Prevalence and predictors of elevated liver enzymes among hospitalized adolescents with anorexia nervosa

Jason M. Nagata, MD, MSc, KT Park, MD, MS, Kelley Colditz, MS, RD, Neville H. Golden, MD

1Department of Pediatrics, Stanford University, Stanford, California; 2Division of Adolescent Medicine, Stanford University, Stanford, California; 3Division of Pediatric Gastroenterology, Stanford University, Stanford, California; 4Department of Clinical Nutrition, Stanford University, Palo Alto, California

AIM

The objective of this study was to analyze the prevalence, predictors, and evolution of elevated liver enzymes in a large sample of adolescents hospitalized with AN.

METHODS

Study Population

• Inclusion criteria: subjects 10-22 years of age with AN, first admitted to a tertiary children’s hospital from January 2007 to December 2012
• Demographic factors, anthropometric factors, duration of illness, initial prescribed calories, and alanine aminotransferase levels (ALT) were recorded
• Dietary recall and prescribed caloric intake on the first day of the hospitalization were reviewed and recorded by a registered dietician

Statistical Analysis

• Multivariate logistic regression was performed to assess the effect of degree of malnutrition, initial calories prescribed, age, sex, and duration of illness on elevated liver enzymes (ALT ≥ 40 IU/L).

RESULTS

Table 1. Demographic and clinical characteristics of sample upon first hospital admission for anorexia nervosa

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%/Mean SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex (%)</td>
<td>356</td>
<td>317</td>
<td>89.0%</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>30.0%</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race (%)</td>
<td>356</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (non-Hispanic)</td>
<td>257</td>
<td>72.2%</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>45</td>
<td>12.6%</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>41</td>
<td>11.5%</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>3</td>
<td>0.8%</td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>2</td>
<td>0.6%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>2.2%</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>356</td>
<td>356</td>
<td>16.1±2.4</td>
</tr>
<tr>
<td>Clinical characteristics</td>
<td></td>
<td></td>
<td>10.3-22.0</td>
</tr>
<tr>
<td>Duration of illness (years)</td>
<td>356</td>
<td>356</td>
<td>1.1±1.1</td>
</tr>
<tr>
<td>Body mass index on admission (kg/m²)</td>
<td>356</td>
<td>356</td>
<td>15.9±1.9</td>
</tr>
<tr>
<td>Percentage median BMI on admission (%)</td>
<td>356</td>
<td>356</td>
<td>78.2±8.5</td>
</tr>
<tr>
<td>Dietary recall (kilocalories)</td>
<td>316</td>
<td>316</td>
<td>945.1±391.0</td>
</tr>
<tr>
<td>Initial prescribed Calories (kilocalories)</td>
<td>355</td>
<td>355</td>
<td>1452.4±720.0</td>
</tr>
<tr>
<td>Length of stay (days)</td>
<td>356</td>
<td>356</td>
<td>14.1±3.9</td>
</tr>
<tr>
<td>ALT on admission</td>
<td>338</td>
<td>338</td>
<td>45.4±35.5</td>
</tr>
<tr>
<td>ALT ≥ 40 IU/L on admission</td>
<td>125</td>
<td>125</td>
<td>37.0</td>
</tr>
<tr>
<td>ALT ≥ 80 IU/L on admission</td>
<td>21</td>
<td>21</td>
<td>6.2%</td>
</tr>
<tr>
<td>ALT ≥ 40 IU/L at any point during hospitalization</td>
<td>139</td>
<td>139</td>
<td>41.1%</td>
</tr>
<tr>
<td>ALT ≥ 80 IU/L at any point during hospitalization</td>
<td>1</td>
<td>1</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Table 3. Odds ratios for determinants of developing ALT ≥ 40 after admission among patients hospitalized for anorexia nervosa

