

1 **Title Page**

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3 Cardiac Rehabilitation Availability and Characteristics in Latin America and the  
4 Caribbean: A Global Comparison

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1 **Abstract**

2 **Background:** This study aimed to establish availability and characteristics of cardiac  
3 rehabilitation (CR) in Latin America and the Caribbean (LAC), where cardiovascular  
4 disease is highly prevalent.

5 **Methods:** In this cross-sectional sub-analysis focusing on the 35 LAC countries, local  
6 cardiovascular societies identified CR programs globally. An online survey was  
7 administered to identified programs, assessing capacity and characteristics. CR need  
8 was computed relative to ischemic heart disease (IHD) incidence from the Global  
9 Burden of Disease study.

10 **Results:**  $\geq 1$  CR program was identified in 24 LAC countries (68.5% availability;  
11 median=3 programs/country). Data were collected in 20/24 countries (83.3%); 139/255  
12 programs responded (54.5%), and compared to responses from 1082 programs in 111  
13 countries. LAC density was 1 CR spot per 24 IHD patients/year (vs. 18 globally).  
14 Greatest need was observed in Brazil, Dominican Republic and Mexico (all with  
15  $>150,000$  spots needed/year). In 62.8% (vs 37.2% globally  $p<.001$ ) of CR programs,  
16 patients pay out-of-pocket for some or all of CR. CR teams were comprised of a mean  
17 of  $5.0\pm 2.3$  staff (vs  $6.0\pm 2.8$  globally;  $p<.001$ ); Social workers, dietitians, kinesiologists,  
18 and nurses were significantly less common on CR teams than globally. Median number  
19 of core components offered was 8 (vs 9 globally;  $p<.001$ ). Median dose of CR was 36  
20 sessions (vs 24 globally;  $p<.001$ ). Only 27 (20.9%) programs offered alternative CR  
21 models (vs 31.1% globally;  $p<.01$ ).

1 **Conclusion:** In LAC countries, there is very limited CR capacity in relation to need. CR  
2 dose is high, but comprehensiveness low, which could be rectified with a more  
3 multidisciplinary team.

4 **Key words:** Cardiac rehabilitation; capacity; density; Latin America and Caribbean  
5 region; access; healthcare services.

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1 **Abbreviations table:**

<b>CR:</b> cardiovascular rehabilitation
<b>CVDs:</b> cardiovascular diseases
<b>HICs:</b> high-income countries
<b>IHD:</b> ischemic heart disease.
<b>LAC:</b> Latin America and the Caribbean
<b>LMICs:</b> low- and middle-income countries.

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## 1 Introduction

2 Cardiovascular diseases (CVDs) remain the leading cause of chronic disability  
3 and premature death worldwide.<sup>1</sup> High-income countries have experienced declines in  
4 CVD rates over the last 25 years, but only a moderate decrease or no change has been  
5 observed in most low and middle-income countries (LMICs).<sup>1</sup> Latin America and the  
6 Caribbean (LAC) is comprised of 35 countries of varying economic status, and all  
7 countries have high CVD burden.<sup>2,3</sup>

8 Cardiovascular rehabilitation (CR) is a comprehensive, secondary prevention  
9 model, delivered by a multidisciplinary team that has been shown to reduce mortality  
10 and morbidity.<sup>4-6</sup> Unfortunately, the availability of CR, despite its' cost-effectiveness, is  
11 low in LMICs.<sup>7</sup> To the best of our knowledge, the only information regarding the  
12 availability and characteristics of CR services in LAC countries is based on a survey  
13 undertaken more than a decade ago. Results showed that programs were available only  
14 in 56% of 13 evaluated countries.<sup>8</sup> It has not been possible to compare the nature of  
15 CR services delivered in LAC countries to other parts of the globe, as the survey was  
16 only performed in LAC countries. However, the International Council of Cardiovascular  
17 Prevention and Rehabilitation (ICCPR; [https://globalcardiacrehab.com/Global-CR-  
18 Program-Survey](https://globalcardiacrehab.com/Global-CR-Program-Survey)) undertook an audit and survey of CR programs globally. While global  
19 results have previously been summarized,<sup>9,10</sup> results from LAC have not been  
20 synthesized and compared to the rest of the world.

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1           The level of implementation and characteristics of CR programs in LAC and its  
2 delivery in relation to global guidelines and recommendations remains poorly  
3 characterized.<sup>11</sup> Therefore, the aim of this study was to establish the availability,  
4 capacity, density and need for CR in LAC, and characterize the following aspects of CR  
5 delivery: (a) setting, (b) funding sources and cost, (c) type of patients served, (d)  
6 number and type of healthcare professional on CR teams, (e) CR dose, (f) core  
7 components delivered, and (g) alternative models of CR offered. We aimed to  
8 characterize this by LAC country, and to compare regional values to those in the rest of  
9 the globe.

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## 11 **Methods**

12           This work was supported by a research grant from York University's Faculty of  
13 Health, Toronto, Canada, and by project number LQ1605 from the National Program of  
14 Sustainability II (MEYS CR), Czech Republic. The authors are solely responsible for the  
15 design and conduct of this study, all study analyses, the drafting and editing of the  
16 paper and its final contents.

### 17 *Design and Procedure*

18           This sub-analysis of the global audit was cross-sectional in design. Detailed  
19 methods for the audit are reported elsewhere.<sup>9,10</sup> In brief, first a list of all countries was  
20 compiled by cross-referencing several key sources; 203 countries were considered, and  
21 their income was categorized based on the World Bank.<sup>12,13</sup>

1 To ultimately compute unmet need and CR density, annual incidence of ischemic  
2 heart disease (IHD) in each country was ascertained from the Global Burden of Disease  
3 Study (2016 estimates).<sup>14</sup>

4 For each identified country, cardiovascular societies or identified leaders were  
5 requested to: (a) identify the number of programs in their country, and (b) get contact  
6 information for each. Through this process, the total number of CR programs in each  
7 country was collated.

8 From June 2016 to December 2017 programs were emailed the confidential  
9 survey and online consent form, administered through REDCap.<sup>15</sup>

#### 10 *Setting and Sample*

11 The global sample consisted of all CR programs identified in the world. CR was defined  
12 as offering at least: (1) initial assessment, (2) structured exercise, and (3) at least one  
13 other strategy to control cardiovascular risk factors. This inclusion criteria was finalized  
14 following consultation with programs around the world before the study; We aimed to  
15 ensure we captured programs offering secondary prevention services for heart patients,  
16 but did not exclude programs in low-resource settings if they were not fully  
17 comprehensive due to lack of resources.

18 For the purposes of this study, data from the 35 LAC countries according to the  
19 World Bank <sup>13</sup> were considered (The British territories were not considered  
20 separately:[e.g., Cayman Islands]; Puerto Rico and United States Virgin Islands were  
21 grouped with the United States; **Table 1** and **Supplemental Table 1**).Population and



1 income classification <sup>16</sup> of LAC countries are detailed in the **Supplemental Methods**.

## 2 *Measures*

3 Programs were asked to report in the survey volumes and capacity in an average  
4 year (e.g., “How many patients do you have capacity to serve each year, in terms of  
5 staff and space?”). CR program volume was defined as the median number of  
6 unique/new patients served by a program annually, and program capacity was defined  
7 as the median number of patients a program could serve per year. National CR capacity  
8 was computed as median number of patients a program could serve per year multiplied  
9 by the number of programs in that country. For a country without a response national  
10 capacity was estimated based on the regional median.

11 To compute density, IHD incidence was divided by national capacity; the latter  
12 was then ranked by country from most to least. CR need or number of additional spots  
13 needed to manage all IHD patients (i.e., IHD incidence per year minus national  
14 capacity) was also computed by country and across the region. Finally, occupancy (i.e.,  
15 median number patients program served per year divided by national capacity) was  
16 calculated.

