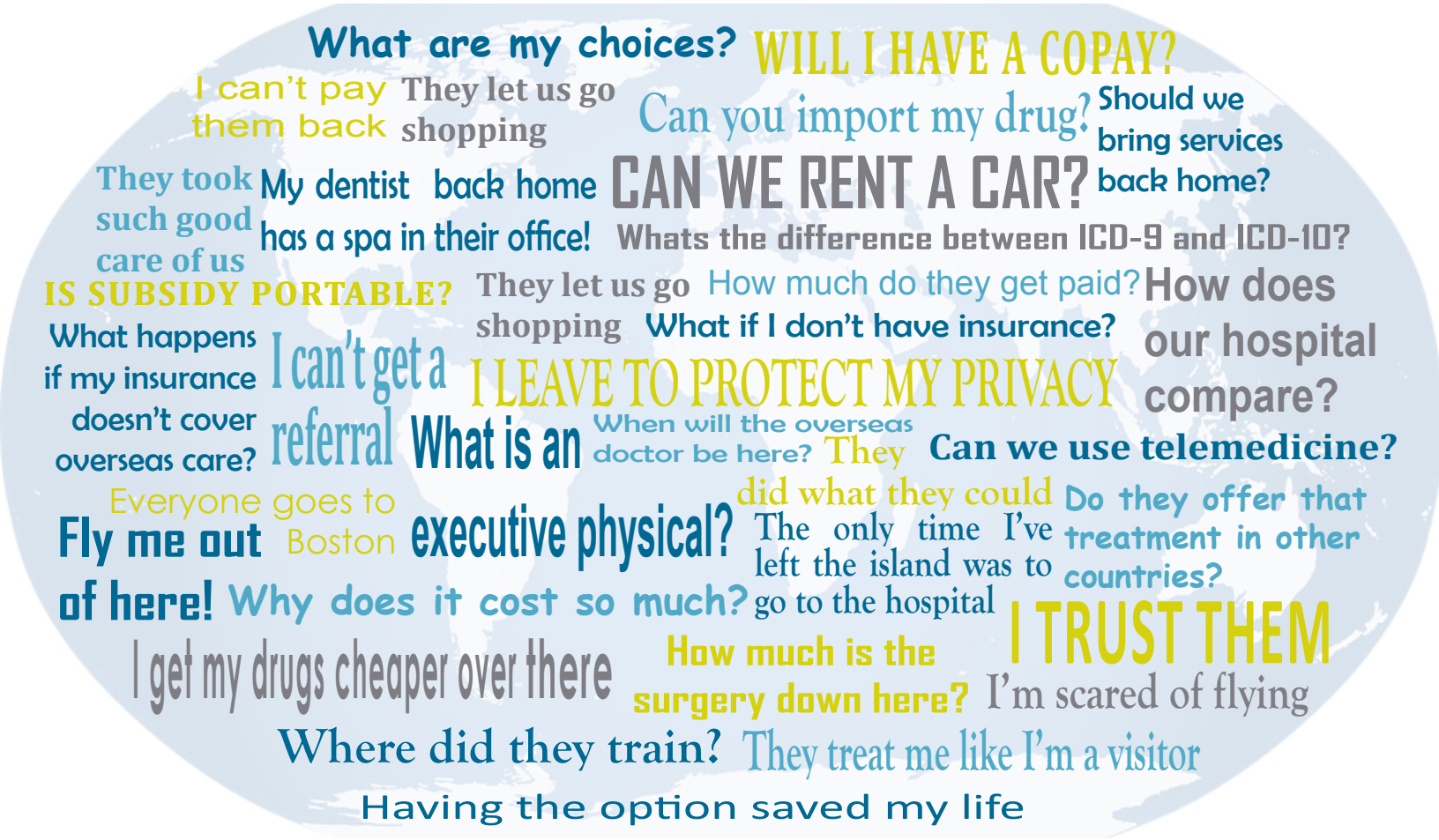


Figure 10: Overseas Voices

Discussion

Discussion #1 - Massachusetts is the most frequently visited location for Bermuda's residents to receive overseas care

For health services delivery, U.S. News ranks Massachusetts #2 in behind Hawaii as the best state in 2016 for healthcare when measuring healthcare access, quality and public health. WalletHub also measured the impact of geography, treatment, and costs to determine the best state healthcare systems. Massachusetts ranks #2 in this analysis for health outcomes, however, it ranks #50 regarding healthcare costs. In the same analysis, Maryland, Bermuda's 2nd most frequently used location, ranks #1 for healthcare costs and #29 for health outcomes.