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Odds ratio (95% CI)</th>
<th>Odds ratio (95% CI)</th>
<th>Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univariate analysis</td>
<td></td>
<td>(excluding refeeding)</td>
<td>(including refeeding)</td>
<td></td>
</tr>
<tr>
<td>Multivariate analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multivariate analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>356</td>
<td>1.00 (0.80-1.25)</td>
<td>1.00 (0.80-1.25)</td>
<td>1.00 (0.80-1.25)</td>
</tr>
<tr>
<td>Percentage median body weight on admission</td>
<td>356</td>
<td>0.99 (0.93-1.05)</td>
<td>0.97 (0.90-1.04)</td>
<td></td>
</tr>
<tr>
<td>Duration of illness</td>
<td>356</td>
<td>0.75 (0.55-1.06)</td>
<td>0.78 (0.50-1.21)</td>
<td></td>
</tr>
<tr>
<td>Initial prescribed calories (increments of 200)</td>
<td>356</td>
<td>1.75 (1.05-3.18)</td>
<td>1.81 (1.04-3.18)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Odds ratios for determinants of developing ALT ≥ 40 after admission among patients hospitalized for anorexia nervosa

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Odds ratio (95% CI)</th>
<th>Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univariate analysis</td>
<td></td>
<td>(excluding refeeding)</td>
<td>(including refeeding)</td>
</tr>
<tr>
<td>Multivariate analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multivariate analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>356</td>
<td>1.00 (0.80-1.25)</td>
<td>1.00 (0.80-1.25)</td>
</tr>
<tr>
<td>Percentage median body weight on admission</td>
<td>356</td>
<td>0.99 (0.93-1.05)</td>
<td>0.97 (0.90-1.04)</td>
</tr>
<tr>
<td>Duration of illness</td>
<td>356</td>
<td>0.75 (0.55-1.06)</td>
<td>0.78 (0.50-1.21)</td>
</tr>
<tr>
<td>Initial prescribed calories (increments of 200)</td>
<td>356</td>
<td>1.75 (1.05-3.18)</td>
<td>1.81 (1.04-3.18)</td>
</tr>
</tbody>
</table>

Abbreviations: CI, Confidence interval

CONCLUSIONS

• In this largest study of AN and elevated liver enzymes to date, degree of malnutrition and sex predicted ALT ≥ 40 on admission but initial prescribed calories may also be associated with ALT ≥ 40 after admission in a small proportion of patients.
• ALT is known to be higher in males than females at baseline; therefore, males may be more likely to present with elevated liver enzymes as this study suggests.
• Future research should better characterize the evolution of elevated liver enzymes in patients hospitalized with AN undergoing refeeding.

ACKNOWLEDGEMENTS

Thanks to Jennifer Carlson, Audrey Chang, Bryan Liang and Christopher Stave
Addressing Summer Hunger: A Community-Campus Partnership

Steve Ko, BS1, Janine Bruce, DrPH1, Jennifer Puthoff, BA2, Lisa Chamberlain, MD, MPH1

1Stanford University School of Medicine; 2YMCA of Silicon Valley

Background

• Food insecurity (FI): reduced or lack of access to adequate food necessary for active, healthy living. (USDA)
• Household FI rates increase during summertime when children no longer receive reduced-price school meals. Especially challenging for underserved communities.
• Program & Study Aims: (1) To implement a 5-week summer meal program serving low income children and their families; (2) To examine barriers to utilization of local food resources.

REVOLUTION FOODS

• Provided nutritious, fresh foods throughout the program
• Administered the USDA’s Summer Food Service Program (SFSP). Allowed for federal reimbursement of unlimited number of child meals.
• Co-led program implementation.

RAVENSWOOD CITY SCHOOL DISTRICT (RCSD)

• 4,200 children in East Palo Alto and east Menlo Park, CA.
• Demographics: Hispanic (79%), African American (10%), Pacific Islander (9%), and other (2%). 93% are eligible for free or reduced-price lunch.

Project Description

QUANTITATIVE SURVEYS

• Objective: To track program participation and assess summertime change in risk for FI among enrolled families.
• Validated 2-item screen used to assess FI risk.
• Parents surveyed at beginning (N=105) and end (N=72) of 5-week meal program. FI risk over the past 30 days and over the past 12 months assessed.

QUALITATIVE INTERVIEWS

• Objective: To examine awareness of community resources, barriers to resource access and utilization, and seasonality of FI.
• 5-10-min interviews conducted with parents (N=35) as they picked up children at the end of the day. Interviews performed by bilingual program staff. Analysis conducted using an iterative transcript-based coding and theme analysis process.

