

# **Cardiology Fellowship Manual**

## **Goals & Objectives Adult Congenital Heart Disease (ACHD)**

**Pediatric Cardiology Fellowship**  
**Children's Hospital & Medical Center, Omaha**

**ACHD Rotation**

**GOALS & OBJECTIVES**

**Introduction/Purpose**

The goal of this rotation is to enable trainees to achieve expertise in inpatient and outpatient clinical care of adults with congenital heart disease (ACHD) as outlined below. The general goals are to (1) enable the fellow to understand the clinical science upon which high quality care is based for (a) ACHD, (2) obtain training to gather history, physical, and laboratory data relevant to high quality inpatient and outpatient care of patients with ACHD, and (3) become proficient in the provision of inpatient and outpatient care of these patients, which also includes clinical collaboration with other physicians and health care professionals participating in such care, and a meaningful role in patient and family education regarding their heart disease and its management.

Inpatient and outpatient training for patients with these cardiac conditions is mandatory for all pediatric cardiology fellows during clinical training. During the first year, 1 rotation will be scheduled in the care of adults with congenital heart disease. During the second or third year, an additional ACHD month will be scheduled. Both of these ACHD months will be dedicated solely to the adult with congenital heart disease.

Faculty Supervisor(s)/Preceptor(s): Cramer/Erickson/Tsai/Yetman

Admin Assistant or Office Contact: Coordinator, Kristi Graybill; CH Administrative Assistant, Christina Capps, UNMC Administrative Assistant, Kathy Duncan.

**Length of Rotation**

- 4 weeks

**Location(s):**

- Outpatient clinics of Children's Hospital & Medical Center
- Outreach ACHD clinics
- Nebraska Medicine inpatient units, CVICU, and ACHD outpatient clinic

**Prerequisites**

- There will be no prerequisites
- Vacation / time off will NOT be allowed during rotation.

## **General Responsibilities and Expectations**

### **1. Inpatient and Outpatient Clinics**

- Hours: Average 12.5 hours/day
- The fellow will be responsible to participate in all inpatient cardiology rounds and consultations, and outpatient clinics pertinent to the rotation at both Children's Hospital and Medical Center, as well as Nebraska Medicine. Exceptions occur for required conflicting educational fellowship activities. There will be a preference shown towards continuity clinical duties while on the rotation.
- General ACHD clinics occur on Monday, Wednesday, and Thursday
- Subspecialty clinics occur on Tuesday, including Eisenmenger and Aortopathy
- Longest permitted continuous duty shift: 28 hours.
- Maximum permitted weekly total duty: 80 hours.

### **2. Procedures**

- Imaging
  - Assist with transthoracic and transesophageal echocardiograms
- Cardiac catheterization
  - Assist with procedure (service attending to select cases)
- Surgery
  - Attend one OR case start with cardiac anesthesia
- Cardiopulmonary exercise testing (peds fellows)
  - Supervision, review, and interpretation of data

### **3. Weekly/monthly didactic schedules**

- Fellows will be required to attend all pertinent lectures and conferences.
- Congenital case management conference occurs weekly on Monday at Children's Hospital
- ACHD case management conference occurs weekly at Nebraska Medicine. The fellow will be asked to review the current inpatient service and present selected cases for review.

### **4. Night or weekend call.**

- Fellows will continue to perform call at Children's Hospital as scheduled on evenings, weekends and holidays as dictated by the overall fellowship schedule, subject to the duty limitations above. There will not be additional call taken from Nebraska Medicine.

## **Educational Responsibilities and Expectations**

1. Obtain reading materials required for the rotation. This will include:
  - a. 2018 ACC/AHA Guidelines on the Care of ACHD
  - b. Moss and Adams Heart Disease in Infants, Children, and Adolescents
  - c. Diagnosis and Management of Adult Congenital Heart Disease (2<sup>nd</sup>)
  - d. Key journal articles in care of ACHD patients which will be provided by the preceptors

2. Complete and submit rotation experience and faculty evaluations.
3. Submit a total list of admissions, consultations performed, clinic patients seen.
4. Minimum required patients seen for the 3-year fellowship:
  - a. ACHD: Perform at least 75 admissions, consultations or outpatients seen.

