

## Partnered Care in The Bahamas: A Model of Advanced Healthcare Delivery for Developing Countries,

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### ABSTRACT

**Objective:** To assess the delivery of advanced specialized medical care using The Partnered Care Model as a means of providing affordable access to all, irrespective of ability to pay.

**Design and Methods:** A retrospective analysis of all persons presenting to a specialized, private, cardiac unit, The Bahamas Interventional Cardiology Center (BICC), over an 8.5-year period from March 1996 to September 2004 was conducted. The Bahamas Heart Center's Discounted Service System had been applied since inception to all patients in three groups including insured patients billed at 100% of the fee schedule of The Medical Association of the Bahamas for the procedures performed, private self-pay and government patients billed at 75% and 50% respectively. Their respective distribution and contributions to total revenue was analyzed. A series of financial models were constructed taking into consideration variables that could influence the percentages of revenues collected from each sector and the number of individuals served.

**Results:** One thousand five-hundred and forty-two patients received services in BICC over the 8.5 year period (56% males and 44% females age range: 0.25 – 96 years, with mean age of 55.7 years). One thousand eight-hundred and eighty-eight patient-procedures were performed, with 51% insured generating 69% total revenue, 18% Private producing 16% Revenue, and 31% Government patients generating 15%. Financial models were created to predict revenue behaviour in various scenarios.

**Conclusion:** Partnered Care is a viable alternative for Governments (Ministries of Health) of developing countries to provide costly specialized healthcare to their populations at minimal expense and capital outlay. Partnered Care reduces the otherwise overwhelming burden of healthcare cost to governments, particularly in developing countries, by sharing the burden of care between the private, user and government sectors.

## Cuidados Mediante Asociación en las Bahamas: un Modelo Avanzado de Prestación de Servicios de Salud Para los Países en vías de Desarrollo

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### RESUMEN

**Objetivo:** Evaluar la prestación de servicios médicos especializados avanzados, usando el modelo de cuidados mediante asociación, como medio de proporcionar acceso económico a todos, con independencia de su capacidad de pago.

**Diseño y métodos:** Se llevó a cabo un análisis retrospectivo de todas las personas que acudieron a una unidad privada de cardiología – The Bahamas Interventional Cardiology Center (BICC) – por un periodo del 8.5 años, a saber, de marzo de 1996 a septiembre de 2004. El sistema de servicio de descuentos del Centro Cardiológico de Bahamas, había sido aplicado desde el principio a todos los pacientes en tres grupos. Los mismos comprendían: los pacientes con seguro – quienes pagaban el 100% de la suma estipulada por la Asociación Médica de Bahamas para los procedimientos realizados, los pacientes privados auto-financiados, y los pacientes con asistencia gubernamental, que abonaban 75% y 50% respectivamente. Se analizó su distribución respectiva y sus contribuciones al ingreso total.

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*Se construyó una serie de modelos financieros tomando en consideración las variables que podrían influir en los porcentajes de ingresos percibidos por cada sector así como el número de individuos atendidos.*

**Resultados:** *Mil quinientos cuarenta y dos pacientes recibieron servicios en el BICC por espacio de 8.5 años (56% hombres y 44% mujeres). El rango de edad: 0.25–96 años, con una edad media de 55.7 años). Se realizaron mil ochocientos ochenta y ocho procedimientos por los cuales el 51% constituido por los asegurados generó un ingreso total del 69%; el 18% formado por los privados produjo un ingreso del 17%; y el 31% representado por los pacientes gubernamentales generó una entrada del 15%. Se crearon modelos financieros a fin de predecir el comportamiento de los ingresos en diversos escenarios.*

**Conclusión:** *El cuidado mediante asociación es una alternativa viable, mediante la cual los gobiernos (los ministerios de salud) de los países en vías de desarrollo pueden brindar a sus respectivas poblaciones, servicios de salud especializados – que de otra forma serían costosos – con costos y desembolso de capital mínimos. Los cuidados mediante asociación reducen la carga del costo de la atención a la salud para los gobiernos – carga que de otra forma resultaría realmente abrumadora, especialmente en los países en vías de desarrollo. Esto se logra mediante el procedimiento de compartir la carga de los cuidados médicos entre los tres sectores referidos – el de los usuarios, el privado, y el gubernamental.*

West Indian Med J 2006; 55 (1): 31

## INTRODUCTION

The benefits of technological advances in healthcare delivery are indisputable; at the dawn of the new millennium, man's average lifespan had doubled compared to one hundred years ago. Unfortunately, as technological advances have become the standard of care in the management of the most common diseases, technology has emerged as a major determinant in the rising cost of healthcare delivery. As cost becomes the major impediment to universal access to healthcare, governments are challenged to find creative means of acquiring these expensive technologies. Public-Private Sector initiatives have emerged as viable options to fund the delivery of healthcare services (1).

