

Academic Pathology Departments and Associated Children's Hospitals: An Overview of the Relationship

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Abstract

A survey of academic pathology departments was conducted in order to evaluate the relationship with their associated children's hospitals. Forty percent (88) of US children's hospitals were associated with academic pathology departments. Sixty percent of pathology department respondents indicated that their children's hospital was part of their academic health system. As a reflection of this, the majority (54%) of all respondents reported that their children's hospitals were physically located within the academic health care system itself. Accordingly, a vast number (94%) of academic departments reported that they performed the clinical services for those children's hospitals that were part of their academic health system. For those associated children's hospitals that were not part of the academic health system, 70% of respondents reported that the academic pathology department provided at least some clinical services for them. The number of pathologists in the children's hospital pathology departments that were not part of the academic health system ranged from 1 to 5 (41%), 6 to 10 (18%), and >10 (41%), with one-third having salaried faculty appointments in the academic pathology department. The chief of pathology in those children's hospital departments was part of the academic department leadership team in half of the cases. Although 86% of respondents reported that pathology residents rotate through the associated children's hospital, in only 26% of instances did the children's hospital provide resident support for the academic pathology department. The perceived strengths and weaknesses of the relationship between academic pathology departments and associated children's hospitals are discussed.

Keywords

academic health system, children's hospital, pathology department, relationship, survey

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Introduction

From the time that the Children's Hospital of Philadelphia was opened in 1855 as the first hospital in the United States dedicated to children,¹ there has been a proliferation of such institutions. Despite this growth, only 5% of all hospitals are children's hospitals, and these perform 97% of all organ transplantations and 90% of all cancer care in children.² Perhaps not surprisingly, children's hospitals have long partnered with academic institutions. Schools of medicine benefit from having access to a pediatric specialty hospital for teaching, clinical training, and research, while children's hospitals benefit from the academic affiliation through improved national reputation,

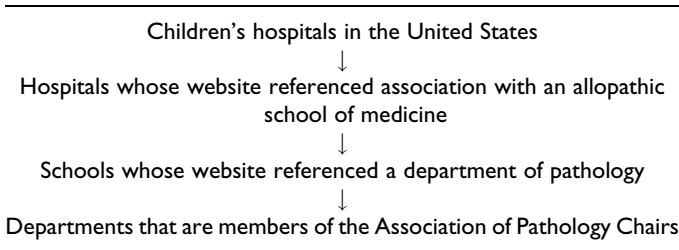
secured funding for research and training programs, and attractiveness in recruiting nationally recognized physicians.³ Although there is some literature on children's hospital relationships with academic health systems,⁴⁻⁷ it is scant, and to the author's knowledge, there has been no report on academic

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Table 1. Selection of Departments Surveyed.

departments of pathology and their associated children's hospitals.

The Association of Pathology Chairs (APC) Senior Fellows Group (former chairs who wish to remain active in the APC) have launched several projects focused on historical aspects of pathology. This author (a member of the APC Senior Fellows Group) is interested in how academic pathology departments have been affected and influenced by their relationships with affiliated health care institutions.⁸ Accordingly, the present study investigates the relationship of academic pathology departments with their associated children's hospitals. In this context, the term "associated" denotes a relationship that could include ownership, supervision, partnership, or affiliation with the department. The definition of a children's hospital is "A children's hospital is a hospital that offers its services exclusively to children and adolescents. Most children's hospitals can serve children from birth up to the age of 21."⁹

Methodology

Children's hospitals in the United States were identified from Wikipedia.⁹ The website of each hospital was then queried for reference to an association with an allopathic school of medicine. Nondegree granting medical centers that could be affiliated with children's hospitals were not included because part of the assessment was to be medical school student and postgraduate training in the children's hospital. Similarly, osteopathic schools were not included because they typically do not have postgraduate pathology training programs. The existence of a department of pathology in those allopathic medical schools that were associated with a children's hospital was verified by examining the website of the school. In order to facilitate contact with the department, only those departments of pathology that were members of the APC were included in the study. Harvard Medical School and Boston Children's Hospital were not included in this study because the Harvard Department of Pathology has its postgraduate pathology training programs based in its affiliated hospitals (Massachusetts General Hospital, Brigham & Women's Hospital, and Beth Israel Deaconess), and thus, the medical school department of pathology's association with the children's hospital differs from that of other academic departments of pathology.