Quantitative Outcomes

<table>
<thead>
<tr>
<th>Meals to children</th>
<th># Children served daily</th>
<th>~270-370</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of child meals served</td>
<td>14,769</td>
<td></td>
</tr>
<tr>
<td>Lunches for families &amp; community</td>
<td># Adults meals served daily</td>
<td>~4-30</td>
</tr>
<tr>
<td>Total # of adult lunches served</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>Take-home meals for families</td>
<td># Families served take-home meals daily</td>
<td>~170</td>
</tr>
<tr>
<td>Total # of take-home meals served</td>
<td>~2,525</td>
<td></td>
</tr>
</tbody>
</table>

Quantitative Outcomes - Demographics

<table>
<thead>
<tr>
<th>% of Families Risk</th>
<th>Hispanic</th>
<th>Af Am</th>
<th>Pacific Islander</th>
<th>White</th>
<th>Asian</th>
<th>No Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>6%</td>
<td>5%</td>
<td>5%</td>
<td>82%</td>
<td>5%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Quantitative Outcomes - Food Insecurity Risk

<table>
<thead>
<tr>
<th>Past 30 Days (Pre-Program)</th>
<th>Past 30 Days (Post-Program)</th>
<th>Past 12 Months (Post-Program)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>74%</td>
<td>64%</td>
</tr>
<tr>
<td>*p-value: 0.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Qualitative Outcomes

DOMAIN 1: ACCESS TO COMMUNITY FOOD RESOURCES

Question: How do families access additional food resources in the community?

1. Churches
2. Cal Fresh/ Food stamps Program
3. Community organizations (e.g. Boys & Girls Club, Senior Center)
4. “Don’t know”
5. Second Harvest Food Bank

DOMAIN 2: BARRIERS TO FOOD RESOURCES

Question: Describe barriers families face accessing community resources?

• Transportation is barrier to access
• Lack of awareness and misinformation pervasive
• Discouraging past experiences prevent utilization

DOMAIN 3: SEASONALITY OF FOOD INSECURITY

Question: Describe other times during the year when families struggle with not having enough money to buy food?

• When jobs are scarce/ During rainy seasons
• Winter and holidays seasons are tougher
• Summer break poses burden of added food costs

Lessons Learned

KEY FINDINGS

• A high percentage of families enrolled in a summer school program were at risk of experiencing FI during the year.
• School serves as an effective location to support food security for children and families.
• Churches function as an important safety net for families struggling with not having enough money for food.
• Despite general awareness of local food resources, families face barriers to access and utilization of resources.
• Rainy and holiday seasons also pose economic hardships for families in need of extra assistance.

LIMITATIONS

• Lack of a control group prevented a thorough evaluation of the impact of the feeding program on reducing food insecurity.
• Sensitive nature of the topic may have prevented some participants from speaking candidly about access barriers.

Recommendations

• Given the extreme risk for food insecurity and multiple barriers to food access, an intensive multi-faceted community-level intervention continues to be warranted.
• Address the problem of food insecurity during other times of the year, beyond summertime.
• Conduct an experimental study comparing the intervention of the feeding program with a control group.

Acknowledgements

We would like to extend special gratitude to the following individuals:

• The RCSD and the Boys & Girls Club for their commitment to their students’ health and allowing us to provide nutritious meals for them;
• Jennifer Puthoff, Sara Avakian, and the YMCA, for their oversight over our program and on-the-ground presence, leadership, and support;
• Eileen Reyes, San Jose State MPH Program, for coordinating the major program logistics;
• Revolution Foods, for their delicious, healthy breakfast and lunch meals;
• The countless student and adult volunteers who invested their time and joined in our effort to address a tangible community need;
• Lucile Packard Children’s Hospital for providing funds for adult meals;
• The Schweitzer Fellowship and the Stanford Medical Scholars Program for their guidance, support, and funding for the project.
How Well Do Residents Communicate with Patients?
Tyrone Chan, MD; Rebecca Blankenburg, MD, MPH; Caroline Rassbach, MD
Lucile Packard Children’s Hospital, Stanford University School of Medicine, Palo Alto, CA

Background

• The ACGME requires programs to assess residents’ communication skills.
• Communication Assessment Tool (CAT) is a validated measure of physicians’ communication with patients.
• CAT has not been rigorously studied in pediatrics.

Objective

To implement the Communication Assessment Tool to compare residents’ self-assessments with patient/guardian assessments of residents’ communication skills.

