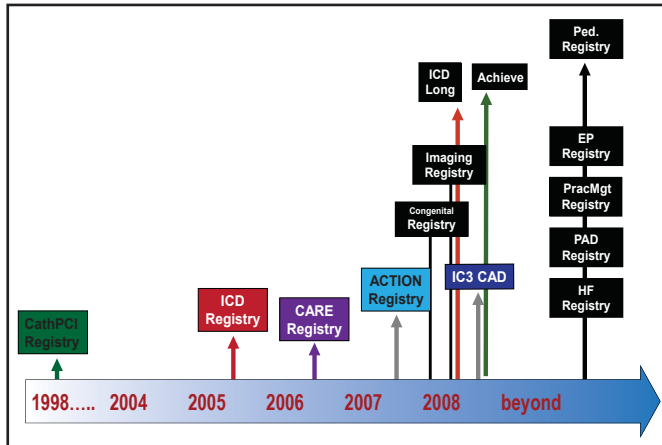


Figure 2. NCDR.



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Registries have been an important source of data, leading to changes in clinical practice. One important contribution has been in the area of bleeding, a critical consideration in the assessment of antithrombotic and interventional therapies. Multivariable analysis of the data that were collected in the CathPCI Registry identified several factors that were related to increased bleeding risk in patients who were undergoing PCI, as shown in Table 1. Several of these risk factors for bleeding, which are now well understood, may not have been identified without the large volume of patients and broad-based data collection that registries make possible (Table 1). Registries also allow for benchmarking between similar institutions using standardized quality-of-care metrics, such as door-to-balloon time. Additionally, real-world data that are related to new devices and drugs can be monitored to identify rare complications or side effects that were not previously documented.

Dr. Giugliano closed with a discussion of the REACH Registry, a global observational study of approximately 68,000 patients in 44 countries who are at high risk of atherothrombosis [Bhatt DL et al. *JAMA* 2006]. Data from REACH have helped to identify the ethnic and geographical differences in the incidences of cardiovascular risk factors across populations, such as the rates of diabetes and hypertension, differences in age at presentation, and the rates of undertreatment of risk factors in various regions, as well as the overlap among the various forms of vascular disease. In conclusion, Dr. Giugliano encouraged fellow members of the Caribbean Cardiovascular Society to collaborate and support the development of a regional, Caribbean PCI registry with the goal of improving the quality of care that is delivered to CVD patients in the Caribbean through a better understanding of the current risk factors and treatments.

Table 1. Risk Factors for Bleeding: Adjusted Analysis.

| Variable | OR | 95% CI | x square |
|------------------------------|------|--------------|----------|
| Female | 1.74 | 1.64 to 1.85 | 319.3 |
| Age (per 10 years) | 1.36 | 1.31 to 1.42 | 223.6 |
| GFR (per 10 ml/min decrease) | 1.11 | 1.10 to 1.13 | 210.2 |
| Prior PCI | 0.69 | 0.64 to 0.73 | 128.9 |
| Cardiogenic Shock | 1.87 | 1.66 to 2.10 | 104.7 |
| Emergent/Salvage PCI | 2.22 | 1.98 to 2.49 | 81.7 |
| Urgent PCI | 1.46 | 1.34 to 1.57 | |
| COPD | 1.31 | 1.23 to 1.39 | 70.6 |
| NYHA Class 3 | 1.14 | 1.05 to 1.24 | 41.4 |
| NYHA Class 4 | 1.42 | 1.30 to 1.56 | |
| Non-STEMI/Unstable Angina | 1.13 | 1.04 to 1.22 | 35.9 |
| STEMI | 1.49 | 1.32 to 1.69 | |
| Prior Valve Surgery | 1.61 | 1.34 to 1.94 | 24.8 |
| CVD | 1.16 | 1.09 to 1.24 | 19.1 |
| Intra-aortic balloon pump | 1.95 | 1.41 to 2.70 | 16.1 |
| PVD | 1.15 | 1.07 to 1.23 | 13.6 |
| HTN | 1.12 | 1.05 to 1.19 | 12.5 |
| Weight (per 5 kg decrease) | 1.02 | 1.01 to 1.03 | 11.9 |

GFR=glomerular filtration rate; PCI=percutaneous coronary intervention; COPD=chronic obstructive pulmonary disease; STEMI=ST elevation myocardial infarction; CVD=cardiovascular disease; PVD=peripheral vascular disease; HTN=hypertension.

For additional information, please visit: <http://www.ncdr.com>.