The algorithm for selection (Table 1) yielded 87 schools of medicine (56% of the 155 allopathic US medical schools¹⁰) that appeared to have associations with 88 children's hospitals (40% of the 220 children's hospitals⁹ in the United States). In

2 instances, 2 schools of medicine had associations with the same children's hospital, while in 3 instances, a school of medicine had associations with 2 children's hospitals.

A survey was developed to capture information about the relationship between academic departments of pathology and their respective associated children's hospitals. The survey consisted of a series of multiple-choice questions with the opportunity to provide narrative comments for each. Narrative comments were incorporated whenever relevant into the Results and Discussion sections of this report. Respondents were told to leave blank any questions that they could not answer. Because this study was survey-based, the University of California, San Diego Human Research Protections Program deemed it to be exempt from formal review by the investigational review board. The survey was emailed to the department chair and department administrator identified from the APC membership directory with a response requested within 5 weeks. The survey was not administered anonymously in order to provide the ability to follow up with respondents as needed for clarification regarding their responses. A reminder was sent 2 weeks after the initial request.

Results

Response Rates

Of the 87 academic departments of pathology surveyed, 60 responded (69% response rate). Of those 60, 2 departments indicated that, to their knowledge, their school has no association with a children's hospital, and another 2 departments indicated that, while their school has an association with a children's hospital, the pathology department has no relevant interaction with it. The remaining 56 respondents (identified in Table 2) were the source of information for this study. Because one responding department has associations with 2 children's hospitals, there were 57 maximum responses possible. In some instances, respondents did not answer all questions so that the number of responses for some questions was less than 57.

The survey results are summarized in Table 3 and discussed below.

Nature of the Association (57 Responses)

Of the 57 responses, a substantial majority (34; 60%) indicated that the children's hospital is owned and/or operated by the academic health system, while 23 (40%) indicated that the children's hospital is a completely separate entity but affiliated with the academic health system.

Geographic Separation (57 Responses)

Because the majority (60%) of children's hospitals in this study are owned and operated by the academic health system, most (54%) of all 57 responses indicated that the children's hospitals are geographically located within that system. The distance of the other children's hospitals from the medical school was reported as follows: <5 miles (33%), 6 to 10 miles (4%), 11 to 20 miles (4%), and >20 miles (5%).

Table 2. Pathology Departments Providing Information About Their Association With Children's Hospitals.*

Case Western Reserve University School of Medicine	University of Arizona College of Medicine–Phoenix
Columbia University Vagelos College of Physicians and Surgeons	University of California, Davis School of Medicine
Dartmouth College Geisel School of Medicine	University of California, Irvine School of Medicine
David Geffen School of Medicine at the University of California, Los Angeles	University of California, San Diego School of Medicine
Donald and Barbara Zucker School of Medicine at Hofstra/Northwell	University of Chicago Pritzker School of Medicine
Duke University School of Medicine	University of Cincinnati College of Medicine
Eastern Virginia Medical School	University of Connecticut School of Medicine
Herbert Wertheim College of Medicine at Florida International University	University of Florida College of Medicine
Icahn School of Medicine at Mount Sinai	University of Iowa Roy J. and Lucille A. Carver College of Medicine
Indiana University School of Medicine	University of Kansas School of Medicine
Johns Hopkins School of Medicine	University of Kentucky College of Medicine
Keck School of Medicine at the University of Southern California	University of Louisville School of Medicine
Loma Linda University School of Medicine	University of Minnesota Medical School
Mayo Clinic College of Medicine	University of Mississippi School of Medicine
Medical College of Georgia at Augusta University	University of Missouri–Columbia School of Medicine
Medical University of South Carolina College of Medicine	University of North Carolina School of Medicine
New York University Grossman College of Medicine	University of Pittsburgh School of Medicine
Northwestern University Feinberg School of Medicine	University of Rochester School of Medicine and Dentistry
Ohio State University College of Medicine	University of South Florida Morsani College of Medicine
Oregon Health & Science University School of Medicine	University of Texas Medical Branch School of Medicine
Pennsylvania State University College of Medicine	University of Utah School of Medicine
Perelman School of Medicine at the University of Pennsylvania	University of Washington School of Medicine
Renaissance School of Medicine at Stony Brook University	University of Wisconsin School of Medicine and Public Health
Robert Larner, M.D. College of Medicine at the University of Vermont	Vanderbilt University School of Medicine
Saint Louis University School of Medicine	Washington University School of Medicine
Sidney Kimmel Medical College at Thomas Jefferson University	Weill Cornell Medical College
Stanford University School of Medicine	West Virginia University School of Medicine
Tufts University School of Medicine	Yale School of Medicine

* N = 56.