Cardiovascular disease is the leading cause of morbidity and mortality in the Bahamas (2) but unfortunately, modern cardiac care is limited mainly to the private sector services. A new concept in public-private healthcare partnerships, Partnered Care, was introduced to provide universal access and delivery of state-of-the-art cardiac diagnostic and therapeutic services in both the public and private sectors.

Partnered Care is a novel and very cost-effective means of making state-of-the-art and costly medical services available to the general population, irrespective of their ability to pay.

It requires that a significant tri-partite partnership be formed between the three main sectors involved with healthcare: the private sector or investor-service provider group, the user sector, and the government sector.

The private sector or investor-service provider group finances the project and delivers the service(s). The User Sector refers to the customer base that is the general public and main user of healthcare services. The government sector refers to the governing body of the country, usually

responsible for regulatory matters and for ensuring that all residents have appropriate and necessary healthcare services – regardless of ability to pay (Fig. 1).

Partnered Care also requires, to be most effective, that a discounted service system be implemented such that the population is divided into three main payor groups, namely: insured patients; private self-pay patients; and government or public patients.

Insured patients have their medical care funded by major medical insurance programmes. Private self-pay patients seek private care but are not insured. Government-public patients are neither insured nor private; they may pay for their care (self-paying public patients), or the Government may sponsor or subsidize the cost of healthcare for these constituents.

The Bahamas Heart Center, a private healthcare facility, was established in 1990 with a mission to provide Comprehensive Cardiac Services to all residents of The Bahamas, irrespective of ability to pay. The Center's "Discounted Service System" (BHCDSS) was central to meeting this objective. The Center implemented the Medical Association of the Bahamas Fee Schedule Guidelines. These guidelines were adopted from the relative value system and fee schedule guidelines of the Healthcare Consultants of America Inc. Each service provided is assigned a certain number of Relative Value Units (RVU) depending on its complexity and resource demands. The RVU multiplied by the Conversion Factor produces the price offered to insured patients and insurance companies for a particular service. The benchmark cost of a service recommended by the MAB is at a Conversion Factor (CF) of \$10.00/Unit, range of \$9 – \$11/Unit. The Bahamas Heart Center applied the following discounted policy: private self-pay patients were charged a