17 Development of the survey is described in the **Supplemental Methods**. <sup>17</sup>

## 18 *Statistical analyses*

19 Analyses were performed using JMP statistical software, 14.1.0 (SAS, Cary,  
20 North Carolina). All initiated surveys were included. The number of responses for each  
21 question varied due to missing data. Descriptive statistics were used to characterize  
22 availability, volume, capacity, density, as well other closed-ended items in the survey.  
23 Continuous variables are presented as mean  $\pm$  standard deviation with medians and

1 P25-P75 where skewed, and categorical variables are presented as frequencies with  
2 percentages. All open-ended responses were coded/categorized. For global  
3 comparisons, Fisher's exact test was applied for categorical variables, and the Mann-  
4 Whitney U test for continuous variables. A 2-tailed  $p < 0.05$  values were considered  
5 statistically significant.

## 6 **Results**

7 CR was identified in 111/203 countries. Data were collected in 93 countries, from  
8 which 1082 surveys were completed.

9 At least one CR program was identified in 24 LAC countries (68.5% availability;  
10 **Table 1**). Data were collected in 20 of the 24 countries (83.3% country response rate);  
11 no response was obtained from Aruba, El Salvador, Grenada or Trinidad and Tobago.  
12 Responses were received from 139/255 programs (regional program response  
13 rate=54.5%; shown also by country in **Table 1**).

### 14 *Availability, volumes, capacity, density and need*

15 CR availability by LAC country in those that have CR is shown in **Table 1**. It  
16 ranged from one program (in 5 of the 24 countries) to 75 in Brazil (median=3, P25-  
17 75=2-10). The first program in the LAC opened in Mexico in 1944. Most programs  
18 (n=15; 78.9%) opened before 2010.

19 Median volumes ranged from 18 patients per program per year in Guatemala to  
20 1500 patients in Argentina (LAC median=70 [P25-75=36-125] vs. 158 globally,  $p < .001$ ;  
21 **Table 1**). Volumes were higher (median=120, P25-75=50-170) in LAC HICs compared  
22 to LMICs (median=52, P25-75=33-130). National capacity was 500 CR spots/ country

1 (P25-75=200-2300; **Table 1**) vs 2,795 globally (P25-75=420-10,440;  $p < .01$ ); higher  
2 national capacity (median=720, P25-75=190-3950) was observed in LMICs compared  
3 to HICs (median=400, P25-75=200-2000).

4 Regional density was 1 CR spot per 24 incident IHD patients per year (versus 18  
5 patients globally), and ranged from less than 1 (Bermuda) to 485 incident patients in  
6 Dominican Republic (**Table 1 and Figure 1**); the median in LMICs was 28 (P25-75=16-  
7 80) and in HICs was 12 (P25-75=3-18). When considering the density of CR, Honduras,  
8 Guatemala, Dominican Republic, and Brazil ranked among the poorest in LAC.

9 Unmet need in the 24 LAC countries with CR was 1,295,155 spots/year (**Table**  
10 **1**). In the 11 LAC countries without CR, there are 2536 incident IHD patients/year  
11 (**Supplemental Table 1**). By country, greatest need in absolute terms for CR was  
12 observed in Brazil, Dominican Republic and Mexico (all with >150,000 spots needed per  
13 year to manage incident IHD patients) Occupancy ranged from over 100% in Colombia  
14 to 15% in Chile (LAC; median=60.0% [P25-75=32%-75.0%] vs 73.1% globally,  $p=.01$ ;  
15 Table 1).

## 16 **Nature of Cardiac Rehabilitation Delivery**

### 17 *Setting*

18 Most CR programs in the 24 countries were offered in an urban setting (n=129,  
19 92.8%). Eighty-three (61.9%) programs reported that there was another CR program  
20 within a 20 km radius (vs. 26 [19.4%] had none close by).

21 The majority of programs were hospital-based (n=94, 68.1%), of which 72  
22 (76.6%) were in major referral centers, quaternary/tertiary facilities and/or academic  
23 centers. One program was situated in a military hospital (Brazil). Of the programs

1 situated in hospitals, in 84 (90.3%) the hospitals had an inpatient cardiology service; 51  
2 (60.7%) of these programs reported the inpatients were regularly referred to CR. The  
3 hospitals where these programs were situated offered advanced acute cardiovascular  
4 treatments commonly, such as implantable rhythm devices (n=74, 79.6%),  
5 percutaneous coronary intervention (n=69, 74.2%), coronary artery bypass graft surgery  
6 (n=64, 68.8%) and valve procedures (n=56, 60.2%); cardiac transplantation was  
7 available in 20 (21.5%) centers.

8 CR programs were most often part of cardiology departments (n=42; 30.9%),  
9 followed by Physical Medicine and Rehabilitation departments (n=36; 26.5%), while 31  
10 (22.8%) were part of another department such as internal medicine, primary or general  
11 practice, or a community facility, and 27 (19.9%) programs were stand-alone.

12 Physicians were the most common source (n=132, 98.5%) of patient referral to  
13 CR programs, followed by allied healthcare providers and/or nurses (n=52, 38.8%);  
14 patient self-referral was allowed in 41 (30.6%) programs. For patients following a  
15 cardiac hospitalization, the median wait time to enroll (i.e., discharge to initial  
16 assessment appointment) in CR was 2 weeks (P25-75=2–4).

### 17 *Cost and Source of Funding*

18 Using purchasing power parity conversions (2016 US dollars), the estimated  
19 average cost to treat one patient for a full program in LACs was US\$1,046.9±1,227.7  
20 (vs US\$ 1,527.8 ± 1,671.1 globally,  $p<.01$ ; **Table 2**). Funding sources for CR programs  
21 by LAC country and globally are shown on Table 2. In LACs, over half of the programs  
22 (n=73, 53.3%) were funded by multiple sources (vs n=301, 32.5% globally,  $p<.001$ ). In  
23 CR programs where there was only one funding source (n=64, 46.7%), government

1 (n=35, 54.7%), followed by patients (i.e., out-of-pocket; n=19, 29.7%) were the most  
2 common source. In countries where patients paid some or all of CR program costs  
3 (n=86, 62.8%), they paid on average of 38.4±36.6% (standard deviation) of the cost of  
4 the program.

5 Thirty-six (28.6%) programs reported lack of financial resources or budget as a  
6 “major barrier” to greater patient participation in their CR program; 39 (44.3%) additional  
7 programs reported “other barriers” such as inconsistency or lack of payment (n=12,  
8 23.5%) from the funding sources.

#### 9 *CR Indication: Type of Patients Served*

10 The most common types of patients served in CR programs and global  
11 comparisons are shown in **Supplemental Table 2**. Over 90% of programs managed  
12 each of the Class I Level A guideline-recommended cardiac indications for CR. (i.e.,  
13 post-acute coronary syndrome, heart failure, post-revascularization and stable coronary  
14 artery disease). The following CR indications were significantly more-commonly  
15 accepted in LAC than other countries of the world: stable coronary artery disease,  
16 coronary artery bypass graft surgery, heart failure, rhythm devices, arrhythmias,  
17 congenital heart disease, rheumatic heart disease, and high risk of CVD.

18 **Supplemental Table 3** displays non-cardiac indications served in CR programs  
19 by LAC countries. As shown, all were more commonly accepted in LAC than other  
20 countries of the world, except stroke / transient ischemic attack.

1 *Healthcare Professional on the CR Team*

2           The nature of personnel on CR teams is shown in **Table 3**. In LAC, programs  
3 had a mean of 5.0±2.3 (part-time personnel counted as 0.5) members on their teams  
4 (vs 6.0±2.8 globally;  $p<.001$ ). The following professions were significantly more or less  
5 common on CR teams in LAC than globally: sports medicine physicians (more in LAC),  
6 community healthcare workers (less in LAC), dietitians (less in LAC), kinesiologists (less  
7 in LAC), nurses (less in LAC), pharmacists (less in LAC), and social workers (less in  
8 LAC).