**Expectations with Year-wise Progression of the Fellow's experience are the following:**

**First year:** The fellows will be introduced to the organized standard approach for gathering history, physical and laboratory data relevant to clinical diagnosis and management of the patient with ACHD. The fellow will, with appropriate supervision, organize these data in clinical context, and understand the principles upon which clinical decision making is based.

**Second or Third year:** The fellow will be expected to exhibit greater independence in the gathering and organization of clinical data, culminating in proficiency in diagnosis and clinical management of the patient with ACHD.

**Measurement of Expectations:**

A checklist of yearly expectations based upon the goals & objectives listed below in the six core competencies will be provided to each fellow by the Program Director at the beginning of each year. This checklist will serve as a measurement tool to ensure all expectations will be met at the end of the first year before proceeding to the expectations checklist for the second year. Similarly, this measurement will be applied for the second year towards advancement to the third year.

**Educational Goals and Objectives**

Patient Care Goals – Patient focused, compassionate and effective care is delivered at all times to the patient with ACHD.

By the end of this rotation, the pediatric cardiology fellow will be able to achieve the following Objectives:

Year 1 ACHD

1. Perform a comprehensive cardiac evaluation of the ACHD patient
2. Understand the unique social, educational, and medical (both cardiac and non-cardiac) needs of the ACHD patient
3. Develop a complete and ordered differential diagnosis

4. Prescribe medications in a rational, thoughtful, and safe manner for acute and chronic cardiac conditions and for supportive care.
5. Make informed diagnostic and therapeutic decisions based on patient information, current scientific evidence, and clinical judgment

#### Year 2 ACHD

1. Maintain and improve upon Year 1 Goals for Patient Care Medical Management.
2. Develop ordered, rational management plans for both simple and complex patients.

#### Medical Knowledge Goals –

By the end of this rotation, the pediatric cardiology fellow will be able to achieve the following Objectives:

#### Year 1 ACHD

1. Demonstrate understanding of the features of simple lesions (atrial septal defect, ventricular septal defect, patent ductus arteriosus, pulmonary stenosis, bicuspid aortic valve, coarctation of the aorta)
  - a. Know the anatomy, pathophysiology, associated lesions, and natural histories of atrial septal defects (primum, secundum, sinus venosus) and ventricular septal defects
  - b. Know the anatomy, pathophysiology, associated lesions, and natural histories of bicuspid aortic valve, pulmonary stenosis, coarctation of the aorta, and patent ductus arteriosus.
  - c. Know the risk of development and pathophysiology of pulmonary arterial hypertension in ACHD, including issues related to noncardiac surgery, pregnancy, contraception, and exercise.
  - d. Known the cardinal symptoms, physical examination, electrocardiogram, and CXR findings of patients with simple ACHD.
  - e. Know the indications of noninvasive and invasive testing for the evaluation of simple ACHD
  - f. Know the indications and contraindications for surgical and percutaneous interventions in ACHD.

- g. Know the indications for endocarditis prophylaxis based on current guidelines.
- 2. Demonstrate understanding of the pregnancy and birth control issues faced by women with ACHD
- 3. Demonstrate understanding of the unique social, educational challenges of ACHD patients
- 4. Demonstrate understanding of the insurance needs and challenges of ACHD patient.

#### Year 2 or 3 ACHD

- 1. Demonstrate understanding of the features of complex lesions (Ebstein anomaly, tetralogy of Fallot, cyanotic disease, transposition of the great arteries, single ventricle)
  - a. Know the basic anatomy and pathophysiology of the cyanotic CHD encountered in adolescents and adults.
  - b. Know the natural history of cyanotic CHD, particularly Eisenmenger Syndrome
  - c. Know the hematological complications and management in pts with cyanotic CHD
  - d. Know the risks of cardiac arrhythmia and their management in ACHD
  - e. Know the renal complications of cyanotic CHD, including medications and procedures with potential for precipitating ARF
  - f. Know the systemic complications of cyanotic CHD: pulmonary, orthopedic, and neurological
  - g. Know the vulnerability for mortal complications from routine noncardiac surgical procedures, and risks of IV lines without air filters
  - h. Know the potential for mortal complications in cyanotic HCD, particularly those with PHTN, from pregnancy, or use of estrogen-based contraception
  - i. TGA: basic anatomy, types of surgical repair (Mustard/Senning, Jatene, Rastelli), and their complications in ACHD
  - j. Single Ventricle/Fontan: know the basic anatomy and hemodynamics in patients with and without surgical repair and that noncardiac surgery must be performed at ACHD center.
  - k. Tetralogy of Fallot: basic anatomy, types of surgical repair (Waterston/Potts/BTT shunts, complete), and postop residua and sequelae, including indications and timing of reoperation (PVR)
  - l. Ebstein anomaly: anatomy, pathophysiology, and associated lesions

2. Demonstrate understanding of the transition to care issues involved when adolescents transition to adulthood
3. Maintain and improve upon Year 1 Goals for Medical Knowledge.