Reviewing rankings for healthcare provides some insight into why decisions may be made on care locations. However, a 2012 literature review noted that few patients actively choose their healthcare provider. Generally, patients rely on their general practitioner to choose for them or go to the nearest provider, which is a more important factor than care outcome indicators. Furthermore, patients rely on their previous healthcare experiences when deciding where to receive care (Victoor et al., 2012)[10] .

Policy makers assume that patients, as they aim for high-quality care while minimizing costs, will actively choose the best provider. However, research shows that most patients are unable and/or unwilling to make rational choices on providers due to a lack of information on the available options[11] .

Discussion #2 – The primary condition most seen by overseas providers was one of "General Symptoms"

Patients access overseas care for these types of conditions through insurance, charitable contributions[12], and out-of-pocket payments[13]. Though these benefits should be sufficient to cover the health needs of the population, it is important that cost-control mechanisms are established to protect against over-utilisation due to moral hazard or over-referrals.

As healthcare is a good typically purchased in groups, the impact of unnecessary utilisation can be far reaching. Theoretically, patients who have low co-payments may demand any and all pharmaceuticals and other treatments that promise any benefit, net of the risks and side effects of the treatment, without regard to costs. Without understanding of the costs of care, and strategic population based policies, moral hazard can impact Bermuda's health system's financial flexibility.

Discussion #3 – Regression analysis shows that claims paid overseas are $345 more expensive than claims paid locally

To mitigate this risk of uneven spending in healthcare, data analysis such as the one provided on comparative costs of treatments, should be periodically disseminated to allow for more informed consumer market decisions. The more that individuals in Bermuda know about the costs of care and options, the higher probability that more investments can be made to reduce disease, prevent illness, and maintain wellness. For example, during the reporting period, Bermuda spent $26.6 million on dialysis for 165 individuals ($26.3M locally, and $0.3M abroad). When compared to other countries, Bermuda's per unit expenditure for dialysis is significant (see Figure 10).

10 Victoor et al. Determinants of patient choice of healthcare providers: a scoping review. BMC Health Services Research (2012) 12:272
11 Robertson R, Dixon A: Choice at the point of referral: early results of a patient survey. (2009)
12 Charitable organizations include P.A.L.S and Lady Cubitt Compassionate Association
13 Zweifel, Peter, and Willard G. Manning. "Moral hazard and consumer incentives in health care." Handbook of health economics 1 (2000): 409-459.