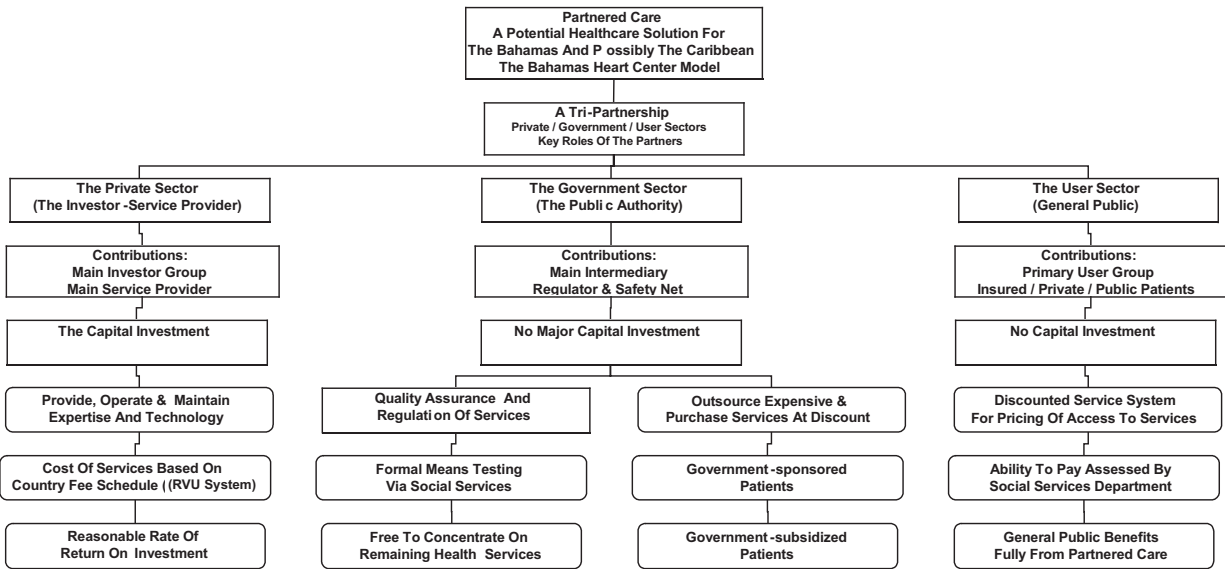


Fig 1: The Partnered Care Approach: a potential healthcare solution for the delivery of advanced healthcare services.

CF = \$7.50/Unit and public patients \$5.00/Unit, representing 25 and 50% discounts respectively. The end result is that public patients receive the same access and care as the insured or private patients, but at significantly reduced rates. This study reviews the first 8.5 years of implementing Partnered Care in the delivery of cardiovascular services in the Bahamas. The findings suggest that the concept can be extended to provide advanced technologies in the management of other prevalent pathologies, such as cancer, and can serve as a model for other Caribbean countries.

**SUBJECTS AND METHODS**

A retrospective review of the medical records of patients presenting to the BICC since its inception in March 1996 through September 2004, was undertaken. The data on numbers of patients seen, their demographic data including age, gender and distribution according to payor status were reviewed. The frequency of performance of procedures, such as cardiac catheterization and interventional procedures, in relation to payor class was also examined. The frequency of performance of procedures in relation to payor class was reviewed, and net contributions of each payor group to total revenue of BICC was determined. All revenue data are presented as the percentage contributions to revenue compared with percentage procedures.

A Partnered Care Financial Model (Table 2) was designed taking into account the prevalence of the three payor groups in a given population, and the relevant discounted service system. This allowed for one to predict the contribution of each payor group to revenue. This model was also applied to the BICC Experience.

**RESULTS**

One thousand five-hundred and forty-two patients were seen during the subject period of 8.5 years, March, 1996 to September, 2004 (Fig. 2). Of the 1542 patients seen, 762

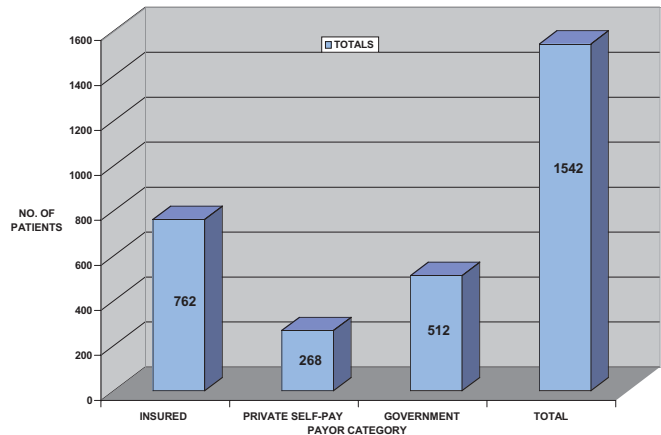


Fig 2: BICC patient population by payor category for period March 1996 to September 2004.

(50%) were insured, 268 (17%) were private self-pay patients and 512 (33%) were government or public patients (Fig. 3). The gender distribution (Fig. 4) revealed 834 (44%) females and 1054 (56%) males. Patient Age Distribution (Fig. 5) ranged from three months to 96 years. The majority of patients (83%) were between 40 and 79 years of age. The population mean age was 55.7 years, with the average female age of 56.4 years and the average male age of 55.2 years.

The most commonly performed procedure (Fig. 6) was adult cardiac catheterization (67% of total) with a 15% progression to an adult interventional procedure including

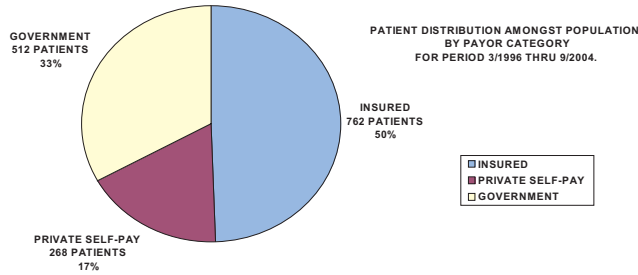


Fig 3: BICC patient population by payor distribution.