9           With regard to provider type with overall responsibility for CR, cardiologists  
10 (n=60, 43.2%) were most frequent in LACs, followed by physiotherapists (n=25, 18.0%)  
11 and physiatrists (n=24, 17.3%). In most CR programs (n= 118, 92.9%) patients received  
12 an individual consult with a physician, with an average of 4.4± 6.8 encounters in a full  
13 program.

14 *Core components*

15           Core components offered are shown in **Table 4**. The median number of core  
16 components offered by LAC programs was significantly lower by 1 than those globally.  
17 Initial assessment, exercise prescription and counseling, as well patient education were  
18 universally offered. However, tobacco cessation interventions (n=55, 42.0%) followed by  
19 return-to-work counseling (n=55, 43.0%), were least likely to be delivered (vs 73.3% and  
20 65.7% globally, respectively). As also shown in the Table, there were also significant  
21 differences between programs in LAC countries and globally with regard to delivery of:  
22 risk stratification (higher in LACs), exercise prescription and counselling (higher in LAC),  
23 nutritional counseling (lower in LAC), communication with primary care (lower in LAC),

1 management of CV risk factors (lower in LAC), and stress management (lower in LAC).  
2 Patients received an average of  $7.4 \pm 7.5$  education sessions per program, with each  
3 session lasting  $45.5 \pm 28.9$  minutes.

4 During initial assessment, major risk factors assessed are shown in  
5 **Supplemental Table 4**. Blood pressure, tobacco use and adiposity were universally  
6 assessed. As displayed, most were consistent with other countries of the world, except  
7 depression and anxiety were less often assessed in LAC.

8 Median dose of CR offered by programs is shown in **Supplemental Table 5**;  
9 Median frequency was 3 sessions per week (P25-75= $2.5-3$ ), and program duration was  
10 12 weeks (P25-75= $5-20$ ). As shown, dose and total hours are higher in LAC than  
11 globally. The average number of staff at each CR session was  $3.0 \pm 1.7$ ; the staff-to-  
12 patient ratio is also shown in **Supplemental Table 5**. Other program elements are  
13 shown in **Supplemental Table 6**.

14 Alternative models offered by country, across LAC and are detailed in the  
15 **Supplemental Results**.

16

## 17 **Discussion**

18 This study characterized the availability, density, need, and nature of CR  
19 programs in LAC, for the first time in a decade, and compared it to the rest world for the  
20 first time ever. Only 255 CR programs were identified in all of LAC, across only ~70% of  
21 its' countries, providing service to 91,893 patients, despite a total regional unmet need  
22 of 1,297,691 more spots per year to manage all incident IHD patients. Despite the fact  
23 that CR started in this region of the world before most others, the regional CR density

1 was significantly poorer (1 CR spot available per 24 incident IHD patients per year  
2 versus one CR spot for every 18 IHD patients globally); these results suggest that there  
3 is significant opportunity for improvement and underscored the need for further  
4 implementation of CR services. Moreover, our results likely underestimate the need for  
5 CR in the region, since patients with other conditions than IHD benefit from CR but were  
6 not accounted in our analysis due to lack of available estimates.<sup>18</sup>

7         Given guideline recommendations,<sup>19</sup> the fact that the immense majority of IHD  
8 patients in LAC would not have the opportunity to receive CR is alarming, and  
9 represents a major lost opportunity, considering the significant benefits of CR, and its'  
10 cost-effectiveness.<sup>20,21</sup> Need is greatest in countries such as Mexico, Brazil and the  
11 Dominican Republic. Sadly, the need for accessible and effective CR programs in this  
12 region will continue to grow due to the increasing burden of CVD and the high  
13 prevalence of cardiovascular risk factors such as obesity, diabetes, and dyslipidemia.<sup>22</sup>

14         Notable discrepancies existed in some countries, where there was enormous  
15 unmet need yet significant unfilled occupancy, as well as very low annual program  
16 volumes and staff-to-patient ratios, highlighting inefficiencies in healthcare systems.  
17 Moreover, most LAC programs are offered in urban settings, similar to previous  
18 reports.<sup>9</sup> These results suggest that the planning and distribution of CR programs do not  
19 match local need, and suggest location and accessibility of CR centers may play a key  
20 role in usage. In Mexico, a particularly centralized distribution of CR programs around  
21 the capital was previously described in 2017. Another study regarding CR in Brazil  
22 showed significantly fewer programs in the Northern vs Southern areas of the country,  
23 with large geographic areas in those countries with little or no CR availability; with only



1 1/5<sup>th</sup> of programs offering remote models at the time, clearly most patients are going  
2 without life-saving care.<sup>23,24</sup>

3         The structure of health systems in LAC is complex and heterogeneous.<sup>25</sup>  
4 Regionally, the health system is composed by 2 main models: public (i.e., public  
5 hospitals or government) and private (i.e., private clinics or private insurance  
6 companies). Public systems generally offer universal coverage for CR when CR is  
7 available. In other countries, the public system offers only partial coverage for CR  
8 services, and private health insurance or the patients pays the remaining percentage of  
9 the total cost out-of-pocket. This study has shown that a substantial proportion of  
10 patients are paying for CR out-of-pocket, and in a few programs patients pay for the full  
11 cost. Where patients pay, about 40% of the cost of the program is paid out-of-pocket, a  
12 share that is generally higher than standard deductibles or co-payments for many  
13 medical interventions.<sup>25</sup> Previous reports have described a heterogeneous model of  
14 private insurance across LACs, where most companies provide partial coverage of CR  
15 services, but in other countries, health insurance companies may not provide coverage  
16 of CR services at all. These factors represent a significant burden for patients and a  
17 barrier to receive CR in this area of the world. We must advocate for care coverage.<sup>26-28</sup>

18         Lack of funding has also been previously described as a major barrier to CR  
19 delivery in LMICs;<sup>29,30</sup> however, our study shows that the majority of medical centers in  
20 LAC provide advanced services such as cardiac catheterization, a procedure that is  
21 more expensive than CR (and indeed CR cost was significantly lower in this region than  
22 it is globally), which challenges the assumption that lack of CR programs is due to  
23 limited economic resources. Although the limited profitability of CR in private institutions

1 may partially explain the decision to offer CR, this factor could not explain the limited  
2 availability in public hospitals.

### 3 *Characteristics of Programs*

4 We also report that Class I Level A guideline-recommended cardiac indications <sup>19</sup>  
5 are quite universally accepted in LAC programs. When considering the  
6 comprehensiveness of CR, LAC programs on average, offered 1 less component when  
7 compared to the rest of the world, with nutritional counseling, stress management, and  
8 medical risk factor management delivered less frequently. Lowest was delivery of  
9 tobacco cessation interventions, proven to save lives, and return-to-work counseling,  
10 which would be integral in the LMICs. This is despite the fact that the dose of CR was  
11 robust, so there would be ample opportunity to be fully comprehensive. Indeed, major  
12 risk factors were universally assessed, and this was consistent with other regions of the  
13 world, except depression and anxiety. This may be explained by the lack of  
14 psychiatrists, psychologists, and social workers on CR teams. Indeed, CR teams had on  
15 average 5 members, less often including many allied health professions than programs  
16 around the world. These findings suggest existing programs have limited capacity to  
17 offer psychosocial and risk factor management, explaining the lower number of  
18 components delivered, which is shown to affect the prognosis and outcomes of  
19 patients.<sup>31,32</sup>

### 20 *Limitations*

21 Caution is warranted in interpreting these finding. We were unable to obtain  
22 information from some countries in the region. Furthermore, low response in some  
23 countries could limit findings.

1           Although the country response rate was high, the program rate was 55%, which  
2 is robust for online surveys, but suggests there may be bias. It may not have been  
3 possible to identify all programs in LICs which could lead to mis-estimation of capacity  
4 in the region.