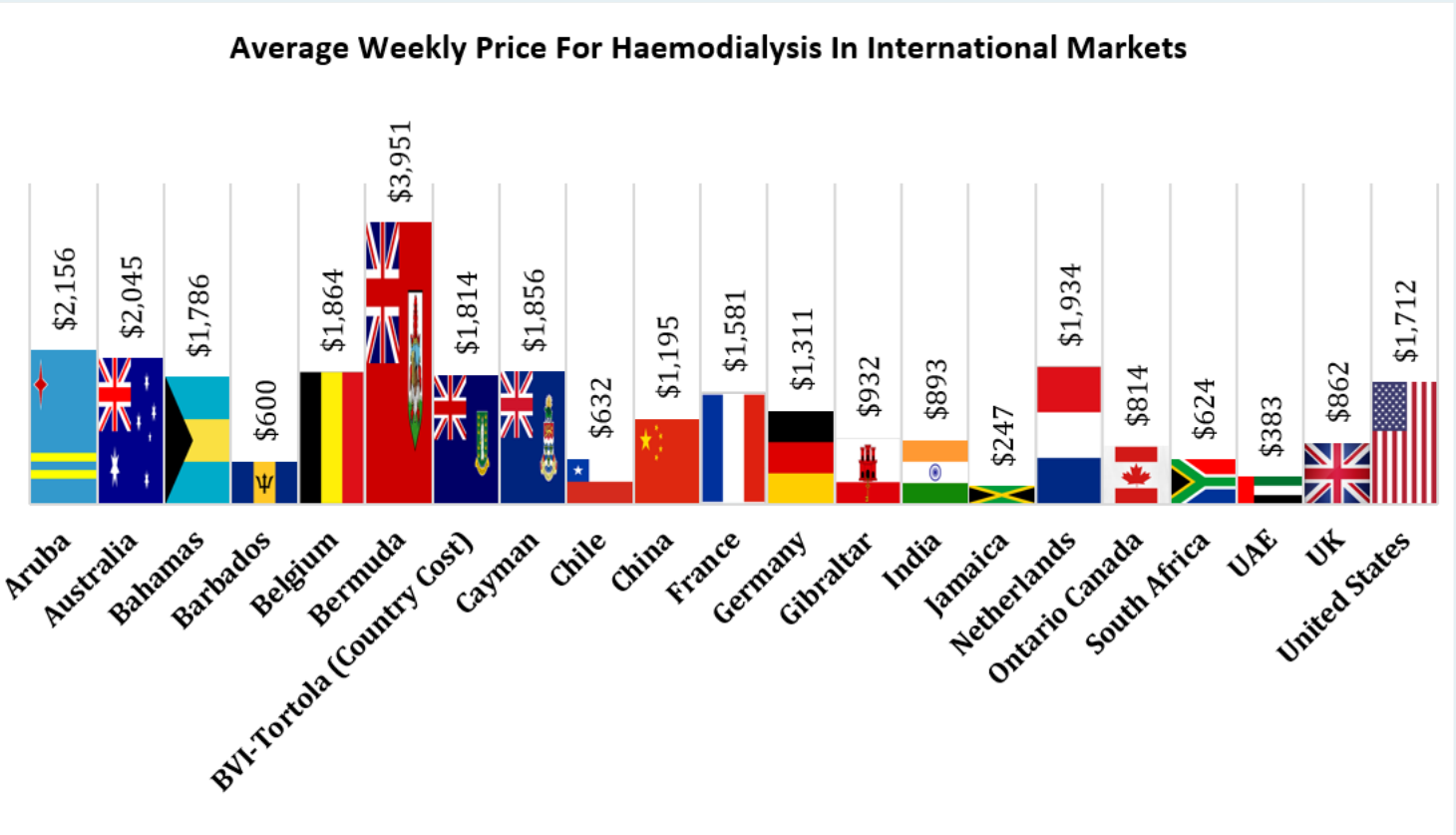


Figure 11: Comparison of global market fees for haemodialysis services based on a routine of 3 sessions per week in 2016 prices[14]

By sharing information on treatments like dialysis, local discussions can occur to address the issues of costs of care and motivate more robust policy and clinical strategies for prevention. Health systems can become bankrupt and the more information that flows into the public sphere, the greater the opportunity for system and individual behaviour change.

Bermuda Health Council's consultations with local stakeholders indicates that the public is indeed interested in hearing more information to better enable individual decision making and government policy setting; this includes providing greater transparency in enhancing understanding about the costs of care locally and overseas. Price-transparency whether local or overseas can lower the costs of healthcare.

According to Boynton and Robinson (2015), both price-transparency and the costs consumers can anticipate paying for a given health service, supports the cost-reduction in the long run. Significant cost-containment cannot occur without widespread and sustained transparency in provider prices[15].

14 Various: https://www.asn-online.org/policy/webdocs/asndagreimbursementdialysis.pdf
http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-015-1166-8
https://academic.oup.com/ndt/article/29/9/1770/1865206/Two-times-weekly-hemodialysis-in-China-frequency
https://www.ncbi.nlm.nih.gov/pubmed/15729985
http://www.gov.ky/portal/pls/portal/docs/1/11528984.PDF
http://kidney.org.au/your-kidneys/support/dialysis/dialysis-and-travel/australian-hd-travel
http://www.jamaicaobserver.com/news/The-uphill-battle-with-kidney-failure_18325697
http://gulfnews.com/xpress/1-600-patients-undergoing-dialysis-in-uae-1.1175036
http://www.nytimes.com/1995/01/22/travel/travel-advisory-health-for-dialysis-patients.html
http://www.gibraltarlaws.gov.gi/articles/2011=128.pdf
http://www.islandsun.com/astronomical-unaffordable-dialysis-is-a-big-problem-ready-to-explode/