Practice-based Learning and Improvement Goals – The fellow will be required to investigate, evaluate, and improve their own practice, and appraise and assimilate scientific evidence.

By the end of this rotation, the pediatric cardiology fellow will be able to achieve the following Objectives:

Year 1

1. Demonstrate the ability to use information technology and feedback to improve the practitioner's fund of knowledge and technical skills and provide a better care to patients.
2. Identify knowledge deficiencies and acts to improve upon them.

Year 2 or 3

1. Maintain and improve upon Year 1 Goals for Practice-Based Learning and Improvement.
2. Apply knowledge of study design and statistical methods to the appraisal of clinical studies and their impact upon patient care.
3. Assist and supervise junior fellows in performance critiques and quality improvement conferences.

Interpersonal and Communication Skills Goals – The inpatient rotation requires very effective communication, including, cardiologists, surgeons, other physicians, health care professionals, patients, and their families.

By the end of this rotation, the pediatric cardiology fellow will be able to achieve the following Objectives:

Year 1

1. Effectively communicate the diagnosis to the attending, referring physician and to members of the healthcare team.
2. Communicate with patients and their families in easily understood and culture-sensitive language.
3. Work effectively as a member of a professional group.
4. Consistently demonstrate sensitivity to patients from different cultures.

5. Maintain comprehensive, timely, and legible medical records.

Year 2 or 3

1. Maintain and improve upon Year 1 & 2 Goals for Interpersonal and Communication Skills.
2. Demonstrate proficiency at leading inpatient rounds and managing the healthcare professionals on the inpatient service.
3. Complete all medical records in a timely, succinct fashion, including inpatient notes.
4. Demonstrate the ability to utilize ancillary team members in an efficient manner.
5. Demonstrate proficiency in effectively communicating all types of defects to patients in a culturally sensitive and understandable manner.

Professionalism Goals – Professional responsibility, adherence to ethical principles and conduct, and sensitivity to patients are essential qualities in a quality physician.

Throughout this rotation, the pediatric cardiology fellow will be expected to achieve the following Objectives:

Year 1

1. Maintain professional demeanor in communication with patients, parents, and caregivers.
2. Maintain respect for patient privacy and confidentiality.

Year 2 or 3

1. Maintain and improve upon Year 1 & 2 Goals for Professionalism.
2. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.
3. Maintain professional demeanor in communication with patient care teams and referring physicians.

System-based Practice Goals –

By the end of this rotation, the pediatric cardiology fellow will be able to achieve the following Objectives:

Year 1

1. Practice cost-effective health care and resource allocation that does not compromise quality of care



2. Demonstrate an understanding of the importance of discharge planning and post-discharge resource utilization.

Year 2 or 3

1. Maintain and improve upon Year 1 & 2 Goals for Systems-Based Practice.
2. Identify and evaluate a quality-improvement project within the division.
3. Demonstrate understanding of the contribution of systems issues to medical error and prevention.

### **“Work Product”**

The rotation is designed with both exposure and core competency completion requirements.

During the course of this rotation, pediatric cardiology fellow will:

- The fellow should maintain a log of all consultations and admissions performed and reviewed, including the age of the patient and the diagnosis.

### **Methods of Evaluation and Feedback**

Assessment of the fellow’s performance and the quality of the rotation experience will be documented with evaluation forms. These will include:

1. Assessment of the fellow’s consultations and admission history and physical examination reports for completeness and accuracy.
2. Assessment of the fellow’s medical knowledge, practice based learning and improvement, interpersonal and communication skills, professionalism, and system-based practice
3. The consultation and admission log will be reviewed regularly to ensure that each trainee is obtaining adequate and balanced experience.
4. The standard evaluation form will be used and discussed with the fellow at the end of the rotation and during the semi-annual meeting with the program director.
5. The fellow will submit a rotation experience evaluation using the standard rotation evaluation form.