Methods

• Cross-sectional, IRB-exempt study at Lucile Packard Children’s Hospital.
• June 2014: A modified CAT with 14 5-point Likert-scale items was distributed to all pediatric residents to self-assess their communication skills.
• July-September 2014: 2 non-MD teams administered CATs by iPad or paper to admitted patients/guardians on designated units.
• Mean summary score for the patient/guardian CATs and the resident self-assessments was calculated per resident and class.
• Patient/guardian summary scores and resident self-assessment summary scores were compared with an unpaired t-test.
• Summary scores of each resident class were compared with one-way ANOVA.
• Difference between highest and lowest scoring self-assessment items was evaluated with a paired t-test.

Results

• 27 residents both received patient/guardian CAT reports and completed the self-assessment.
• Self-assessment scores were significantly lower than patient/guardian-reported scores:
  Mean difference = 0.88, p<0.0001 (Fig. 1).
• For the self-assessment, the highest-scoring item [#2, mean(SD) = 4.33(0.62)] and lowest-scoring item [#14, mean (SD) = 3.19(0.79)] were statistically different (p<0.0001).
• Patient/guardian CATs revealed no significant variation between item scores (Fig. 2).

Conclusions

• Pediatric residents underestimate their communication skills when compared to responses of patients/guardians.
• Residents feel they excel at treating patients/guardians with respect and need improvement with spending the right amount of time with them.

References


Contact Information

Tyrone Chan, MD tychan@stanford.edu
Rebecca Blankenburg, MD, MPH rblanke@stanford.edu
Caroline Rassbach, MD crassbac@stanford.edu
Scholarly Concentrations: Developing Residents’ Skills in Scholarship Through Structured Experiential Learning

Rebecca Blankenburg MD, MPH, Alyssa Bogetz MSW, Janine Bruce DrPH, Harvey Cohen MD, Lauren Destino MD, Jennifer Frankovich MD, MS, Saraswati Kache MD, Jennifer Kang MPH, Terry Platchek MD, Marlene Rabinovitch MD, Caroline Rassbach MD, Gary Shaw PhD, Elizabeth Stuart MD, MSEd, Aisha Talib MPP, Lisa Chamberlain, MD, MPH

The authors have no conflicts of interest to disclose

Stanford Children’s Health, Lucile Packard Children’s Hospital, Stanford University

Background

- A report of physician education by the Carnegie Foundation, Educating Physicians: A Call for Reform of Medical School and Residency, recommends the development of habits of inquiry and innovation as critical to reforming medical education
- The ACGME requires that all residency programs provide evidence of a scholarship-rich learning environment and opportunities for residents to engage in meaningful scholarly activities
- While many pediatric residency programs have scholarly requirements, few have formal curricula or infrastructure to support these activities while simultaneously fostering habits of inquiry and innovation
- Semi-structured interviews with PGY3 residents in 2012 revealed the need for a structured, longitudinal scholarly concentration program for residents

Objective

To evaluate the feasibility and effectiveness of a required Scholarly Concentration program for all pediatric residents

Methods

- We measured the scholarly productivity of residents from the graduating classes of 2013-2015 following implementation of a robust, structured curriculum in 2012
- Since 2009, all pediatrics residents were required to complete a scholarly project during residency; in 2012, 6 concentrations were established that required 2-4 week rotations for skill development in research
- Scholarly productivity was measured by the number of completed projects, local presentations, regional and national presentations and awards received annually. Data were collected through an online annual resident survey and review of conference programs
- Feasibility and satisfaction data were also collected through our annual residency program survey

Program Goals and Description

- The goal of the Scholarly Concentration program is to develop leaders in pediatrics. The program encourages residents to:
  - Experience a fundamental category of scholarship and recognize that creating, transforming and extending new knowledge are all valuable tenants of academic medicine
  - Gain a deeper understanding of the process of inquiry
  - Consider how continued scholarly work can fit into long-term career goals
- Residents select 1 of 6 scholarly concentration areas in January of their intern year:
  - Basic Science Research
  - Clinical Research
  - Community Engagement and Advocacy
  - Medical Education
  - Quality and Performance Improvement
  - Global Health
- In their PGY2 and 3 year, all residents participate in core block rotations associated with their concentration of choice. These rotations (2-4 wks) expose residents to fundamentals of research design and methodology, as well as principles unique to their concentration (e.g., curriculum development, grant writing, improvement science and international health).
- In addition to these block rotations, residents participate in: a) Evening sessions to share “works-in-progress” with concentration leaders, research mentors and colleagues; b) Bimonthly noon conferences and c) Journal club
- Residents are evaluated on fulfillment of oral and written presentation of their project, which must be completed by the end of their PGY3 year. Presentations can be made at local (e.g., Stanford), regional or national forums.

