The Career of Caring for Adults with Congenital Heart Disease

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President, U of Iowa, Cornell, Secretary of the Smithsonian

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IM cardiology
Karen Stout, MD,
Master Clinician Educator, Advocacy
U Washington

age 45
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Joseph Wu, MD, PhD
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Kaiser Permanente, UCSF, Stanford
Imaging (MRI), Bioengineering, Transition Medicine
age 47
peds cardiology
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Director, COACH Program
Fellowship Director
Catheterization, PAH
Inter/national Advocacy
Ohio State University

age 49
IM/Peds cardiology
“Grow old along with me!
The best is yet to be,
The last of life, for which the first was made..., Youth shows but half... see all, nor be afraid!
“Grow old along with me!
The best is yet to be,
The last of life, for which the first was made...,
Youth shows but half... see all, nor be afraid!

Congenital heart disease is a lifelong process with both backward and forward reflections
There exists a UNIQUE medical science and set of data and competencies required of practitioners and programs of ACHD care. This science and data/skill set has been constructed upon, and requires coordination between interdisciplinary age-independent partnerships.
ACHD surgery by CHD surgeons $\rightarrow$ ↓ mortality

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>$P$</th>
</tr>
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<tbody>
<tr>
<td>Pediatric heart surgeon as dichotomous variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpediatric heart surgeon</td>
<td>4.50</td>
<td>2.12–9.53</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Karamlou T et al. Circulation 2008: NIS
Mahle W. et al. JTCS 2008: 30% PHS ACHD surgeries with sig pre-co-morbidities
ACHD surgery by ACHD surgeons $\rightarrow$ ↓ mortality

\[ n = 3061 \text{ cases} \]

39 free-standing pediatric institutions

is the strongest predictor of postop survival

Care in ACHD centers leads to ↓ mortality

Mylotte et al. Circulation 2014 Mar 3 [ Epub ahead of print]
ACHD specialized care is desired

- Patients/families
- Pediatric cardiologists
- Adult internal medicine cardiologists

perceive benefit from ↑ ACHD specialty care

Fernandes SM et al. Pediatrics 2011; 128: e1489-95
Fernandes SM et al. J Am Coll Cardiol 2012; 60: 2411-18
Fernandes SM et al. J Am Coll Cardiol 2013; 61: 1303-4
“Come on Up for the Rising”
Petition for ACHD Subspecialty Certification
American Board of Internal Medicine Pathway

Based on ABIM Criteria for Recognition as Subspecialty Certification

Michael J. Landzberg, MD and Curt Daniels, MD for the ABIM Petition Working Group

<table>
<thead>
<tr>
<th>Member</th>
<th>Representing</th>
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</thead>
<tbody>
<tr>
<td>Michael Landzberg, MD, FACC, Chair</td>
<td>ISACHD</td>
</tr>
<tr>
<td>Curt Daniels, MD, FACC, Co-Chair</td>
<td>ABP/ABIM</td>
</tr>
<tr>
<td>Elyse Foster, MD, FACC</td>
<td>AHA</td>
</tr>
<tr>
<td>Thomas Graham, MD, FACC</td>
<td>ABP</td>
</tr>
<tr>
<td>Gerard Martin, MD, FACC</td>
<td>ACC</td>
</tr>
<tr>
<td>Stephanie Mitchell</td>
<td>ACC</td>
</tr>
<tr>
<td>Amy Verstappen</td>
<td>ACHA</td>
</tr>
<tr>
<td>Carole Warnes, MD, FACC</td>
<td>ACC</td>
</tr>
<tr>
<td>Gary Webb, MD, FACC</td>
<td>ACC/ACHA</td>
</tr>
</tbody>
</table>
Petition for ACHD subspecialty certification – American Board of Pediatrics