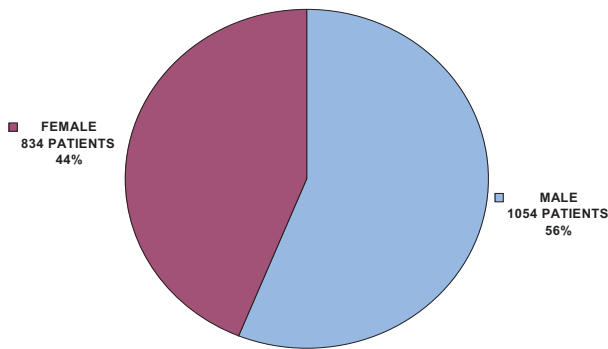


Fig. 4: Gender distribution of BICC patient population.

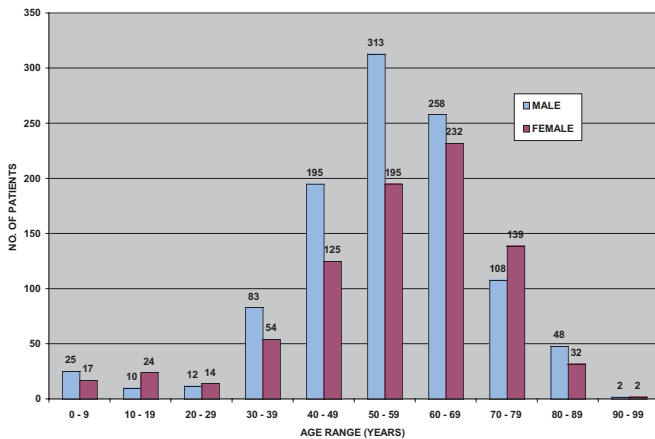


Fig 5: Age and sex distribution of BICC patient population over 8.5 year period

angioplasty or stenting. Pacemakers also form an active component of the total service with all types implanted, including single and dual chamber systems, with or without rate-responsivity, in addition to a smaller defibrillator service.

A total of 1888 patient-procedures were performed on the patient population of 1542. With respect to payor class, (Fig. 7, 8), 961 (51%) procedures were performed on insured patients, 335 (18%) on private self-pay patients, and 592 (31%) on government or public patients.

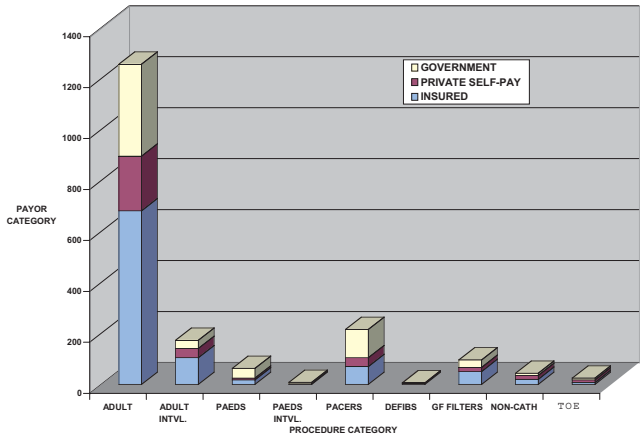


Fig. 6: The spectrum of services offered to all payor classes by the BICC

Legend for BICC Procedures:

- §Adult: Adult Catheterization Procedures: Left and Right Heart Catheterization, Coronary, Pulmonary, Central and Peripheral Angiography and Venography;
- §Adult intvl: Adult Interventions: Coronary and Peripheral Angioplasty and Stents, Balloon Mitral Valvuloplasty;
- §Paeds: Paediatric Catheterization Procedures as per adults;
- §Paeds intvl: Paediatric Interventions: Pulmonic Balloon Valvuloplasty;
- §Pacers: Pacemakers: VVI, VVIR, DDD, DDDR;
- §Defibs: Defibrillators: ICD, BiV-ICD;
- §GF filters: Greenfield Filter Implantation;
- §Non-cath: Non-Cath Procedures, Intra-aortic Balloon Pump Insertion, Fluoroscopic Procedures;
- §Toe: Trans-Oesophageal Echocardiography

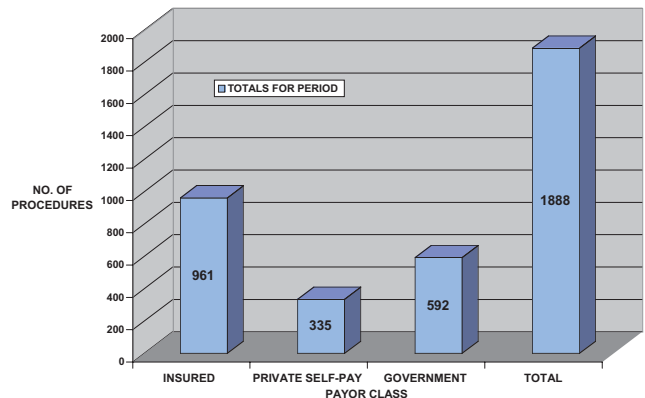


Fig. 7: Procedure distribution amongst population by payor category.