15 Boynton and Robinson. Appropriate Use of Reference Pricing Can Increase Value. Health Affairs Blog (2015).

As systems locally evolve, a subset of referrals to overseas facilities may be avoidable. As an example of avoiding referrals, a 2014 study on island utilisation in the Netherlands, found that after the introduction of innovations such as tele-radiology, diagnostic accuracy increased and more patients could be treated without traveling to a hospital[16]. Increased procedural training and enhancing informal channels of communication between generalists and specialists has also been shown to result in more appropriate level of referrals at lower cost[17].

Discussion #4 – Special mention: Pharmaceutical Drugs

Within the claims costs overseas, there are also significant expenditures for pharmaceuticals that are driven by international market prices. Unlike service provision, the pharmaceutical drug market involves a supply chain of manufacturers, wholesalers, retailers and providers. More than $40 million is spent annually on prescription drugs filled in Bermuda and overseas. During FY16, at least $18 million of these pharmaceutical drugs were reimbursed by local insurers. Overseas consumer point of sale transactions, accounted for approximately 11% of these drug sales. The remainder are based on drugs procured from overseas jurisdictions and sold locally in Bermuda. Currently, it is legislated in Bermuda that a person shall only import into Bermuda for medicinal use medicines that are obtained from manufacturers or wholesalers if those medicines are eligible for sale in the United States of America, Canada or a country in the European Union in accordance with the regulatory standards of the relevant country[18].

To optimise value-based purchasing of pharmaceutical drugs, it is important for small jurisdictions to develop some strategic partnerships with other international organisations for larger volume procurement at discounted prices. According to the Comparative Cost Reports released by the International Federation of Health Plans, the sourcing of drugs based on country can result in widely disparate consumer costs (See Figure 11)[19] . As pharmaceutical drug purchase is a significant driver of overseas expenditure and local costs, it is important that drug procurement is carefully managed and strategic partnerships developed. The Pan American Health Organization also stresses that to obtain the best value for money, procurement of drugs should be centralized and conducted in collaboration with other countries. The current drug market does not allow for significant volume discounts to be delivered through unilateral national negotiations.

Bermuda has an opportunity to improve its drug procurement. With more than 18 pharmacies and no local manufacturing of the chemicals, prescription drugs are procured from international sources. As demand is driven by consumers and providers, pharmacies and providers make purchase decisions based on segmented consumer groups.

16 Jacobs et al. Fracture Diagnostics, Unnecessary Travel and Treatment: A comparative study before and after the introduction of tele radiology in a remote general practice. BMC Family Practice (2015) 16:53

17 Donohoe et al. Reasons for Outpatient Referrals from Generalists to Specialists. Journal of General Internal Medicine (1999) 14(5): 281-286.