Based on ABP GUIDELINES FOR ESTABLISHING A NEW SUBSPECIALTY

ABP Petition Writing Group

<table>
<thead>
<tr>
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<tr>
<td>Thomas Graham, MD, FACC</td>
<td>ACC</td>
</tr>
<tr>
<td>Curt Daniels, MD, FACC</td>
<td>ACC</td>
</tr>
<tr>
<td>Robert Beekman, MD, FACC</td>
<td>AAP/JCCHD</td>
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<tr>
<td>Michelle Gurvitz, MD, FACC</td>
<td>ACC</td>
</tr>
<tr>
<td>Gerard Martin, MD, FACC</td>
<td>ACC/JCCHD</td>
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<tr>
<td>Allison Knauth, MD, FACC</td>
<td>AHA</td>
</tr>
<tr>
<td>Catherine Webb, MD, FACC</td>
<td>JCCHD</td>
</tr>
<tr>
<td>David Sahn, MD, FACC</td>
<td>CHF</td>
</tr>
</tbody>
</table>
ACHD Subspecialty Certification Timeline

2007
- 9/07 Chicago JCCHD
- 1/08 Wash DC
- 9/08 WC formed BIM & ABP
- 12/08 Petitions ABIM & ABP

2008
- 1/08 Wash DC

2009
- 7/09 ABIM Initial Petition Submission
- 10/09 ABP Initial Petition Submission
- 12/09 ABIM Petition Re-submission

2010
- 6/10 ABIM BOD Meets criteria
- 10/09 ABP Unanimously Approved Content
- Business Models
- ABP Collaboration

2011
- 1/11 Wash DC ACC ABIM
- 9/11 Application COCERT ABMS

2012
- 3/12 COCERT Defense #1
- 8/12 COCERT Defense #2
- 8/12 COCERT Approved
Update on ACHD Certification

- Approved by ABP
- Approved ABIM
- Approved by COCERT
- Approved by ABMS 12/12

COCERT – ABMS Committee on Certification, Subspecialties and Recertification
ABMS Announces Certification in New Subspecialty: Adult Congenital Heart Disease

CHICAGO - December 5, 2012 - The American Board of Medical Specialties (ABMS) announces the creation of physician certification in a new subspecialty: Adult Congenital Heart Disease (ACHD). The ABMS Board of Directors and ABMS Reserved Powers Board approved the subspecialty at its September 2012 meeting. The subspecialty will be offered by the American Board of Internal Medicine (ABIM) and will create a pathway for certification for cardiologists previously certified by either the ABIM or the American Board of Pediatrics (ABP) with the expectation that the certification exam will be available within the next three years. The Accreditation Council for Graduate Medical Education (ACGME) will be approached to develop accreditation standards for training programs very shortly.

“Children who suffer from Pediatric Congenital Heart Disease are now surviving into adulthood, with specialized medical needs that will be best met by trained specialists in Adult Congenital Heart Disease,” noted Eric Holmboe, MD, FACP, ABIM’s Chief Medical Officer. “This new subspecialty will enable patients to identify those clinicians with the competence and skill necessary to deliver quality care.”

The ACHD subspecialty will:

- Meet the needs of the growing population of adults with congenital heart disease by ensuring there are enough physicians with the appropriate training to care for them in a consistent and comprehensive manner that is in compliance with recently published guidelines.
- Enable adult congenital heart specialists to work in an environment that specializes in caring for this patient population and provides a mechanism for transition of care from adolescence to adulthood that would eliminate gaps in medical care.
- Develop well-defined training pathways for internal and pediatric medicine cardiology trainees through the ABIM and the ABP. These pathways would culminate in a final common examination and subspecialty certification available.
Pathways to ACHD Fellowship

Residency | Cardiology | ACHD Fellowship
---|---|---
General PEDS | Cardio PEDS | ACHD
General IM | Cardio IM | ACHD
General IM/PEDS | Cardio PEDS | ACHD
Cardio IM | | }

Year
1 2 3 4 5 6 7 8 9
ACHD Inpatient/Consult Service
- 10 months

ACHD Cardiac Imaging
- 3 months

General Pediatric Cardiology
- 2 months

ICU/CT Surgery
- 1 month

ACHD Elective/Research
- 6 months

≥ 200 Inpatient admissions
≥ 10 ACHD pregnancies
≥ 10 Non-cardiac surgeries
≥ 30 ACHD PH
≥ 30 ACHD heart failure
≥ 30 ACHD atrial arrhythmias
≥ 15 ACHD vent arrhythmias