5           Finally, LAC shows exceptional heterogeneity across countries. Therefore,  
6 regional differences should be considered exploratory, with future research needed.

7           In conclusion, there is very limited CR capacity in LAC countries. Approximately  
8 30% of countries have no CR. The structure of health systems in LAC is complex and  
9 heterogeneous, leading to significant variations in coverage of CR services, placing a  
10 burden on patients preventing them from receiving CR, and limiting delivery of  
11 alternative models, which could increase capacity. While dose is robust, LAC programs  
12 offer fewer core components when compared to the rest of the world; more allied  
13 healthcare professionals are needed to offer psychosocial counseling and other risk  
14 factor control strategies, particularly for hypertension, dyslipidemia, tobacco use and  
15 diet.

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19 CR programs globally.

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Table 1. Cardiovascular rehabilitation availability, capacity, density and need by LAC country, N=24

Country	Income classification	Human Development Index	Annual IHD Incidence rate	# CR Programs	# Responding (%)	Year 1st CR program	Median annual volume/ program	Median annual capacity/ program	National CR capacity <sup>1</sup>	CR density <sup>2</sup>	CR density ranking <sup>3</sup>	CR need <sup>4</sup>	CR Occupancy <sup>5</sup>
Argentina	UMI	0.827	122,357	23	3 (13)	1998	1500	2000	46,000	3	3	76,357	75.0%
Aruba	HIC	-	-	1	0 (0)	-	-	200	200	-	-	-	-
Barbados	HIC	0.795	1,240	1	1 (100)	1994	70	96	96	13	8	1,144	72.9%
Bermuda	HIC	-	197	1	1 (100)	2012	220	400	400	0.5	1	-203	55.0%
Brazil	UMI	0.754	529,062	75	30 (40)	1973	60	72	5,400	98	19	523,662	83.3%
Chile	HIC	0.847	45,008	10	1 (10)	2009	30	200	2,000	23	T10	43,008	15.0%
Colombia	UMI	0.727	75,245	50	48 (96)	1972	410	390	19,500	4	T4	55,745	105.1%
Costa Rica	UMI	0.776	8,288	6	6 (100)	1985	45	120	720	12	T6	7,568	37.5%
Cuba	UMI	0.775	49,789	8	8 (100)	1973	145	180	1,440	35	16	48,349	80.6%
Curacao	HIC	-	-	2	1 (50)	-	120	200	400	-	-	-	60.0%
Dominican Republic	UMI	0.722	193,919	2	1 (50)	2016	-	200	400	485	22	193,519	-
Ecuador	UMI	0.739	27,046	5	2 (40)	1995	36	190	950	28	14	26,096	18.9%
El Salvador	LMI	0.680	9,129	2	0 (0)	-	-	200	400	23	T10	8,729	-
Grenada	UMI	0.754	296	1	0 (0)	-	-	200	200	1	2	96	-

Guatemala	LMI	0.640	13,671	2	2 (100)	2011	18	60	120	114	20	13,551	30.0%
Honduras	LMI	0.640	10,939	2	1 (50)	2005	20	20	40	273	21	10,899	100.0%
Jamaica	UMI	0.730	8,026	3	1 (33)	2006	24	60	180	45	17	7,846	40.0%
Mexico	UMI	0.762	161,348	24	9 (38)	1944	38	250	6,000	27	13	155,348	15.2%
Panama	UMI	0.788	5,039	1	1 (100)	2006	38	80	80	63	18	4,959	47.5%
Paraguay	UMI	0.693	14,892	3	3 (100)	2011	125	200	600	25	12	14,292	62.5%
Peru	UMI	0.740	49,967	10	7 (70)	1992	80	250	2,500	20	9	47,467	32.0%
Trinidad and Tobago	HIC	0.780	4,759	2	0 (0)	-	-	200	400	12	T6	4,359	-
Uruguay	HIC	0.795	10,656	12	5 (42)	1970	120	200	2,400	4	T4	8,256	60.0%
Venezuela	UMI	0.767	45,575	9	8 (89)	1974	103	163	1,467	31	15	44,108	63.2%
LAC country median (P25-75)	UMI (UMI-HIC)	0.754 (0.724-0.784)	14,281 (7,279-56,286)	3 (2-10)	139 (55)	1995 (1973-2009)	70 (36-125)	200 (102-200)	500 (200-2300)	24 (10-49)	-	13,921 (6,915-50,197)	60.0% (32.0-75.0%)
Global Median (P25-75)	UMI (UMC-HIC)	0.795 (0.733-0.887)**	50,474 (15, 446-148,338)**	7 (2-35)	1,082 (32)	1992 (1976-2008)	158 (79-350)***	250 (150-482)**	2,795 (420-10,440)**	18 (4-53)	-	44,108 (11,232 - 119,335)	73.1% (45.6%-98.1%)**

– Not available (response was not provided by any respondent in the country).

Acronyms: CR cardiovascular rehabilitation; HIC, high-income country; IHD, ischemic heart diseases; P25-75, quartiles; LAC, Latin America and Caribbean; LMI, lower middle- income; UMI, Upper middle- income.

Income classification was obtained from World Bank.<sup>13</sup>

Human development index was obtained from United Nations Development Program.<sup>33</sup>

Estimated annual Incidence rate of IHD was obtained from Global Burden of Disease study.<sup>14</sup>

<sup>1</sup>National CR capacity: median number of patients a program could serve per year multiplied by the number of programs per country. For a country without a response, national capacity was estimated based on regional median program capacity multiplied by number of programs in that country.

<sup>2</sup>CR density: number of incident patients per available spot (annual ischemic heart disease incidence (IHD)/national capacity; eg., a density of 2 suggests there are 2 CR spots per year for each incident IHD patient). Lower numbers are better.

<sup>3</sup>CR density ranking, where ranks are assigned to density ratings in ascending order, so 1 represents the most spots per incident patient. Programs with the same CR density are prefaced with a “T” (i.e., ties), followed by the corresponding ranking number.

<sup>4</sup>CR need: number of additional spots needed to manage IHD patients (i.e., IHD - national capacity) in countries with CR (total=1,295,155); note, IHD incidence in 11



countries without identified CR (Supplemental Table 1, 2536) was considered to compute unmet need across all LAC countries. Therefore, total regional unmet need=1,297,691 spots per year to manage all incident IHD patients.

<sup>5</sup>Occupancy: median number of patients program served per year / national capacity.

Note: due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\*p<.05; \*\*p<.01; \*\*\*p<.001 compared to LAC countries.

Table 2: CR Funding Source and Cost to Program to Serve 1 Patient by LAC country

Country	Government	Hospital/Clinic	Private insurance	Patients Pay Out-of-Pocket	Multiple sources <sup>2</sup>	Cost to serve 1 patient for a complete program in US\$ (PPP2016) <sup>1</sup>
Argentina	0 (0.0%)	1 (33.3%)	2 (66.7%)	3 (100%)	2 (66.7%)	1,200.0
Barbados	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	-
Bermuda	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	7,073.0
Brazil	17 (58.6%)	4 (13.8%)	6 (20.7%)	12 (41.4%)	7 (24.1%)	844.6
Chile	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	100.0
Colombia	37 (78.7%)	10 (21.3%)	36 (76.6%)	41 (87.2%)	43 (91.5%)	834.0 ± 597.6
Costa Rica	4 (66.7%)	1 (16.7%)	2 (33.3%)	2 (33.3%)	3 (50.0%)	300.0
Cuba	6 (75.0%)	2 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	45.3
Curacao	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	586.0
Dominican Republic	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	3,549.6
Ecuador	0 (0.0%)	0 (0.0%)	1 (50.0%)	2 (100.0%)	1 (50.0%)	900.0 ± 848.5
Guatemala	2 (100.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	-
Honduras	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	300.0
Jamaica	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	-
Mexico	1 (11.1%)	3 (33.3%)	5 (55.6%)	7 (77.8%)	5 (55.6%)	1,808.9 ± 1,955.4
Panama	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	-
Paraguay	1 (33.3%)	0 (0.0%)	0 (0.0%)	2 (66.7%)	0 (0.0%)	400.0
Peru	4 (57.1%)	2 (28.6%)	0 (0.0%)	2 (28.6%)	1 (14.3%)	883.4 ± 991.2
Uruguay	0 (0.0%)	2 (40.0%)	1 (20.0%)	5 (100.0%)	3 (60.0%)	148.2 ± 97.7
Venezuela	2 (25.0%)	2 (25.0%)	1 (12.5%)	4 (50.0%)	1 (12.5%)	2,972.3 ± 1,978.1
LAC Total	78 (56.9%)	27 (19.7%)	61 (44.5%)	86 (62.8%)	73 (53.3%)	1046.9 ± 1,227.7
Global	623 (58.6%)	311 (29.2%)**	272 (25.6%)***	396 (37.2%)***	375 (35.2%)***	1,527.8 ± 1,671.1*