18 Bermuda Pharmacy and Poisons Act 1979

19 http://www.ifhp.com/

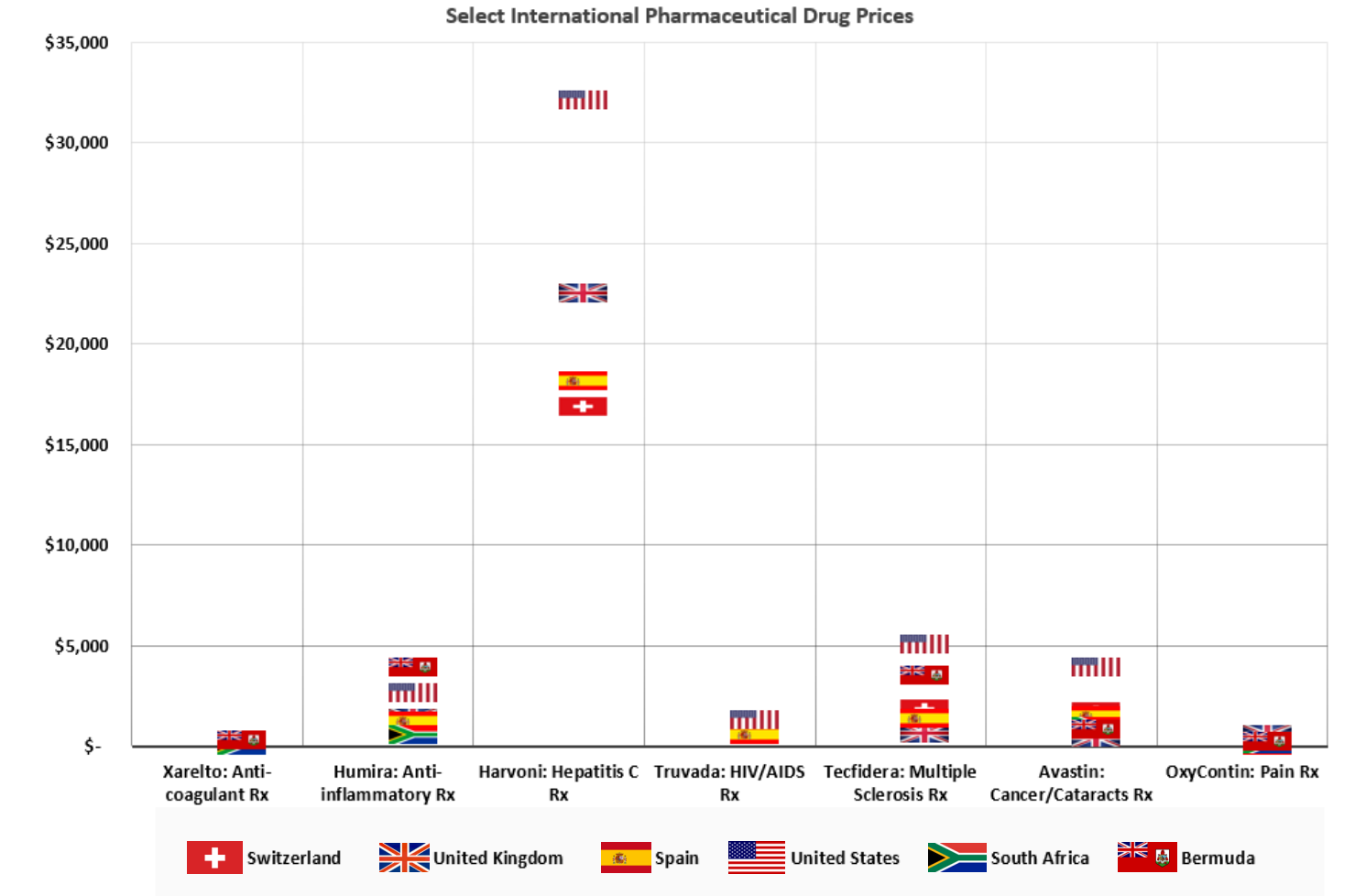


Figure 12: International Federation of Health Plans Sample Review of Drug Prices (2015 Price Report)

Instead of a combined purchase strategy for a population of 61,695, the market is often segmented by special purchase arrangements and patient preference. This results in a local market where consumer price fluctuates, drug expiration is a challenge, and inventory management of supply is contingent on each operation's ability to properly time its ordering. As prescriptions drugs play an increasing role in both the care model of aging patients and using providers locally or overseas, careful review of the processes of international drug procurement and use can reduce growing economic risks within the healthcare system.

Discussion #5 – Special Considerations: Optimising Care Quality

In addition to considering economic impact in overseas care decision making, clinical quality should also be regarded as a primary driver of Bermuda's overseas care. In 2015, leaders at three major international hospital systems pledged to prevent certain surgical procedures from being performed by their surgeons who perform relatively few of them or at their hospitals where relatively few of them are performed. This course of action is promoted by quality improvement advocates. For this pledge they looked at surgical procedures including gastrointestinal, cardiovascular, and joint replacement and established some minimum thresholds for annual volume.

For example, the thresholds ranged from 10 per hospital and 5 per surgeon for carotid stenting to 50 per hospital and 25 per surgeon for hip and knee replacement. It is therefore important that considerations for clinical care take into account volume completed at overseas entities and implications for quality[20].