Status Report: Heart Failure Registry 2011

Written by Rita Buckley

Heart failure (HF) affects over 5.8 million individuals in the United States (US) and over 23 million worldwide [Lloyd-Jones D et al. *Circulation* 2010; Bui AL et al. *Nat Rev Cardiol* 2011]. It results in substantial morbidity, mortality, and expense; yet, quality of care varies widely and is frequently inadequate. Performance improvement registries have been developed to help identify ways to improve quality of care and outcomes for patients with HF in both inpatient and outpatient settings [Fonarow GC. *Circ J* 2011]. Martin Didier, MD, Medical Consultant, Tapion Hospital, Castries, St. Lucia, reported on progress, or lack thereof, in establishing a HF registry for the Caribbean region.

The Caribbean Cardiac Society (CCS) consists of 18 countries, including England, France, Spain, and the Netherlands. The objective of the registry initiative is

to provide information on the characteristics of HF and its management in the Caribbean region. However, the effort to date has encountered many challenges, including lack of funds, staff shortage, lack of coordinators, and no coordinating centers.

The aims of the CCS Survey on HF were to: 1) describe the clinical characteristics of outpatients and inpatients with HF who were followed by representative Caribbean cardiology centers; 2) describe the diagnostics and therapeutics that are undertaken in the evaluation and follow-up of patients with HF; 3) assess the outcomes of patients with HF within a 12-month follow-up period and determine prognostic predictors of their outcomes; 4) evaluate whether disparities in management between countries, if found, affect patient outcomes; and 5) determine the characteristics of patients who require referral if necessary to extraregional facilities.

The survey was designed to be prospective, international, multicenter, and observational. It was expected to last 1 year with three visits (enrollment, 6 months, and 12 months). Participants were to include patients aged <18 years with HF. Cardiology centers were graded according to capabilities or competencies (Table 1).

The challenges that are mentioned above have prevented the study from taking place. However, opportunities exist to continue the effort. These include collaboration with American colleagues and those from the European Society of Cardiology; memoranda of understanding with regional or international universities and public health programs; partnerships with industry; and European funding through French colleagues.

As Co-Chair of the CCS Cardiac Heart Failure Registry Steering Committee, Dr. Didier recommended that the Committee appoint regional coordinators (English, Spanish, and Dutch); convene a face-to-face registry CCS meeting; involve the Organisation of Eastern Caribbean States (OECS); access funding; and continue efforts through 2013.

Four registries in the US collect data on clinical characteristics, admission, hospital and/or outpatient care, discharge, and outcomes. Those who are part of the registry make frequent use of web-based tools that provide real-time performance feedback, national data, and other benchmarked quality measures [Fonarow GC. *Circ J* 2011].

Participation in performance improvement registries is associated with substantial improvements in the use of guideline-recommended therapies for HF in both inpatient and outpatient settings. Conformity with HF quality measures also improves treatment and reduces or eliminates disparities in care. Registries have also been linked to improvements in clinical outcomes [Fonarow GC. *Circ J* 2011].

Table 1. CCS CV Center Classifications.

| Description | Subtype | Capabilities or Competencies |
|-----------------|-------------------------------------------------|----------------------------------------------------------------------------------------|
| Type I | | |
| Clinical | A | EKG: 12-Lead, Rhythm Strip |
| | B | CXR: PA and Lat |
| | C | LAB: • CBC, PT/PTT/INR, SMAC-25, Lipid Profile, HsCRP, etc. |
| | D | Research and innovation |
| Type II | | |
| Non-invasive | A | EKG • 12-Lead, Rhythm Strip |
| | | EST • Stress testing; Exercise or pharmacologic |
| | | ECHO • TTE, TEE, 3D, 4D, Stress, pharmacologic |
| | | HOLTER • 24 to 48 hour |
| | | Event Recorders • Loop Recorders (additive capabilities) |
| | | MTWA • Microvoltage T-wave alternans for SCD |
| | | SAE • Signal Averaged EKGS for SCD |
| | B | Nuclear • Perfusion, viability and MUGA scans |
| | C | Cardiac CT • Coronary calcium score, CT coronary angios |
| | | Cardiac MRI • Cardiac function, angio |
| | Cardiac PET • Perfusion, viability, function | |
| D | Research and innovation | |
| Type III | | |
| Invasive | A | Cardiac Catheterization • Left and right; Bedside RHC |
| | | Coronary Angiography • Diagnostic |
| | B | Cardiac Rhythm Management • Pacers, defibrillators, CRTD |
| | C | Electrophysiology • Ablations, mapping, etc. |
| D | Research and innovation | |
| Type IV | | |
| Interventional | A | Vascular (Cors/Central/Periph) • PCI (coronaries); PPI (peripherals); Aortics, etc. |
| | B | Valvuloplasty • BMV, TMV, etc. |
| | C | Valve Repair and Replacement |
| | D | Research and innovation |
| Type V | | |
| Surgical | A | Conventional • CABG/valves (repair-replacement)/etc. |
| | B | Hybrid Procedures • Revascularization/Valves/Endography, etc. |
| | C | VADs/Destination RXs/Transplant • L/R/BiVADs/HeartMate II/Transplant/etc. |
| | D | Research and innovation |