– Not available (response was not provided by any respondent in the country)

Acronyms: CR, cardiovascular rehabilitation; LAC, Latin America and Caribbean; PPP, Purchasing Power Parity; US\$, United States dollar.

<sup>1</sup>Cost to serve 1 patient for a complete program: mean  $\pm$  standard deviation for a complete program; PPP is equivalent to 2016 US\$.<sup>34</sup> This item assessed total program costs (i.e., not itemized) and hence was likely to be estimated grossly by respondents. Therefore, there is likely to be considerable measurement error which should be taken into consideration when interpreting the values.

<sup>2</sup>Respondents instructed to select all that apply of: social security/government, hospital/clinical center, patient and private healthcare insurance. Then, the most frequent category for a given country was computed.

Note: Due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  compared to LAC countries.

Table 3. Personnel on CR teams by LAC country

Country	Physiotherapist	Cardiologist	Administrative assistant	Dietitian	Nurses	Psychologist	Exercise specialist	Physiatrist (PMR)	Other physician	Sports Medicine Physician	Social worker	Psychiatrist	Pharmacist	Kinesiologist	Community health worker
Argentina	1 (33.3%)	3 (100.0%)	3 (100.0%)	1 (33.3%)	0 (0.0%)	1 (33.3%)	3 (100.0%)	1 (33.3%)	1 (33.3%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Barbados	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
Bermuda	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)
Brazil	18 (75.0%)	16 (69.6%)	12 (54.5%)	12 (54.5%)	11 (50.0%)	11 (36.7%)	12 (40.0%)	0 (0.0%)	8 (26.7%)	8 (26.7%)	8 (26.7%)	0 (0.0%)	5 (16.7%)	0 (0.0%)	0 (0.0%)
Chile	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Colombia	46 (97.9%)	35 (76.1%)	39 (86.7%)	24 (52.2%)	36 (78.3%)	24 (50.0%)	12 (25.0%)	19 (39.6%)	12 (25.0%)	16 (33.3%)	3 (6.3%)	8 (16.7%)	0 (0.0%)	1 (2.1%)	5 (10.4%)
Costa Rica	3 (75.0%)	4 (80.0%)	2 (50.0%)	5 (100.0%)	5 (100.0%)	4 (66.7%)	4 (66.7%)	2 (33.3%)	4 (66.7%)	0 (0.0%)	1 (16.7%)	2 (33.3%)	3 (50.0%)	1 (16.7%)	2 (33.3%)
Cuba	6 (100.0%)	6 (85.7%)	3 (50.0%)	5 (71.4%)	6 (85.7%)	7 (87.5%)	4 (50.0%)	5 (62.5%)	0 (0.0%)	0 (0.0%)	3 (37.5%)	3 (37.5%)	2 (25.0%)	2 (25.0%)	1 (12.5%)
Curacao	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Dominican Republic	1 (100.0%)	-	1 (100.0%)	-	1 (100.0%)	1 (100.0%)	-	1 (100.0%)	-	-	-	-	-	-	-
Ecuador	1 (100.0%)	2 (100.0%)	2 (100.0%)	1 (100.0%)	1 (50.0%)	2 (100.0%)	1 (50.0%)	0 (0.0%)	1 (50.0%)	2 (100.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Guatemala	0 (0.0%)	2 (100.0%)	1 (50.0%)	1 (50.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Honduras	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Jamaica	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Mexico	7 (77.8%)	8 (100.0%)	8 (88.9%)	7 (87.5%)	6 (75.0%)	6 (66.7%)	3 (33.3%)	3 (33.3%)	3 (33.3%)	3 (33.3%)	3 (33.3%)	5 (55.6%)	0 (0.0%)	4 (44.4%)	1 (11.1%)
Panama	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Paraguay	3 (100.0%)	3 (100.0%)	2 (66.7%)	3 (100.0%)	1 (33.3%)	2 (66.7%)	1 (33.3%)	2 (66.7%)	1 (33.3%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (33.3%)	0 (0.0%)
Peru	6 (85.7%)	7 (100.0%)	2 (28.6%)	6 (85.7%)	5 (71.4%)	5 (71.4%)	0 (0.0%)	4 (57.1%)	1 (14.3%)	0 (0.0%)	3 (42.9%)	0 (0.0%)	2 (28.6%)	0 (0.0%)	0 (0.0%)
Uruguay	2 (40.0%)	5 (100.0%)	3 (60.0%)	3 (60.0%)	2 (40.0%)	4 (80.0%)	3 (60.0%)	1 (20.0%)	1 (20.0%)	1 (20.0%)	0 (0.0%)	1 (20.0%)	0 (0.0%)	0 (0.0%)	1 (20.0%)
Venezuela	7 (100.0%)	8 (100.0%)	7 (87.5%)	6 (75.0%)	3 (50.0%)	7 (87.5%)	4 (50.0%)	3 (37.5%)	1 (12.5%)	0 (0.0%)	3 (37.5%)	5 (62.5%)	0 (0.0%)	0 (0.0%)	1 (12.5%)
LAC Total	106 (84.1%)	105 (83.3%)	91 (73.4%)	79 (63.7%)	71 (58.7%)	76 (54.7%)	51 (36.7%)	44 (31.7%)	36 (25.9%)	33 (23.7%)	27 (19.4%)	25 (18.0%)	13 (9.4%)	12 (8.6%)	12 (8.6%)
Global	733 (79.3%)	721 (77.8%)	596 (65.6%)	739 (80.2%)*	779 (84.5%)*	527 (57.8%)	432 (47.8%)	389 (43.4%)	334 (38.2%)	183 (20.5%)*	380 (42.2%)*	208 (23.5%)	366 (41.0%)*	180 (20.2%)*	166 (18.7%)*

– Not available (response was not provided by any respondent in the country).

Acronyms: CR cardiovascular rehabilitation; LAC, Latin America and Caribbean; PMR, Physical medicine and rehabilitation.

Note: Due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\*p<.05; \*\*p<.01; \*\*\*p<.001 compared to LAC countries.