Within this context, Bermuda can consider repatriation of services as a viable alternative to overseas care demand by local residents; such decisions would be contingent upon an assessment of the expected proportion of volume that may be retained locally in the face of a global market (see Appendix I). This assessment should not just consider service volume and revenue expended, but also consider clinical proficiencies, preference of treatment location, and multiple personnel and perceptual factors[21].

20 Urbach. Pledging to Eliminate Low-Volume Surgery. N Engl J Med (2015) 373:15

21 Using methods such as conjoint analysis in health economics allows estimation of the relative importance of different aspects of care, the trade-offs between these aspects, and the total satisfaction or utility that individuals derive from their choice of healthcare services.

Conclusion

A review of Bermuda's use of overseas care trends provides evidence of how funds are currently being used, the locations of use, and the type of use. These three factors provide a framework for potential avenues to further strategic collaboration and identify means of local expansion of services. Some potential areas of local expansion include furthering specialty care in paediatrics and orthopaedics.

To further build on considering these types of areas for expansion, it may be valuable to include other regional partners is discussions and whether becoming a Centre of Excellence for the Caribbean region is viable. As radiation therapy is operationalized on island, such discussion may be a source of collaboration in the region. Viability of Bermuda's services are important both to ensure that costs are covered and that care quality is maintained for more optimal health outcomes.

Within the regional context, according to the World Bank, the Caribbean region includes an estimated 40 million individuals. The region's islands require external capacity to meet the healthcare needs of its residents. With Bermuda also geographically situated in the Atlantic Ocean off of the East Coast of the United States, there are an additional 112 million individuals within geographic reach. There may be opportunities for Bermuda to become an overseas preferred location for strategic quality health services; this has the added benefit of enhancing care quality and access for local residents to be cared for on island.

In addition to the market possibilities, there are opportunities to focus on maximising positive health outcomes recognising the multiple determinants which influence health. It is critical that systems do not rely solely on spending to reduce sickness; investments in prevention and wellness are also required. Increasing productivity and quality of life demands improvements in service delivery and funding models. As Bermuda's population ages, the prevalence of chronic conditions grows, and the ratio of working public to seniors declines, the model of care must be inclusive of variables outside of the traditional healthcare system.

While transitioning to a more value based system from a current volume based infrastructure, careful examination of current costs and value gained through international partnerships requires a larger community discussion. This is especially important as healthcare is primarily a social good to be protected from biased financially vested interests.

Appendix 1 *Types of procedures completed overseas where the aggregate payments exceed $100,000*

Code	Expenditure	Units of Service	Service Description
-	$25,540,875	26,416	Non-Specific Services
240	$3,382,783	166	General All Inclusive Ancillary Services
RX - 250	$1,849,571	7,076	General Pharmacy
120	$1,679,717	356	General Room And Board Semi-Private Two Bed (Medical Or General)
77385	$1,095,086	576	Radiation Treatment Delivery, Simple
99213-15	$1,053,402	7,122	Office/Outpatient Visit Est
77386	$1,047,418	660	Radiation Treatment Delivery, Complex
360	$950,983	89	General Operating Room Services
77412	$892,565	1,392	Image Guided Radiation Treatment Delivery
121	$855,399	95	Medical/Surgical/Gyn Room And Board-Semi-Private Two Bed (Medical Or General)
96413	$726,742	285	Chemo Iv Infusion 1 Hr
78815	$542,083	214	Pet Image W/Ct Skull-Thigh
SNF	$478,131	29	Skilled Nursing Facilities
99203-5	$426,923	2,033	Office/Outpatient Visit New
VST	$404,932	211	Office/Outpatient Visit
99284-5	$397,987	914	Emergency Dept Visit – Level 4 -5
370	$363,373	337	General Anaesthesia
70553	$335,118	247	MRI Brain Stem W/O & W/Dye
J2505	$319,077	30	Injection, Pegfilgrastim 6mg
77387	$318,784	497	Guidance For Radiaj TX Dlvr
22551	$307,513	65	Neck Spine Fuse & Remov Bel C2
22612	$290,651	47	Lumbar Spine Fusion
206	$286,923	50	Intermediate ICU - Intensive Care
278	$266,960	97	Other Implants - Medical/Surgical Supplies And Devices
63047	$266,870	69	Remove Spine Lamina 1 Lmbr
88305	$264,862	1022	Tissue Exam By Pathologist
90999	$260,419	223	Dialysis Procedure
272	$256,458	418	Sterile Supply - Medical/Surgical Supplies And Devices
99285	$250,340	356	Emergency Dept Visit
77334	$243,734	330	Radiation Treatment Aid(S)
710	$243,319	385	General Recovery Room
77295	$242,388	119	3-D Radiotherapy Plan
99233	$236,277	1,235	Subsequent Hospital Care
J9228	$236,094	4	Ipilimumab Injection
99217	$223,349	232	Observation Care Discharge
99244-5	$220,711	627	Level 4-5 Office Consultation

