For more than half a century, growing numbers of practitioners and clinician-scientists have created systems for and practiced healthcare delivery within centers of expertise for young and older adults with congenital heart disease (CHD). To date, this has been driven largely by energy, enthusiasm, and shared mission without supportive data demonstrating the benefit of such adult CHD (ACHD) care programs in the lives of patients and families served by this developing field. Now, for the first time, Mylotte and colleagues present in this issue of Circulation good evidence that there is a survival advantage to ACHD patients being cared for by ACHD specialists. This confirms what those working in this field had long assumed and hoped but to date could not substantiate.

The authors used their own extensively validated, province-wide, administrative longitudinal database that has been highly effective in demonstrating the demography and epidemiology of ACHD care in Quebec, Canada, as a model for North America. Their study included data from 1990 to 2005. They performed an elegant combination of time-series analysis together with case-control studies that included year-dependent survival and center-dependent survival so as to determine mortality trends within a highly monitored and geographically stable group of adults with CHD. A number of important findings emerged. Specialized ACHD care was independently associated with reduced mortality. Among patients who died, just under half died of cardiovascular diseases. Other causes of death included neoplasms (≈18%), respiratory disease (≈9%), and diseases of other systems (≈31%). Patients with severe CHD, with a higher expected mortality rate, benefitted more than did patients with less severe forms of CHD, but all groups showed reduced mortality.

The study period included the presentation and publication of the first set of ACHD cardiovascular care guidelines, sponsored by the Canadian Cardiovascular Society. Thus, the authors were able to assess the potential impact of these guidelines on patient referral to 1 of the 3 specialized ACHD centers in the province of Quebec and to relate patient mortality to these events. They found that mortality among ACHD patients rose slowly from 1990 to 2000 and then fell during the last 5 years of the study. From 1990 to 1997, there was only a slight increase in the number of patients seen at ACHD centers in Quebec. This increased quite sharply beginning in 1997, 3 years before the mortality rate for this population began to decline.

The authors suggest multiple reasons why increasing patient referrals to ACHD centers of expert care might improve outcomes. Team members within such a system of healthcare delivery have a special interest, training, and experience with ACHD patients, and as such, they may be more likely to use practice guidelines, reduce variability in care, and maximize the use of medical advances than other practitioners who may be less familiar with this information. They also discuss the “practice makes perfect” hypothesis to explain how such higher-volume specialized centers allow the accumulation of skills and knowledge, the acquisition of specialized equipment, and the development of service models that have been demonstrated to improve outcomes in other cardiovascular patient groups.

Sophisticated readers may recognize additional and important confounders to the study. Receipt of care within ACHD specialized care centers may be associated with better transition and transfer of care from pediatric providers (not analyzed in the present study). If true, the association with improved outcomes may reflect the success of lifelong coordinated CHD care rather than simply adult care. Patient motivation and attention to good healthcare principles may influence outcomes and may drive particular adults with CHD to specialized care centers. In addition, the present study demonstrates that the majority of deaths in ACHD centers of expertise were coded as attributable to noncardiac and other causes. This intriguing finding suggests that in addition to the direct benefits of specialized cardiovascular ACHD care, improved survival in such patients may reflect the impact of a broad range of healthcare services available at such centers. Although these influences may carry important distinction for future study and healthcare refinement, the data presented underscore the fact that specialized ACHD care centers have now truly come of age.

What should we do with this information? This study reinforces recommendations from America, Canada, and Europe that adult patients with moderate or complex CHD be followed up regularly in specialized ACHD centers, in collaboration with their other providers. Patients and families should be informed of this survival advantage and encouraged to attend the centralized, specialized ACHD facilities available to them. Physicians of all types and especially cardiologists should be informed of the survival advantage and encouraged...
to share or refer appropriate patients to centers dedicated to coordinated ACHD care. Likewise, such expert centers appear to have an obligation to communicate well with local providers, disseminate best practices and care guidelines, and promulgate optimal quality and innovation.

Efforts to build excellence in ACHD care need to be redoubled, which makes 2 ongoing efforts very timely. The first is the development of an accreditation process and criteria for US ACHD clinics, coordinated by patient advocacy within the Adult Congenital Heart Association. The Adult Congenital Heart Association will build a roadmap of standards based on expert consensus and care guidelines, including expertise in staffing and services with an emphasis on collaboration, in the hope that these will lead to a strengthening network of specialized ACHD care programs and improved quality of care in the United States. It is estimated by Marelli and colleagues\(^\text{13}\) that the United States will require at least 150 ACHD centers to care for the 50% of the ACHD population with moderate and severe forms of CHD. The implications for ACHD program building are far reaching and now have clear and concise data to support this approach.

The second important initiative aims to increase the number of trained and certified ACHD subspecialty cardiologists. Recent collaboration between the American Board of Pediatrics and the American Board of Internal Medicine has led to the creation of a subspecialty certification in ACHD, with the first qualifying examination scheduled for 2015. This will require a greater number of dedicated fellowship training programs for ACHD cardiologists. To this end, the Accreditation Council for Graduate Medical Education agreed in 2013 to accredit fellowship programs in the subspecialty of ACHD. With these accomplishments, we anticipate greater numbers of both pediatric and internal medicine cardiologists will seek training opportunities, and more academic institutions will provide fellowship positions in the advanced care of adults with CHD, thereby increasing the workforce that will be required.

The results from the present study provide legitimacy to prior expert guideline statements that can continue to form the basis for the continued development of systems of ACHD care delivery in the United States and elsewhere. The belief by specialized ACHD cardiologists that has led them to advance such care is now supported by data. The imperative now becomes the achievement of changes in practice that will build a specialized healthcare delivery system to engender fiscally responsible and patient-centered quality care in an atmosphere of collaboration and coordination within the multidisciplinary team of specialized healthcare providers needed for the many and varied needs of ACHD patients. Fortunately, the time to move forward on behalf of these patients is now.

### Disclosures

None.

### References


Specialized Adult Congenital Heart Care Saves Lives
Gary Webb, Michael J. Landzberg and Curt J. Daniels

Circulation. 2014;129:1795-1796; originally published online March 3, 2014;
doi: 10.1161/CIRCULATIONAHA.114.009049
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2014 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://circ.ahajournals.org/content/129/18/1795

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published
in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial
Office. Once the online version of the published article for which permission is being requested is located,
click Request Permissions in the middle column of the Web page under Services. Further information about
this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org//subscriptions/