Table 4: CR core components by LAC country

Country	Initial assessment	Risk stratification	Patient education	Exercise counseling/prescription	Management of CV risk factors	Nutrition counseling	Smoking cessation	Stress management	Vocational counseling/support for return to work	Communication with primary care provider	End of program re-assessment	Median Total #components <sup>1</sup> (P25-75)
Argentina	3 (100.0%)	2 (100.0%)	2 (100.0%)	3 (100.0%)	2 (66.7%)	2 (66.7%)	0 (0.0%)	1 (33.3%)	-	2 (66.7%)	1 (33.3%)	7 (3-7)
Barbados	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	-	1 (100.0%)	1 (100.0%)	8 (0)
Bermuda	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	11 (0)
Brazil	24 (100.0%)	23 (100.0%)	20 (100.0%)	24 (100.0%)	20 (83.3%)	12 (50.0%)	6 (25.0%)	9 (37.5%)	4 (16.7%)	10 (41.7%)	22 (91.7%)	7 (6-8)
Chile	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	-	1 (100.0%)	1 (100.0%)	8 (0)
Colombia	46 (97.9%)	46 (97.9%)	47 (100.0%)	47 (100.0%)	47 (100.0%)	40 (85.1%)	21 (44.7%)	33 (70.2%)	20 (43.5%)	35 (74.5%)	39 (86.7%)	9 (7-10)
Costa Rica	6 (100.0%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	4 (66.7%)	3 (50.0%)	3 (50.0%)	4 (66.7%)	6 (100.0%)	8 (7-10)
Cuba	8 (100.0%)	7 (100.0%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	4 (50.0%)	8 (100.0%)	7 (87.5%)	3 (37.5%)	8 (100.0%)	9 (8-11)
Curacao	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	9 (0)
Dominican Republic	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	-	1 (100.0%)	1 (100.0%)	9 (0)
Ecuador	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	2 (100.0%)	9 (9-10)
Guatemala	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	-	2 (100.0%)	2 (100.0%)	7 (6-8)
Honduras	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	-	1 (100.0%)	1 (100.0%)	0 (0.0%)	9 (0)
Jamaica	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	5 (0)
Mexico	9 (100.0%)	9 (100.0%)	9 (100.0%)	9 (100.0%)	9 (100.0%)	9 (100.0%)	6 (66.7%)	7 (77.8%)	5 (55.6%)	9 (100.0%)	9 (100.0%)	10 (9-10)
Panama	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	-	1 (100.0%)	1 (100.0%)	6 (0)
Paraguay	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	1 (33.3%)	3 (100.0%)	-	1 (33.3%)	3 (100.0%)	8 (8-9)

Peru	7 (100.0%)	6 (85.7%)	6 (100.0%)	7 (100.0%)	7 (100.0%)	6 (85.7%)	1 (14.3%)	5 (71.4%)	3 (42.9%)	3 (42.9%)	7 (100.0%)	8 (7-9)
Uruguay	5 (100.0%)	5 (100.0%)	3 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	2 (40.0%)	3 (60.0%)	3 (75.0%)	5 (100.0%)	5 (100.0%)	8 (8-10)
Venezuela	8 (100.0%)	7 (100.0%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	5 (71.4%)	6 (75.0%)	5 (71.4%)	7 (87.5%)	7 (87.5%)	9 (9-10)
LAC Total	131 (99.2%)	127 (98.4%)	121 (100.0%)	132 (100.0%)	126 (95.5%)	109 (82.6%)	55 (42.0%)	84 (64.1%)	55 (43.0%)	90 (68.2%)	118 (91.5%)	8 (7-9.5)
Global	939 (98.8%)	788 (93.5%)*	888 (100.0%)	918 (97.0%)*	928 (98.2%)*	880 (92.7%)**	692 (73.3%)**	771 (81.7%)**	614 (65.7%)**	788 (84.0%)**	858 (91.4%)	9 (8-10)**

– Not available (response was not provided by any respondent in the country)

Acronyms: CR cardiovascular rehabilitation; CV, cardiovascular; LAC, Latin America and Caribbean.

Note: due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\*p<.05; \*\*p<.01; \*\*\*p<.001 compared to LAC countries.

<sup>1</sup>Delivery of the 11 following core components was assessed: initial assessment, risk assessment/stratification, exercise training, patient education, management of CV risk factors, nutrition counselling, stress management, tobacco cessation interventions, vocational counselling / return-to-work, communication with primary care and end of program re-assessment.

## Figure Captions

Figure 1: CR density in LAC countries, N=22.

Acronyms: CR, cardiac rehabilitation; LAC, Latin America and Caribbean

Note: map shows values from 22 countries with CR density results available: Argentina, Barbados, Bermuda, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Honduras, Jamaica, Mexico, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, and Venezuela.

CR density: annual ischemic heart disease incidence (IHD) incidence divided by national capacity. So, there is 1 spot for every x (density) number of IHD patients in need each year in the country; higher numbers reflect fewer CR spots available per IHD patient (worse density).



Figure 1. CR density in LAC countries, N=22.



Cardiac Rehabilitation Availability and Characteristics in Latin America and the Caribbean: A Global Comparison

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## Supplemental Methods

### *Setting and Sample*

Data from 35 LAC countries according to the World Bank were considered (**Table 1 and Supplemental Table 1**). The population in LAC countries in 2016 ranged from 0.07 to 207.3 million individuals in Bermuda and Brazil, respectively.<sup>16</sup> Nine (25.7%) of these countries were considered high-income, 25 (71.4%) middle-income, and one low-income country.

### *Measures*

Development of the global survey is described in detail elsewhere.<sup>17</sup> The final version was translated to Portuguese and Spanish (the English version is available elsewhere;<sup>10</sup> translations available from the corresponding author upon request). Most items had forced-choice response options, and skip logic was used to obtain more detail where applicable.

The following variables were assessed: (a) where the programs were situated (e.g., urban or rural setting), as well as type and nature of institution where situated (e.g., academic hospital, community hospital) as well as proximity to other programs (< or >20 km radius), (b) who funds the program and cost per patient (costs converted to comparable metric, namely purchasing power parity, equivalent to 2016 United States dollars [US\$]),<sup>35</sup> (c) the type (e.g., myocardial infarction, as well as non-cardiac indications) and the number of patients served per session (as well as staff-to-patient ratio); (d) the number and types of healthcare professionals on the CR team; (e) dose of CR (in hours; i.e., sessions per week x duration in weeks x duration of exercise sessions in minutes divided by 60) and wait times; (f) the type and number of core

components and other components delivered (i.e., initial assessment, risk assessment, exercise [counselling, prescription and/or training], patient education, management of CVD risk factors, nutrition counselling, stress management, tobacco cessation interventions, vocation counselling, communication with a primary healthcare provider, and end of program re-assessment), and (g) whether the program offers alternative CR models (i.e., home or community-based programs, or hybrid models where patients transition from supervised to unsupervised settings).

## Supplemental Results

### *Alternative models of CR*

In LAC, 27 (20.9%) programs delivered alternative models of CR (vs 31.1% globally,  $p < .01$ ), of which 13 (48.1%) offered home-based, with the first program opening in 1979 in Venezuela. Community-based and “hybrid” models were equally offered ( $n=8$ , 29.6%) among these 27 programs. Only 5 programs (18.5%), located in Brazil and Cuba, offered multiple models.

The median proportion of patients served in home-based programs was 30.0% (P25-75=10.0-42.5%), with over 45% ( $n=6$ ) of programs reporting insufficient capacity to meet need/demand in that model. Mobile phone, text messages, and email were common communication modes used. Mean home-based program duration was  $26.3 \pm 14.1$  weeks and number of sessions/month delivered was  $4.7 \pm 4.1$ . Mean community-based program duration was  $30.0 \pm 19.4$  weeks with a mean of  $11.4 \pm 4.8$  sessions/month delivered.

**Supplemental Table 1.** Estimated annual IHD incidence (2016) in LAC countries without cardiac rehabilitation, N=11

Country	Income classification	Human Development Index	IHD incidence/100,000
Haiti	LIC	0.493	215
Bolivia	LMI	0.674	175
Nicaragua	LMI	0.645	119
Guyana	UMI	0.638	237
Suriname	UMI	0.725	269
Bahamas	HIC	0.792	268
Belize	UMI	0.706	159
Saint Lucia	UMI	0.735	288
Saint Vincent and Grenadines	UMI	0.722	268
Antigua and Barbuda	HIC	0.786	256
Dominica	UMI	0.726	282
Total	-	-	2536

Acronyms: HIC, high-income country; IHD, ischemic heart diseases; P25-75, quartiles; LAC, Latin America and Caribbean; LIC, low income country; LMI, lower middle-income; UMI, upper middle- income.

