

PEDIATRIC PATHOLOGY
FELLOWSHIP TRAINING PROGRAM

Guidelines and Objectives

Department of Pathology & Laboratory Medicine
University of Calgary, Faculty of Medicine
Alberta Health Services
Calgary Laboratory Services and
Alberta Children's Hospital
Calgary, AB

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Program Director

Alfredo Pinto MD, FRCPC

Pediatric Pathology Fellowship program

Introduction

A. Definition and scope of the speciality

Pediatric pathology is that practice of pathology concerned with the study and diagnosis of human diseases manifested in the embryo, fetus, infant, child and adolescent.

B. Duration and scope of education (General Objectives)

1. Offer 1 year of organized education in diagnostic pediatric pathology with formal education in diagnostic pediatric pathology and placental and fetal pathology as well as management and quality assessment issues germane to the pediatric laboratory environment.

The program is designed to give participants guided and supervised exposure to the practice of hospital based pediatric pathology in all of its facets. Broad exposure to the surgical and autopsy pathology of childhood and the developing years forms the basis of the program.

I. Sponsoring institution

1. University of Calgary
2. Calgary Laboratory Services/Alberta Health Services
3. Alberta Children's Hospital

III. Program personnel and resources

- #### A. Program director
- Dr Alfredo Pinto MD, FRCPC

- #### B. Faculty:
- Dr Jim Wright MD, PhD, FCAP
Dr Cynthia Trevenen MD, FRCPC
Dr Weiming Yu, MD, FRCPC
Dr Alfredo Pinto MD, FRCPC
Dr Harvey Sarnat MD, FRCPC
Dr Joseph Jeff MD, PhD, FCAP

Non physician faculty

Other program personnel

Resources

Alberta Children's Hospital (ACH) a tertiary care center that serves southern Alberta, offers full range of paediatric medical and surgical subspecialty services. The department of Pathology and Laboratory Medicine at ACH provides comprehensive pathology services for this site. Because of regionalized health care within the Calgary Health Region (CHR), we also provide expertise in fetal and placental pathology for all

the hospitals in the CHR. Therefore placentas and challenging obstetrical pathology case materials are sent to the pathology laboratory at ACH. For examination. This creates a high volume service, which is ideal for teaching pediatric, fetal, and placental pathology.

On an annual basis approximately 300 autopsies are performed at ACH And an estimate of 3000 surgical pathology specimens are processed.

Anatomical pathology laboratory at ACH is an integral part of the Division of Anatomical Pathology at the University of Calgary and Calgary Laboratory Services.

IV. Fellow appointment

Eligible candidates must have completed residence training program in Anatomical Pathology through a recognized program.

V. Specialty curriculum

1. Didactic component (Specific objectives)

AUTOPSY

The fellow will:

- review the consent form, health records, prepare a clinical history, and discuss pertinent clinical issues relevant to the case with the attending pathologist and if necessary with the clinician.
- Perform complete pediatric autopsies and know how to modify standard procedures to best demonstrate congenital malformations.
- Understand what tissues should be obtained to document cytogenetic, metabolic diseases, and skeletal dysplasias.
- Know the approach to dissection of the heart to documenting the nature of cardiac malformations.
- Identify the pathologic changes associated with stillbirth and its common causes including those disorders that result in hydrops fetalis.
- Learn the proper method for removal of the fetal/infant brain and its preparation for dissection.
- Know the morphological features of common chromosomal malformation syndromes including trisomies 21, 13, 18 and monosomy X.
- Incorporate the various databases such as OMIM to assist in the differential diagnosis of malformation syndromes into your evaluation.
- Learn the use of dissecting microscope to assist in the evaluation of aborted fetuses.
- Understand the correlation of fetal demise with changes in the placenta
- Learn about the resources available to document the deviation from the norm of various parameters of organ growth.
- Learn to prepare a Preliminary Autopsy report within 48 hours after the autopsy and a final report must be completed within four weeks of performance of the autopsy. The report should interpret autopsy findings, both

gross and microscopic, in the context of the clinical history and clinical laboratory results, and provide clinico-pathological correlations.