Code	Expenditure	Units of Service	Service Description
300	$210,730	199	General Laboratory/Clinical
74177	$209,274	237	CT Abd & Pelv W/Contrast
33249	$206,944	17	Insj/Rplcmt Defib W/Lead(S)
LENS	$204,326	823	Eye Wear
77301	$203,541	76	Radiotherapy Dose Plan Imrt
77427	$202,105	424	Radiation Tx Management X5
29827	$200,481	43	Arthroscop Rotator Cuff Repr
670	$200,338	71	Anesth Spine Cord Surgery
96372	$197,572	206	Ther/Proph/Diag Inj Sc/Im
99232	$196,553	1,816	Subsequent Hospital Care
77014	$195,638	733	Ct Scan For Therapy Guide
AMBL	$193,680	253	Ambulance Services
80053	$192,264	1,597	Comprehen Metabolic Panel
93458	$188,941	66	L Hrt Artery/Ventricle Angio
99291	$184,091	383	Critical Care First Hour
210	$183,185	48	General Coronary Care
C9449	$178,570	43	Injection, Blinatumomab
63048	$171,841	64	Remove Spinal Lamina Add-On
77290	$171,228	203	Set Radiation Therapy Field
93306	$170,717	377	Tte W/Doppler Complete
77336	$167,227	566	Radiation Physics Consult
71260	$158,601	235	Ct Thorax W/Dye
J9035	$150,573	11	Bevacizumab Injection
111	$149,694	29	Medical/Surgical/Gyn
174	$148,205	5	Newborn-Level IV Severly Ill Baby/ICU - Nursery
92928	$147,639	39	Prq Card Stent W/Angio 1 Vsl
480	$143,017	31	General Cardiology
58662	$140,746	25	Laparoscopy Excise Lesions
J3490	$138,589	275	Drugs Unclassified Injection
93454	$136,324	58	Coronary Artery Angio S&I
22845	$128,618	66	Insert Spine Fixation Device
77373	$124,005	30	Stereotactic Body Radiation Therapy Delivery
77300	$123,439	212	Radiation Therapy Dose Plan
33262	$121,024	4	Rmvl & Replc Pulse Gen 1 Lead
66984	$120,262	73	Cataract Surg W/Iol 1 Stage
93656	$119,334	9	Tx Atrial Fib Pulm Vein Isol
72197	$117,376	87	MRI Pelvis W/O & W/Dye

Code	Expenditure	Units of Service	Service Description
93653	$115,962	17	Ep & Ablate Supravent Arrhyt
A9606	$115,102	4	Radium Ra223 Dichloride Ther
200	$110,812	25	General Intensive Care
22851	$110,265	49	Application Of Intervertebral Biomechanical Device[S]
95941	$108,164	44	Intraoperative Neurophysiology Remote/>1 Pt Or Per Hr
58571	$108,019	18	Laparoscopic/Hysteroscopic Procedures on the Corpus Uteri W/T/O 250 G Or Less
128	$107,010	9	Rehabilitation
95811	$105,781	71	Polysom 6/>Yrs Cpap 4/> Parm
74178	$103,036	74	CT Abd & Pelv 1/> Regns
C1882	$101,249	4	Cardioverter-Defibrillator, Other Than Single Or Dual Chamber (Implantable)