Human development index was obtained from United Nations Development Program.

Estimated Incidence of IHD was obtained from Global Burden of Disease study.<sup>14</sup>

**Supplemental Table 2.** CR indications accepted by LAC country.

Country	Stable coronary artery disease	MI/ACS	PCI	CABG	Valve procedures	HF	Rhythm devices	Arrhythmias	Congenital heart disease	High-risk of CVD	Rheumatic heart disease	Heart transplant
Argentina	3 (100.0%)	3 (100.0%)	2 (66.7%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	2 (66.7%)	2 (66.7%)	2 (66.7%)	3 (100.0%)	2 (66.7%)	2 (66.7%)
Barbados	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Bermuda	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Brazil	23 (100.0%)	23 (100.0%)	21 (91.3%)	23 (100.0%)	19 (82.6%)	19 (82.6%)	22 (95.6%)	20 (87.0%)	17 (73.9%)	21 (91.3%)	19 (82.6%)	18 (78.3%)
Chile	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Colombia	47 (100.0%)	47 (100.0%)	47 (100.0%)	46 (97.9%)	46 (97.9%)	47 (100.0%)	46 (97.8%)	45 (95.7%)	45 (95.7%)	43 (91.6%)	43 (91.5%)	22 (46.8%)
Costa Rica	4 (66.7%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	5 (83.3%)	5 (83.3%)	5 (83.3%)	4 (66.7%)	5 (83.3%)	5 (83.3%)	5 (83.3%)
Cuba	7 (87.5%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	6 (85.7%)	7 (100.0%)	7 (100.0%)	6 (85.7%)	6 (85.7%)	5 (71.5%)	2 (28.5%)
Curacao	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)
Dominican Republic	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Ecuador	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)
Guatemala	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)
Honduras	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Jamaica	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Mexico	9 (100.0%)	9 (100.0%)	9 (100.0%)	9 (100.0%)	8 (88.9%)	9 (100.0%)	9 (100.0%)	8 (88.9%)	8 (88.9%)	7 (77.8%)	9 (100.0%)	7 (77.8%)
Panama	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)
Paraguay	2 (66.7%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	2 (66.7%)	2 (66.7%)	2 (66.7%)	2 (66.7%)	1 (33.3%)	1 (33.3%)	2 (66.7%)	1 (33.3%)

Peru	4 (57.1%)	6 (85.7%)	7 (85.7%)	7 (100.0%)	5 (71.4%)	6 (85.7%)	4 (57.1%)	5 (71.4%)	3 (42.9%)	2 (28.6%)	1 (14.3%)	2 (28.6%)
Uruguay	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	3 (60.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)
Venezuela	6 (85.7%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	6 (85.7%)	7 (100.0%)	7 (100.0%)	3 (42.9%)	6 (85.0%)	3 (42.8%)	0 (0.0%)
LAC Total	121 (93.8%)	128 (99.2%)	126 (97.7%)	128 (99.2%)	118 (91.4%)	122 (94.6%)	118 (91.5%)	113 (87.6%)	99 (76.7%)	108 (83.7%)	99 (76.7%)	65 (50.3%)
Global	692 (81.1%)*	833 (97.4%)	820 (96.1%)	817 (95.8%)*	736 (86.3%)	757 (88.7%)*	663 (77.7%)*	566 (66.4%)*	492 (57.7%)*	493 (57.8%)*	435 (51.0%)*	470 (55.1%)

Acronyms: CABG, coronary artery bypass graft; ACS, acute coronary syndrome; CR cardiovascular rehabilitation; CVD, cardiovascular disease; HF, heart failure; MI, myocardial infarction; LAC, Latin America and Caribbean; PCI, percutaneous coronary intervention.

Note: Due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\*p<.05; \*\*p<.01; \*\*\*p<.001 compared to LAC countries.



**Supplemental Table 3. Non-Cardiac indications served in CR programs by LAC country.**

Country	Diabetes	Intermittent claudication/PVD	Chronic lung disease	Stroke/TIA	Cancer
Argentina	2 (66.7%)	3 (100.0%)	2 (66.7%)	0 (0.0%)	0 (0.0%)
Barbados	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Bermuda	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Brazil	17 (73.7%)	16 (69.6%)	15 (65.2%)	9 (39.1%)	8 (34.7%)
Chile	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Colombia	33 (70.2%)	35 (74.5%)	32 (68.0%)	8 (17.0%)	12 (25.0%)
Costa Rica	4 (66.7%)	3 (50.0%)	2 (33.3%)	2 (33.3%)	2 (33.3%)
Cuba	6 (85.7%)	5 (71.5%)	3 (42.8%)	2 (28.5%)	1 (14.2%)
Curacao	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Dominican Republic	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Ecuador	2 (100.0%)	1 (50.0%)	2 (100.0%)	0 (0.0%)	1 (50.0%)
Guatemala	2 (100.0%)	2 (100.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)
Honduras	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Jamaica	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Mexico	7 (77.8%)	7 (77.8%)	5 (55.6%)	3 (33.3%)	2 (22.2%)
Panama	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)
Paraguay	1 (33.3%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Peru	2 (28.6%)	4 (57.1%)	1 (14.3%)	1 (14.3%)	1 (14.3%)
Uruguay	5 (100.0%)	5 (100.0%)	3 (60.0%)	3 (60.0%)	1 (20.0%)
Venezuela	6 (85.7%)	5 (71.5%)	2 (28.6%)	2 (28.6%)	1 (14.3%)
LAC Total	93 (72.1%)	93 (72.1%)	75 (58.1%)	35 (27.1%)	34 (26.4%)
Global	421 (49.4%)*	423 (49.6%)*	340 (39.9%)*	255 (29.9%)	163 (19.1%)*

Acronyms: CR cardiovascular rehabilitation; LAC, Latin America and Caribbean; PVD, peripheral vascular disease; TIA, transient ischemic attack

Note: Due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  compared to LAC countries.

Supplemental Table 4: Risk factors assessed in CR by LAC country

Country	Blood pressure	Tobacco use	Adiposity <sup>1</sup>	Harmful use of alcohol	Physical inactivity	Lipids <sup>2</sup>	Poor diet	HbA1c <sup>3</sup>	Blood glucose <sup>4</sup>	Depression /anxiety	Sleep apnea
Argentina	3 (100.0%)	3 (100.0%)	3 (100.0%)	2 (66.7%)	3 (100.0%)	3 (100.0%)	2 (66.7%)	3 (100.0%)	2 (66.7%)	1 (33.3%)	1 (33.3%)
Barbados	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Bermuda	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Brazil	23 (95.8%)	23 (95.8%)	21 (87.5%)	20 (83.3%)	22 (91.7%)	20 (83.3%)	17 (70.8%)	18 (75.0%)	15 (65.2%)	18 (75.0%)	14 (46.7%)
Chile	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Colombia	47 (100.0%)	45 (95.7%)	45 (95.7%)	44 (93.6%)	42 (91.3%)	44 (93.6%)	44 (95.7%)	40 (85.3%)	36 (78.3%)	29 (65.9%)	20 (41.7%)
Costa Rica	6 (100.0%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	5 (83.3%)	6 (100.0%)	4 (66.7%)	5 (83.3%)	4 (66.7%)	1 (16.7%)
Cuba	7 (100.0%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	7 (100.0%)	2 (28.6%)	6 (100.0%)	6 (85.0%)	2 (25.0%)
Curacao	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Dominican Republic	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Ecuador	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)
Guatemala	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	2 (100.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Honduras	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Jamaica	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Mexico	9 (100.0%)	9 (100.0%)	9 (100.0%)	9 (100.0%)	7 (77.8%)	9 (100.0%)	9 (100.0%)	8 (88.9%)	7 (77.8%)	9 (100.0%)	2 (22.2%)
Panama	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Paraguay	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	2 (66.7%)	0 (0.0%)