Provision of Pathology Clinical Services to Children's Hospitals That Are Owned and Operated by the Academic Health System (34 Responses)

The vast majority (32, 94%) of the 34 responding pathology departments whose associated children's hospital is a part of the academic health system reported that the department provides the pathology clinical services to the children's hospital. In one instance (3%), although owned and operated by the academic health system, the children's hospital provides the pathology services due to a large (>900 miles) geographic separation from the health system, while in another instance (3%), services are provided by both the academic pathology department and the children's hospital.

Provision of Pathology Clinical Services to Children's Hospitals That Are Separate But Affiliated Institutions (23 Responses)

For those 23 children's hospitals that are not owned and/or operated by the academic health system, 16 (70%) respondents reported that the academic department provides at least some services to the children's hospital. These services include the following: a full complement of anatomic and clinical pathology services, outside slide reviews, selected autopsies,

histocompatibility studies, specialized reference work, and transfusion medicine service directorships. For the remaining 30%, the children's hospital provides all of its own pathology services.

Children's Hospital Pathology Department (57 Responses)

Of the 57 total responses, only 17 (30%) academic pathology departments indicated that the associated children's hospital has its own separate pathology department that provides pathology services. The number of pathologists at those children's hospitals ranges as follows: 1 to 5 (41%), 6 to 10 (18%), and >10 (41%). Only 33% of those pathologists are salaried faculty in the academic department. In 52% of instances, the chief of the children's hospital pathology department is a part of the academic department's leadership team.

Children's Hospital and Pathology Trainees (36, 31, and 35 Responses)

Of 36 academic pathology departments that responded to a query about resident rotations, an overwhelming majority (86%) reported that the pathology residents rotate through the children's hospital. However, of 31 departments that responded to a query about financial support of pathology residents,

Table 3. Survey Results.

Nature of the association: (57 responses)

Owned and/or operated by the academic health system (60%)

Separate but affiliated entity (40%)

Geographic separation (miles): (57 responses)

None (located within the academic health system) (54%)

<5 (33%)

6-10 (4%)

11-20 (4%)

>20 (5%)

Provision of Pathology Services to Children's Hospitals Owned and/or Operated by the Academic health system: (34 responses)

Provided by the academic department of pathology (94%)

Provided by the children's hospital (3%)

Provided by both the children's hospital and the academic department (3%)

Provision of At Least Some Pathology Services to Children's Hospitals That Are Separate but Affiliated institutions: (23 responses)

Provided by the academic department of pathology (70%)

Provided by the children's hospital (30%)

Children's hospital pathology department: (57 responses)

Separate pathology department at children's hospital (17; 30%):

Number of pathologists at children's hospital

1-5 (41%)

6-10 (18%)

>10 (41%)

Children's hospital pathologists who are salaried faculty in the academic pathology department (33%)

Chief of children's hospital pathology department is part of the academic department leadership team (52%)

Children's hospitals and pathology trainees: (36, 31, and 35 responses)

Pathology residents perform rotations at children's hospital (36 responses):

Yes (86%)

No (14%)

Children's hospital provides financial support for pathology residents (31 responses):

Yes (26%)

No (74%)

Children's hospital provides financial support for pathology fellows (35 responses)

Yes (6%) (pediatric pathology, neuropathology, hematopathology)

No (94%)

Perceived strengths of the association: (63 responses from 29 unique respondents)

Teaching residents, fellows, and medical students (41%)

Expertise in pediatric pathology (38%)

Financial support of residents and fellows (11%)

Financial support of faculty (10%)

Perceived weaknesses of the association: (18 responses from 14 unique respondents)

Relative lack of engagement of children's hospital pathologists in the academic department (55%)

Culture/work environment differences (28%)

Issues related to salary and benefit differences (17%)

74% indicated that the associated children's hospital does not pay for pathology residents. Of 35 departments that responded to a query about fellowship support, only 6% indicated that the

children's hospital provides fellowship support, and they specifically mentioned pediatric pathology, neuropathology, and hematopathology.