If revenue is represented as a percentage of each dollar earned, then the experience of The Bahamas Interventional Cardiology Center over the period under review (Table 1) revealed: insured patients accounted for 69.18% (69%) of total revenue; private self-pay patients accounted for 15.82% of total revenue; and government-public patients accounted for 15% of Total Revenue.

Government or public patients generated 15% of total revenue, with approximately a third of the patients providing

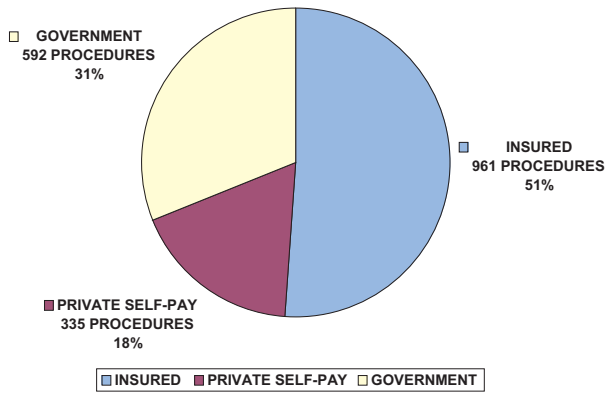


Fig. 8: Percentage distribution of procedures by payor class.

earned is generated by care of insured patients (51% population); 16% of total revenue or 16 cents of every dollar earned is generated by private self-pay patients (18% population); 15% of total revenue or 15 cents of every dollar earned is generated by government or public patients (31% population, self-pay and subsidized).

The actual results for The Bahamas Interventional Cardiology Center Experience (Table 2, Panel I) compared favourably to within  $\pm 5\%$  of the predicted results of the Partnered Care Financial Model (Table 2, Panel II). At the extremes of insurance penetration (that is 0% insured and 100% government-sponsored (Table 2, Panel III) versus 100% insured and 0% government-sponsored (Table 2, Panel IV)), the Partnered Care Financial Model indicated 50% Maxi-

Table 1: The contribution by the parties (government, private, insured) of revenues earned by The Bahamas Interventional Cardiology Center, over an 8.5-year period, March 1996 – September 2004

No	Year	Ministry of Health	Public – Self Pay	Government	Private – Self Pay	Insured	Total Sales
1	1996 (3–12)	0%	10%	10%	10%	80%	\$1
2	1997	0%	0%	0%	12%	88%	\$1
3	1998	7%	4%	10%	14%	75%	\$1
4	1999	17%	2%	19%	9%	72%	\$1
5	2000	19%	2%	21%	16%	63%	\$1
6	2001	10%	6%	16%	22%	62%	\$1
7	2002	17%	4%	20%	28%	52%	\$1
8	2003	10%	7%	18%	13%	70%	\$1
9	2004 (1–6)	13%	10%	23%	19%	59%	\$1
Totals							
<b>Percentages</b>		<b>10.81%</b>	<b>4.19%</b>	<b>15.00%</b>	<b>15.82%</b>	<b>69.18%</b>	<b>100.00%</b>

their own funds (4.2% total revenue), while the government sponsored or subsidized the remaining patients (10.8% total revenue).

Further review of the revenue generated by patient-procedures and the distribution amongst payor classes (Fig. 9) revealed: 69% of total revenue or 69 cents of every dollar

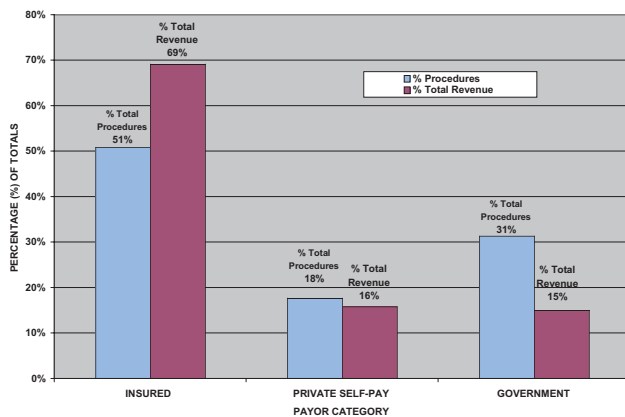


Fig 9: The Bahamas model: BICC distribution of revenue and population per payor category over the 8.5 year period, March 1996 to September 2004.