≥ 150 TTE
≥ 25 TEE (10 intra-operative)
≥ 50 CMR
≥ 10 diagnostic and 20 interventional performed or interpreted
≥ 10 diagnostic and 20 interventional participate

≥ 20 Patients/Month

24 months
Pediatrics
Template

ACHD
Inpatient/Consult
Service
10 months

- ≥ 200 Inpatient admissions
- ≥ 10 ACHD pregnancies
- ≥ 10 Non-cardiac surgeries
- ≥ 30 ACHD PH
- ≥ 30 ACHD heart failure
- ≥ 30 ACHD atrial arrhythmias
- ≥ 15 ACHD vent arrhythmias

ACHD
Cardiac Imaging
3 months

- ≥ 150 TTE
- ≥ 25 TEE (10 intra-operative)
- ≥ 50 CMR

- ≥ 10 diagnostic and 20 interventional performed or interpreted
- ≥ 10 diagnostic and 20 interventional participate

ACHD
Cardiac Catheterization
2 months

General Pediatric
Cardiology
2 months

ICU/CT Surgery
1 month

ACHD
Elective/Research
6 months

≥ 20 Patients/
Month

≥ 20
Months
Update on ACHD Certification

- Approved by ABIM
- Approved ABP
- Approved by COCERT
- Approved by ABMS 12/12
- Approved by ACGME 9/13
- First exam **2015**
AMERICAN BOARD OF INTERNAL MEDICINE

APPLICATION FOR AUTHORIZATION

TO ISSUE SUBSPECIALTY CERTIFICATES IN

ADULT CONGENITAL HEART DISEASE

Appendix C: Fellowship Training Curriculum
Appendix D: Fellowship Program Requirements

AUGUST 2011
Attest candidate's:

- ACHD specialized knowledge base
- Clinical competence
  - in ACHD patient care
  - in multi-specialty care coordination
- Clinical behavior
  - moral
  - ethical

* If before ACGME accreditation:
  * must be associated with ACGME accredited pediatrics or IM cardiology fellowship training program

Competency:
- patient care
- procedural skills
- medical knowledge
- practice-based learning and improvement
- interpersonal and communication skills
- professionalism
- systems-based practice