SURGICAL PATHOLOGY/PLACENTA

The fellow will:

- Perform gross and microscopic examinations of specimens and operating room consultations at ACH under the direction of a staff pathologist
- Participate in intraoperative consultations and understand their role in diagnosis and specimen workup
- Know the morphological features of and any special dissection techniques necessary for evaluating the more common pediatric tumors.
- Perform electron microscopy when indicated.
- Know the morphology and clinical correlates of pediatric brain tumors.
- Become familiar with the pathologic features and clinical correlates of the various non-neoplastic lesions seen in pediatric patients.
- Become familiar with the many less common lesions that occur in infancy and childhood through review of the archival material at ACH (Binders, Glass slides, congenital heart collection)
- Review the hematopathology study set
- Know the common lesions found in the placenta and their clinical correlates.
- Be familiar with the use and interpretation of immunohistochemistry and in-situ hybridization for the diagnosis of pediatric tumors and infectious diseases
- Become familiar with the common “Quality Indicators” used in Anatomical Pathology, including the following:
 - Report turn around time
 - Frozen section/final diagnosis correlation
 - Patient incidents
 - Technical and accessioning errors
 - Safety concerns
 - Critical values in Anatomical Pathology

PEDIATRIC NEUROPATHOLOGY

The fellow will:

- attend the brain cut sessions and sign out the corresponding autopsy brains
- Assist in intraoperative consultation of brain tumor with the attending pediatric pathologist and sign out the final report with the neuropathologist

ARCHIVAL MATERIAL

- Glass slides and accompanying surgical pathology reports: 2000 cases, organized by organ system and binders are located in the department library. These include cases of both common and rare pathological entities. Organ system slide boxes are also located in the resident’s room.
- Museum of congenital heart malformations: a wide variety of wet specimens is available for review

2. Clinical component

Attendance and participation in the following rounds is mandatory

- Pediatric brain cutting, Thursday morning: neuropathologist performs gross brain examinations in ACH autopsy suite.
- Pediatric-Oncology rounds (Tumor board), Wednesday 4 PM. Multidisciplinary review of current oncology cases
- Interesting cases reviews, bimonthly. 2nd and 4th Wednesday at 17:00 hours. Recent surgical or autopsy pathology cases are review amongst staff pathologist with discussion of workup and diagnosis in the ACH multihead microscope room.
- Pediatric GI pathology rounds once a month, Friday noon. Recent GI pathology case are reviewed with clinicians
- Surgical Pathology Slide conference, Fridays 8 AM held in B05 FMC: one session every 4 months is devoted entirely to pediatric pathology cases.
- Grand Pediatric Rounds, weekly, Wednesday, 8:30AM, ACH auditorium
- Pediatric kidney biopsy rounds, 4 times a year on Fridays at 1:00 PM. Review and discussion of biopsy findings with clinicians.
- Developmental rounds - Thursday 8:00AM. Multidisciplinary review of prenatal and perinatal cases encompassing clinical history, diagnostic imaging, prognostic, management, and pathological correlations
- Pediatric neuro-oncology tumor board. Tuesday at 4pm ACH

3. Fellow scholarly activities

The fellow is expected to:

- complete at least one clinical research project for presentation at the annual research day in the department of Pathology.
- present surgical and autopsy cases at appropriate conferences
- assist with the supervision of anatomic pathology residents rotating on the pediatric pathology service.
- Sign-out outside pathology (surgical or autopsy) consultations with staff pathologist

4. CanMED competencies (objectives)

1. Medical Expert: The fellow will:

- Gain knowledge in and acquire competency in all aspects of pediatric pathology
- Be able to work as a consultant in pediatric pathology in a Community or academic hospital

2. Communicator

The fellow will be able to:

- Establish effective working relationships with consulting clinicians /pathologist and surgeons.
- Listen and respond effectively
- Discuss in a timely fashion appropriate information with the health team.
- Advise consulting pathologist/surgeons and clinicians about appropriateness of investigations in pediatric pathology

3. Collaborator :

The fellow will be able to:

- work effectively as a member of the health care system
- consult effectively with other pathologists/clinicians and health care professionals
- contribute effectively to other interdisciplinary team activities.