Table 2: Partnered care financial models for advanced healthcare services delivery as seen in BICC and countries with varied insurance penetration

Panel 1: BICC's actual results for 8.5 year period, March 1996 – September 2004

Category	% Population	% Full Payment	Amount of Revenue	% Total Revenue
	a	b	c = a.b	%d = c/tot rev
Insured	51%	\$100	\$51	69%
Private	18%	\$75	\$13	16%
Government	31%	\$50	\$16	15%
<b>Subtotals</b>	<b>100%</b>		<b>\$80</b>	<b>100%</b>

Panel 2: Partnered care financial model's predicted results for BICC

Category	% Population	% Full Payment	Amount of Revenue	% Total Revenue
	a	b	c = a.b	%d = c/tot rev
Insured	51%	\$100	\$51	64%
Private	18%	\$75	\$13	17%
Government	31%	\$50	\$16	19%
<b>Subtotals</b>	<b>100%</b>		<b>\$80</b>	<b>100%</b>

**Panel 3: Financial model for a 100% government-sponsored population**

Category	% Population	% Full Payment	Amount of Revenue	% Total Revenue
	a	b	c = a.b	%d = c/tot rev
Insured	0%	\$100	\$ –	0%
Private	0%	\$75	\$ –	0%
Government	100%	\$50	\$50	100%
<b>Subtotals</b>	<b>100%</b>		<b>\$50</b>	<b>100%</b>

**Panel 4: Financial model for a 100% insured population**

Category	% Population	% Full Payment	Amount of Revenue	% Total Revenue
	a	b	C = a.b	%d = c/tot rev
Insured	100%	\$100	\$100	100%
Private	0%	\$75	\$ –	0%
Government	0%	\$50	\$ –	0%
<b>Subtotals</b>	<b>100%</b>		<b>\$100</b>	<b>100%</b>

imum Potential Revenue Capacity for the former, and 100% Maximum Potential Revenue Capacity for the latter.

## DISCUSSION

Chronic non-communicable diseases have replaced communicable diseases as the leading cause of morbidity and mortality in the Caribbean and Latin America (3). This has placed an additional burden on the already heavy cost of providing health services, especially to the poor. Funding healthcare is a primary issue globally. In Europe, a socialized medical system ensures universal access to healthcare services. In the United States of America, healthcare is provided through the free market, and only the indigent and elderly have access to publicly financed healthcare. Historically in the Caribbean, healthcare evolved from the European socialized health models but the limited resources and economies precluded adequate funding of healthcare services. Taylor (4) suggests that contracting could be one of the ways in which a government can harness private sector resources to achieve national health objectives.

The investigation and management of cardiovascular disease requires significant financial resources. Consequently, in the Caribbean as in most developing countries, cardiac services meet the basic clinical standards of care. For the most part, modern technology-based, state-of-the-art services, considered the standard of care in the developed countries, are not available. If they are, the services are confined to the private sector and are infrequently accessed by the public sector.

This study documents the contributions and value of the private sector in healthcare delivery as a national commitment. While the capital outlay may be prohibitive for the

government, the private sector investment in modern technology becomes a framework for the government to provide a comprehensive modern service to all its constituents at minimal costs.

The study reveals some interesting findings about the prevalence of insurance in the Bahamas and the willingness of individuals to pay for their healthcare. It is estimated that approximately 35% of the total population of The Bahamas is insured (5). However, in this BICC population, 83% of total patients were in the 40–79-year age group. Of this population of patients, 51% were insured, while 18% of private self-pay patients utilized the 25% discounted fee. Hence, the government needed only to subsidize or support 30 to 35% of the patients.

Partnered Care benefits all users, and the Government of The Bahamas. Thirty-one per cent of the patients receiving services at The Bahamas Interventional Cardiology Center were public patients, and therefore were able to access the government's rate of 50% discount. One third of these public patients (10% total population), paid for their care without Government assistance or subsidy.