Perceived Strengths of the Association (63 Responses From 29 Unique Respondents)

The survey asked for respondents to identify the strengths of the association in defined areas. Because respondents were asked to select among several choices, the number of responses was greater than the number of respondents. The following were identified as strengths: teaching residents, fellows, and medical students (41%); expertise in pediatric pathology (38%); financial support of residents and fellows (11%); and financial support of faculty (10%). Others commented on the importance of children's hospital pathologists in providing backup coverage to the academic department and the importance of the children's hospital with respect to joint research programs.

Perceived Weaknesses of the Affiliation (18 Responses From 14 Unique Respondents)

The survey asked for respondents to identify the weaknesses of the association in defined areas. Because respondents were asked to select among several choices, the number of responses was again greater than the number of respondents. The following were identified as weaknesses: relative lack of engagement of children's hospital pathologists in the academic department (55%), culture/work environment differences (28%), and issues related to salary and benefit differences between the children's hospital and the academic department pathologists (17%). A few commented independently on the difficulty in recruiting pediatric pathologists.

Discussion

The present study was undertaken to evaluate the relationship of academic pathology departments with children's hospitals that are either owned and/or operated by the academic health system or that have formal affiliations with it. In this study, 40% of US children's hospitals were found to be associated in one way or another with an academic health system, consistent with the observation of Thompson et al⁵ that 23.5% of children's hospitals are owned by a university, with another 23.5% being affiliated with a university (47% total).

As noted in this study, there is a broad array of arrangements for the provision of pathology services by academic pathology departments to children's hospitals, ranging from complete integration (a group of academic pathologists providing professional services for both the pediatric and adult services) to complete separation (separate groups of academic adult and pediatric pathologists performing services only for their respective enterprises) with a potential range of intermediate options.

The finding that 94% of the 34 academic pathology departments whose associated children's hospitals are a part of (ie, owned and operated by) the academic health system and provide the clinical services for that hospital indeed emphasizes the importance of this association to the core missions of the

department. Even for the remaining 23 respondents with children's hospitals that are not part of the academic health system, 70% of academic pathology departments reported that they provide at least some clinical services for the children's hospital.

The importance of children's hospitals to the educational mission of the department is demonstrated by the fact that 86% of 36 departments that responded to the query about resident rotations reported that their residents rotate through the children's hospital. In fact, teaching residents, fellows, and medical students was the most cited (41%) of the perceived strengths of the association. Of course, one can wonder how the 14% of departments not reporting that their residents rotate through the children's hospital manage to provide training in pediatric pathology.

The most commonly cited weakness of the association was the relative lack of engagement of children's hospital pathologists in the academic department of pathology (55%). It was not possible to determine the cause(s) of this disengagement (eg, geographical separation, separate practice groups, etc). This was also noted as a weakness in the author's separate study of academic pathology department affiliations with Veterans Affairs Healthcare Systems.⁸

As with any survey-based investigation, this study has limitations. There was heterogeneity among respondents with respect to the type of association between the academic health system and the children's hospital. These associations ranged from complete ownership and operation of a children's hospital by the academic health system to a formal affiliation with an independent children's hospital. Variations between these extremes also occurred with some children's hospitals being owned and operated by the academic health system while also being considered as freestanding. The existence of these overlapping categories could have led to some confusion on the part of respondents. The fact that the survey responses were not anonymous could also have influenced the responses. This could be a cause of the relatively low number of responses to questions about perceived strengths (29 respondents) and weaknesses (14 respondents) of the association. In addition, because so many academic departments of pathology (48, 86%) perform at least some or all of the clinical work for the children's hospital (32 performing all of the work for their children's hospitals that are part of the health system and 16 performing at least some of the work for children's hospitals that are external to the system), the respondents may have felt that functionally there is no "associated" entity ("we are all one and the same") and therefore may have chosen not to evaluate the relationship. Finally, as with any survey-based study, the findings presented are just a "snapshot" in time and may not reflect historical contributions or suggest future contributions of each party to the association.

Overall, affiliations of academic health systems with external entities are enriching for both parties.^{3,8,11} This may be particularly true for children's hospitals because they provide a unique specialized patient population that enhances all missions of the department. It is interesting to speculate whether

these findings for academic pathology departments would apply to other disciplines.

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