4. Manager:

The fellow will be able to:

- manage their time effectively in pediatric pathology consultations in autopsy and surgical pathology
- Utilize their time effectively in self education periods
- Utilize information technology to optimize learning and consultation reports
- Allocate finite health care resources wisely.
- Utilize resources effectively to balance patient care, turn around time, and educational research needs.
- Work effectively and efficiently in a health care organization.

5. Health Advocate:

The fellow will

- recognize the importance of accurate diagnosis and their impact on patient outcome
- recognize the importance of a well organized autopsy and surgical pathology program in an tertiary care pediatric hospital (referrals)
- understand the role of consulting pathology in patient's care.

6. Scholar :

The fellow will:

- recognize that education is a life long process and that the field of pediatric pathology cannot be mastered in a year (or a life time)
- develop, implement and monitor a personal continuing education strategy
- critically appraise source of medical information
- contribute to development of new knowledge
- facilitate learning of patients, house staff/students and other health professionals.

7. Professional:

The fellow will

- exhibit appropriate personal and interpersonal professional behaviours
- practice medicine ethically consistent with obligation of a physician
- deliver quality care with integrity, honesty and compassion
- demonstrate the knowledge, skills and attitudes relating to gender, culture and ethnicity pertinent to pediatric pathology

VI. Fellow duty hours and the working environment

1. Supervision of fellow

Attending Pathologist (Pathologist on service)

2. Duty hours

Regular working hours. Usually 8-10 hour day, 5-6 day week. Duty hours and regulation follow the guidelines for residents at the Anatomical Pathology program at the University of Calgary

VII. Evaluation

A. Fellow

Performance will be evaluated according to CanMed competencies. On fundamental knowledge, diagnostic skills, and attitudes demonstrated on professional activities. Performance will be evaluated periodically based on the training objectives, and will be carried out by the subspecialty program director with the input of other faculty members. There are three evaluations at 3, 6 and 12 months. The performance review will be discussed with the fellow and kept on file.

B. Faculty

The fellow will provide regular written feedback (3,6 and 12months) to the Director of the Fellowship Program. In addition, The Director will emphasize to the fellow that verbal feedback from the fellow to the Director is appropriate at anytime should a problem arise.

C. Program

A written evaluation of the program by the fellow will be required at the completion of the Program.

VIII. Experimentation and innovation

The program is receptive to innovations and special interest of the fellow. The exact order and content of the rotations depend upon the background and progress of the fellow and may be modified to accommodate time for research projects

Pathology systemic review sessions will be organized throughout the year.

Strength of the program

- mentoring by four pediatric pathologist with diverse skills and interest
- abundant material and staffing at ACH provided ample opportunity translational and clinical research.
- exposure to an abundance of clinical material and educational resources
- pediatric pathology is part of the anatomic pathology program at the University of Calgary

IX. Accreditation Certification

Upon successful completion the fellow will be issued a certificate from the office of Post Graduate Medical Education, Faculty of Medicine, University of Calgary affirming that a year in a subspecialty training has been successfully completed.

X. Recommended books and journals

- Journals can be accessed on line through the University Calgary
- Common Journals and books in Pediatrics are available in the Library at ACH or in the Medical Library.
- Current text books in pediatric pathology are available in the Department library. In addition the fellow has ready access to the libraries of the staff pediatric pathologist.

Suggested Reading List

- ◆ Stocker and Dehner: *Pediatric Pathology*, 2nd Edition, JB Lippincott, 2001.
- ◆ Gilbert-Barnes: *Potter's Pathology of the Fetus and Infant*, Mosby, 1997.
- ◆ Gilbert-Barnes and Debich-Spicer: *Handbook of Pediatric Autopsy Pathology*, Humana, 2005.
- ◆ Valdes-Dapena and Huff: *Perinatal Autopsy Manual*, AFIP, 1983.
- ◆ Jones: *Smith's Recognizable Patterns of Human Malformation*, sixth Edition, Elsevier Saunders, 2006.
- ◆ Kraus, Redline, Gersell, Nelson and Dicke: *Placental Pathology*, AFIP, 2004.