Peru	7 (100.0%)	6 (85.7%)	7 (100.0%)	6 (85.7%)	6 (85.7%)	6 (85.7%)	6 (85.7%)	6 (85.7%)	6 (85.7%)	5 (71.4%)	1 (14.3%)
Uruguay	5 (100.0%)	5 (100.0%)	5 (100.0%)	4 (80.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	5 (100.0%)	4 (80.0%)	3 (60.0%)
Venezuela	8 (100.0%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	7 (87.5%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	8 (100.0%)	6 (75.0%)	3 (42.9%)
LAC Total	130 (99.2%)	127 (96.9%)	126 (96.2%)	121 (92.4%)	119 (91.5%)	119 (90.8%)	118 (90.8%)	106 (80.9%)	96 (75.0%)	94 (73.4%)	51 (40.5%)
Global	928 (99.1%)	919 (98.1%)	900 (95.8%)	867 (92.6%)	879 (94.3%)	856 (91.3%)	840 (90.1%)	781 (84.0%)	676 (73.2%)	797 (85.8%)*	437 (47.4%)

Acronyms: CR cardiovascular rehabilitation; LAC, Latin America and Caribbean.

<sup>1</sup>Adiposity: waist / hip circumference or body mass index.

<sup>2</sup>Lipids: total cholesterol, cholesterol fractions (HDL-c, LDL-c) and triglycerides.

<sup>3</sup>HbA1c: for diabetic patients.

<sup>4</sup>Blood glucose: for non-diabetic patients.

Note: due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\*p<.05; \*\*p<.01; \*\*\*p<.001 compared to LAC countries.



Supplemental Table 5: CR dose by LAC Country

Country	Dose of CR <sup>1</sup>	Total CR hours <sup>2</sup>	1 Staff to patient ratio <sup>3</sup>
Argentina	6	6	1: 9 ± 1
Barbados	36	48	1: 4
Bermuda	72	72	1: 3
Brazil	44.5	45	1: 2 ± 2
Chile	24	24	1: 3
Colombia	36	36	1: 4 ± 2
Costa Rica	36	41	1: 3 ± 2
Cuba	60	45	1: 6 ± 4
Curacao	24	21	1: 3
Dominican Republic	24	20	1: 3
Ecuador	36	30	1: 1 ± 2
Guatemala	12.5	5	1: 1 ± 0
Honduras	10	7	1: 1
Jamaica	-	-	1: 1
Mexico	17	16	1: 2 ± 2
Panama	28	21	1: 2
Paraguay	36	36	1: 3 ± 2
Peru	56	60	1: 6 ± 5
Uruguay	72	90	1: 4 ± 1
Venezuela	48	49	1: 5 ± 2
LAC countries (P25-75)	36 (24-56)	36 (27-56)	1: 4 ± 3
Global (P25-75)	24 (12-36) <sup>***</sup>	24 (12-36) <sup>***</sup>	1: 5 ± 8 <sup>***</sup>

– Not available (response was not provided by any respondent in the country).

Acronyms: CR cardiovascular rehabilitation; LAC, Latin America and Caribbean; P25-75, quartiles.

<sup>1</sup>Dose of CR: number of weeks X number of sessions per week

<sup>2</sup>Total CR hours: dose x intensity (minutes per session) divided by 60.

<sup>3</sup>Staff to patient ratio: mean ± standard deviation for program (standard deviation not shown where only 1 response is available).

Note: due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\*p<.05; \*\*p<.01; \*\*\*p<.001 compared to LAC countries.

Supplemental Table 6: Other elements delivered on CR programs by LAC countries.

Country	Resistance Training	Prescription / titration of medication <sup>1</sup>	Assesment of comorbidities	Exercise stress test	Other functional capacity test	HR measurement training	Assessment of strength	Alternative forms of exercise	Psychological counseling	Follow-up post-program	Electronic patient charting
Argentina	3 (100.0%)	2 (66.7%)	2 (66.7%)	1 (33.3%)	1 (33.3%)	3 (100.0%)	1 (33.3%)	2 (66.7%)	0 (0.0%)	1 (33.3%)	2 (66.7%)
Barbados	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Bermuda	1 (100.0%)	-	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Brazil	19 (79.2%)	11 (45.8%)	22 (91.7%)	15 (65.2%)	21 (87.5%)	24 (100.0%)	12 (50.0%)	6 (25.0%)	11 (45.8%)	18 (75.0%)	0 (0.0%)
Chile	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)
Colombia	46 (97.9%)	41 (87.2%)	43 (93.5)	24 (53.3%)	38 (82.6%)	47 (100.0%)	20 (43.5%)	19 (42.2%)	27 (58.7%)	30 (65.2%)	43 (91.5%)
Costa Rica	5 (100.0%)	6 (100.0%)	4 (66.7%)	6 (100.0%)	6 (100.0%)	6 (100.0%)	2 (33.3%)	1 (16.7%)	5 (83.3%)	3 (50.0%)	4 (66.7%)
Cuba	6 (75.0%)	8 (100.0%)	8 (100.0%)	7 (100.0%)	3 (42.9%)	8 (100.0%)	2 (25.0%)	7 (87.5%)	8 (100.0%)	7 (87.5%)	2 (25.0%)
Curacao	1 (100.0%)	-	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)
Dominican Republic	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)
Ecuador	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	2 (100.0%)	1 (50.0%)	1 (50.0%)	2 (100.0%)	1 (50.0%)	1 (50.0%)



Guatemala	1 (50.0%)	2 (100.0%)	0 (0.0%)	2 (100.0%)	0 (0.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)	2 (100.0%)	2 (100.0%)
Honduras	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)
Jamaica	1 (100.0%)	-	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
Mexico	7 (77.8%)	9 (100.0%)	8 (88.9%)	9 (100.0%)	6 (66.7%)	9 (100.0%)	3 (33.3%)	2 (22.2%)	8 (88.9%)	9 (100.0%)	8 (88.9%)
Panama	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	1 (100.0%)
Paraguay	2 (66.7%)	3 (100.0%)	3 (100.0%)	3 (100.0%)	2 (66.7%)	3 (100.0%)	0 (0.0%)	0 (0.0%)	2 (66.7%)	2 (66.7%)	1 (33.3%)
Peru	7 (100.0%)	6 (85.7%)	6 (85.7%)	6 (100.0%)	6 (85.7%)	7 (100.0%)	2 (33.3%)	2 (28.6%)	6 (85.7%)	4 (57.1%)	2 (28.6%)
Uruguay	5 (100.0%)	4 (80.0%)	5 (100.0%)	5 (100.0%)	2 (50.0%)	5 (100.0%)	2 (50.0%)	3 (60.0%)	5 (100.0%)	3 (60.0%)	3 (60.0%)
Venezuela	7 (87.5%)	8 (100.0%)	7 (100.0%)	8 (100.0%)	5 (71.4%)	7 (100.0%)	3 (37.5%)	3 (42.9%)	6 (85.7%)	7 (100.0%)	3 (42.9%)
<b>LAC Total</b>	118 (90.1%)	107 (81.1%)	118 (90.8%)	91 (71.7%)	100 (78.1%)	131 (100.0%)	55 (42.6%)	48 (37.2%)	84 (64.6%)	95 (73.1%)	75 (70.1%)
<b>Global</b>	858 (90.8%)	751 (79.3%)	877 (93.1%)	656 (70.0%)	734 (78.9%)	888(94.1%)** *	447 (48.2%)	355(38.0%) )	752 (79.5%)	662 (70.4%)	472(61.1%) )*

Acronyms: CR, cardiovascular rehabilitation; HR, heart rate; LAC, Latin America and Caribbean.

<sup>1</sup>Prescription or titration of cardiovascular- secondary prevention medications.

Note: due to missing data, percentages are computed where the denominator is the number of valid responses from responding programs.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  compared to LAC countries