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Table 1. CCS CV Center Classifications (cont).

| Type VI | | |
|------------------|---|----------------------------------------------------------------------------------------------|
| Multispecialty | A | I-III • Clinical - invasive capabilities |
| | B | I-IV • Clinical - intervention capabilities |
| | C | I-V • Clinical - surgery capabilities |
| | D | Research and innovation |
| Type VII | | |
| Cardiac Hospital | A | Superspecialized cardiac hospital division • Part of major multispecialty hospital |
| | B | Superspecialized Cardiac Hospital, stand alone • Stand-alone specialized cardiac hospital |
| | C | Teaching, training and service • Additional capabilities |
| | D | Research and innovation |

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The Benefits of a PCI Registry: An Update

Written by Rita Buckley

Godfrey Aleong, MD, FESC, Eric Williams Medical Science Complex, Trinidad, West Indies, reported on the progress and challenges in establishing a percutaneous coronary intervention (PCI) registry. To date, there are no multicenter, national, or Caribbean data in a PCI registry—only single-center data or anecdotal reports. Cath labs that perform PCI in the English-speaking Caribbean include those in the Bahamas, Barbados, Jamaica, Trinidad and Tobago, and Guyana. Within Trinidad and Tobago, there are 4 centers that perform catheterizations, three in the Port of Spain, one in San Fernando, and none in Tobago.

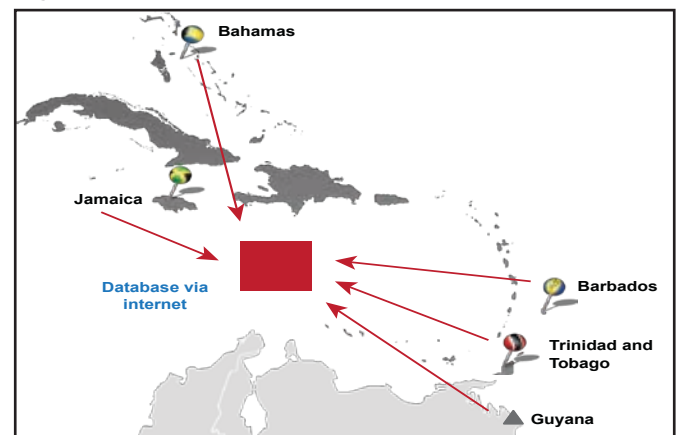
The aim of the PCI Registry is to create both a national and Caribbean registry that will link all centers. The data that are collected will provide effective and pertinent information about the patients and PCI procedures that are performed in the region and, in so doing, will increase the understanding of cardiovascular disease and the effect of PCI in the regional population.

The registry will contain important and accurate information that will generate research, such as a recent report on a comparison of 6-year clinical outcomes of sirolimus- and paclitaxel-eluting stents, based on data from three “real-world” registries in an academic hospital [Simsek C et al. *J Invasive Cardiol* 2011].

The Caribbean registry will provide the region with the information that it needs to participate in international trials and help the region develop a worldwide reputation.

It would include centers in the Bahamas, Jamaica, Barbados, Trinidad and Tobago, and Guyana that are connected to a database via the Internet (Figure 1).

Figure 1. Cath Labs Connected via Internet Database.



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Data that are collected would include:

- Patient demographics (such as the county and country) and characteristics (age, ethnicity, gender, cardiac risk factors, symptoms, previous cardiac history, and cardiac medications)
- Stenosis characteristics (American Heart Association classification)
- Procedure data/information (wire types, balloons, and stents used; whether stenosis was predilated or postdilated and to what pressures; ancillary equipment used, such as intravascular ultrasound, and fractional flow reserve)
- Complications
- 9-month clinical follow-up

Donation by individuals of their protected health information (PHI) for evidence-based research potentially benefits all individuals with diseases through improved understanding of disease patterns. However, without large numbers of people who donate their PHI to disease registries that are designed for research, it is difficult to discover complex patterns, create more specific evidence-based management techniques that can identify new opportunities in disease registry design, or analyze the current stage of a registry [Russler D. *J Diabetes Sci Technol* 2011]. The newly created United States Nationwide Health Information Network provides a good example of how to design, develop, maintain, and update a registry.

Creating a registry will take commitment, communication, and participation. Dr. Aleong encouraged all centers that perform PCI in the region to participate in making a registry a reality. The creation and maintenance of

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