Training

24 months (≥ 12 clinical) ACGME accredited*

< 24 mos: practice pathway

Practice

x %* clinical practice
or
y%* professional time

* At least 3 of past 5 years
ACHD Program
# BETHTESDA Criteria

## Table 1. Personnel and Services Recommended or Required for Regional ACHD Centers

<table>
<thead>
<tr>
<th>Type of Service or Personnel</th>
<th>Local Care</th>
<th>Regional ACHD Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric ACHD cardiologist</td>
<td>Optional</td>
<td>One or several 24/7*</td>
</tr>
<tr>
<td>Adult medical ACHD cardiologist</td>
<td>Optional</td>
<td>One or several 24/7*</td>
</tr>
<tr>
<td>Mid-level practitioner</td>
<td>Optional</td>
<td>Two/several</td>
</tr>
<tr>
<td>Congenital heart surgeon</td>
<td>No</td>
<td>Two/several 24/7*</td>
</tr>
<tr>
<td>Cardiac anesthesia</td>
<td>No</td>
<td>Several 24/7*</td>
</tr>
<tr>
<td>Echocardiography**</td>
<td>Refer to regional ACHD center</td>
<td>Two/several 24/7*</td>
</tr>
<tr>
<td><strong>Includes TEE, intraoperative TEE (required for surgery)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Diagnostic catheterization**</td>
<td>Refer to regional ACHD center</td>
<td>Yes 24/7*</td>
</tr>
<tr>
<td><strong>Noncoronary interventional catheterization</strong></td>
<td>Refer to regional ACHD center</td>
<td>Yes 24/7*</td>
</tr>
<tr>
<td>Electrophysiology**</td>
<td>Consult regional ACHD center unless unrelated to CHD</td>
<td>Yes 24/7*</td>
</tr>
<tr>
<td>Exercise testing</td>
<td>Standard</td>
<td></td>
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<tr>
<td>Transplant</td>
<td>Optional</td>
<td>Echo, radionuclide, cardiopulmonary, metabolic</td>
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<tr>
<td>Cardiac imaging/radiology services</td>
<td>Optional</td>
<td>Heart, lung, heart-lung desirable</td>
</tr>
<tr>
<td>Cardiac pathology</td>
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<td>CT scan, cardiac MRI with fast-pulse sequencing*</td>
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<tr>
<td>Information technology</td>
<td></td>
<td>nuclear medicine</td>
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<tr>
<td>Other</td>
<td></td>
<td>Yes</td>
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<tr>
<td></td>
<td></td>
<td>• Data collection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Database support</td>
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<tr>
<td></td>
<td></td>
<td>• Interface with local practitioners, including</td>
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<tr>
<td></td>
<td></td>
<td>internet-based applications</td>
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<tr>
<td></td>
<td></td>
<td>• Quality assessment review and protocols</td>
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<tr>
<td></td>
<td></td>
<td>• Optional development of best practice guidelines</td>
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<tr>
<td></td>
<td></td>
<td>• Adolescent transitional unit</td>
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<td></td>
<td></td>
<td>• High risk obstetrics</td>
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<td></td>
<td>• Genetics</td>
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<td></td>
<td></td>
<td>• Rehabilitation services</td>
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ACHD Program Accreditation

GOALS

• Improve the quality of ACHD care in the US

Strategy

• Develop criteria for Accreditation of US ACHD Programs
• Develop a process by which to evaluate US ACHD Programs
• Develop a strategy to ensure the process will be sustainable
• Set timelines for programs to achieve accreditation criteria
ACHD Program Accreditation: Criteria under Consideration

**Process Measures** including IT, telephone protocol criteria, formal ACHD case review, Formal ACHD CT surgical review, ACHD guideline utilization

**Subspecialty Services** including Interventional Cardiac Cath and Electrophysiology

**Staffing** including Program Director, ACHD cardiologist, other cardiologist, APN/PA, RN

**Imaging** including Echocardiography, MRI, CT, Heart Failure

**Outpatient Clinic** Staff, Settings and Services

**Inpatient Clinic** Staff, Settings and Services

**Reproductive services** including high risk ob/gyn, training, genetic counseling, other

**Transition services**

**Mental Health** Staff, Settings and Services

**Internal Medicine** Subspecialties

**CT Surgery** including CHD Surgeons, Anesthesiologists, Surgical Criteria and Post Surgery

**Heart Transplant** and Heart/Lung Transplant including setting, # per year, outcomes

**Patient-centered processes**
## Accreditation Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>2012</td>
<td>April</td>
<td>Steering Committee Formed</td>
</tr>
<tr>
<td></td>
<td>August – December</td>
<td>Criteria Assignments and Discussions</td>
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</tbody>
</table>
|      | January 2013 | • In-person meeting  
|      |          | • Phase I Accreditation Criteria Developed |
|      | June 2013 | Phase II Criteria Developed |
|      | January 2014 | • In-person meeting  
|      |          | • Phase III Criteria Developed |
|      | June 2014 | Release of RFA |
|      | January 2015 | Site Visits |
Acknowledgments

Boston Adult Congenital Heart (BACH) Program

Aaron Waxman, MD, PhD
Barbara Cockrill, MD
Michael Singh, MD
Anne Marie Valente, MD
Fred Wu, MD
Michelle Gurvitz, MD
Mary Mullen, MD, PhD
Sasha Opotowsky, MD
Laurence Sloss, MD
Ram Emani, MD
Diego Porras, MD
Dominic Abrams, MD
David Systrom, MD
Binny Shah, MD
Yoni Buber, MD
Keri Shafer, MD
Dan Halpern, MD
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Nancy Barker, PA-C
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