Government-public patients (31%) accounted for 15% of the Center's revenues, and therefore the government's subsidy outlay accounted for less than two-thirds of 15% (or < 10% of total revenues), taking into account the self-payor.

Not all Public patients qualified for government subsidy through a formal or informal "means testing". They (31% population) were first informally offered the opportunity to pay for their required services at the Government's 50% discount rate. A third of these patients (10% of user population) responded in the affirmative to generate approximately 5% revenue out of the 15% total revenue generated by care of government-public patients. Those who responded in the negative or needed assistance, were referred for formal means testing by Social Services Consultation to verify need for Government Subsidy (Payment in Part), or Government Sponsorship (Payment in Whole). Hence, well under 10% total revenue of BICC was provided by government support of government-public patients.

In recent years, the Public Hospitals Authority (PHA) has collected funds from Self-Paying Public Patients at Princess Margaret Hospital. The PHA then applied the appropriate subsidy (or sponsorship), if needed, and submitted payment in full to The Bahamas Interventional Cardiology Center. The exact amount of self-pay is thus undetermined in these later years, though definitely less than 10% total revenue.

The Partnered Care Financial Model permits one to predict the applicability and financial viability of the said model to a country or territory based on the degree of penetration of the various payor groups, as well as the degree of discounting of the services offered. Depending on economies of scale and capital outlay, even at 100% discounted fees, revenues predicted could make the partnered care model

financially viable for all three sectors concerned: the private sector, the user sector and the government sector.

**CONCLUSION**

Partnered Care is a viable, alternative means for developing countries to provide advanced healthcare services to their populations at minimal capital outlay and recurrent expenses to government.

Unlike most healthcare systems in the world, Partnered Care allows for all of the stakeholders (government, private and public or user sectors) to benefit from such a tri-partnership, while sharing and conquering the otherwise overwhelming burden of the cost of healthcare (Fig. 10).

capital expenditure and recurrent expenses while providing in many cases, state-of-the-art, high quality healthcare to its constituents. The public sector clearly benefits from the improved access and affordability, while the Private Sector can earn a reasonable rate of return on investment that should encourage them to provide further advances *via* said model, particularly if contracted to do so. The benefits to the government sector are immeasurable.

It behooves the governments of the Caribbean to embrace partnered care as a strategic directive in formulating their health policies. With healthcare cost assuming and consuming an increasing proportion of national budgets at the expense of other necessary services, Partnered Care serves as an effective tool for balancing the budget. Governments may want to consider providing economic incentives to encourage the private sector to participate in the national delivery of healthcare, advanced and otherwise.

**ACKNOWLEDGEMENTS**

We take this opportunity to thank the staff of The Bahamas Heart Center and of The Bahamas Interventional Cardiology Center for their help in making Partnered Care happen and their assistance in the medical chart reviews. We look forward to expanding this concept to other areas of need in medicine.

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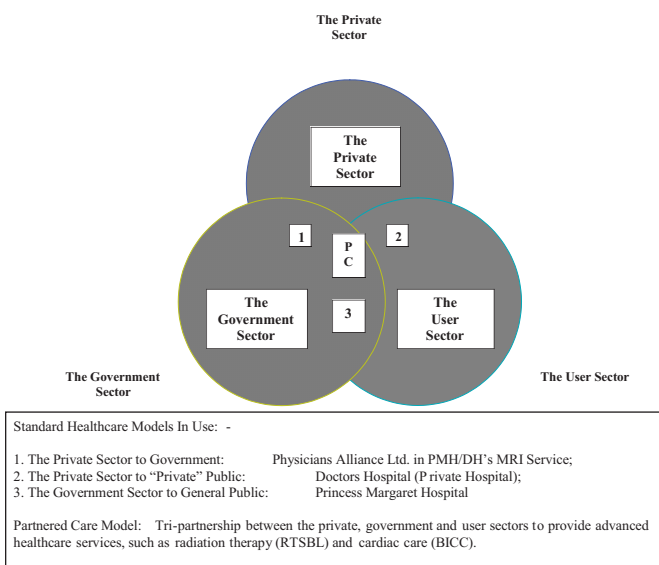


Fig. 10: The partnered care model

Integral to the success of the Partnered Care Model and the mutual and trilateral benefit of all parties concerned, is the willingness of the government sector (leadership, their offices and agencies, and political will) to embrace the opportunity for governments to drastically decrease their