Results

- From 2013-2015, 77/77(100%) graduating residents completed at least one scholarly project; only 4/77 (5.2%) switched concentrations after declaring mid-PGY1 year
- We have seen an increase in resident presentations and awards since implementation

Conclusions and Future Directions

- A required, structured and longitudinal Scholarly Concentration program is feasible and has been effective in increasing the numbers of regional and national presentations among pediatric residents
- Core curricular rotations, individualized mentorship and required scholarly activity are three elements that can be adapted to other programs and levels of learners
- We are measuring the program’s longitudinal impacts on scholarship, career trajectories and leadership activities in pediatrics

Contact Information: Rebecca Blankenburg, MD, MPH, Associate Chair of Education and Program Director, Pediatric Residency Program, rblanke@stanford.edu
Patient activation is necessary to optimize health in patients with inflammatory bowel disease (IBD). The Patient Activation Measure (PAM) Score is a validated assessment of patient activation in adults but has not been formally studied in a pediatric IBD cohort. The purpose of PAM is to predict what level of support a patient needs based on their score. Higher PAM scores have been linked to better outcomes for patients with IBD.

### Objectives

1. To compare baseline PAM scores in both Spanish (SP) and English (ES) speaking cohorts of families affected by IBD
2. To determine the feasibility and efficacy of a novel peer-group education symposium designed to enhance IBD self-management knowledge and skills

### Methods

- Pilot quality improvement intervention study focused on IBD family activation.
- Conducted search of the Stanford Children’s IBD Center Patient Registry (~450 patients) to find eligible patients.
- A total of 10 primary SP and 21 ES families participated.
- Parallel IBD peer-group education symposia were conducted in SP and ES, including presentations on: “Patient and Parent activation and IBD 101,” “Quality of Life, Nutrition and Exercise,” “Medication Adherence and Family Dynamics.”
- The bilingual lecturer and moderator were the same for both groups.
- PAM scores obtained before & after the symposia in both groups for patients and parents.
- Descriptive statistics were used to assess effects of the intervention.
- Student t-tests were performed to obtain p-values and compare pre- vs post-scores within and between groups.
- Chi-square tests were used to compare categorical data between the groups.

### Results

- Paired pre- and post-PAM scores were available from 24 patients (8 SP; 16 ES) and 41 parents (15 SP; 26 ES).
- Mean age for SP and ES patients was 11.6 and 12.0 years, and female gender in 80% and 62%, respectively.
- PAM scores uniformly increased for all four of the groups after the symposia (SP-patients 59.1 to 70.3, P<0.05; SP-parents 69.8 to 75.2, P<0.02; ES-parents 59.9 to 64.0, P<0.08; ES-parents 61.9 to 69.1, P<0.002).
- The incremental change from pre- to post-PAM scores in SP vs. ES groups was not statistically significant.
- When analyzing all participants, the mean pre-PAM score was 62.9 and the mean post-PAM score was 69.4; this aggregate increase represented a statistically significant change (<0.001).

### Conclusions

- We report the first successful pilot in assessing Patient Activation Measurement scores in pediatric IBD patients and their parents.
- A family-centered, peer-group education symposium in either English or Spanish may be effective in enhancing patient and parent activation in families affected by IBD.

### References

Hearing Our Patients’ Voices in Pediatric Education: A Multi-Institution Resident Self-Assessment of Communication Skills With Patients

Elisa Phillips BS, BAa, Vasudha Bhavaraju MD, Rebecca Blankenburg MD, MPHb, Alyssa Bogetz MSW, Katherine Killmond MD, Alisa McQueen MD,c, Nicola Meyer Orlov MD, MPH,d, David Mahoney BS,e, Caroline Rassbach MDf

a. U Arizona College of Medicine Tucson, b. Phoenix Children’s Hospital/Maricopa Medical Center, c. Stanford School of Medicine, d. UCLA, e. U Chicago Pritzker School of Medicine

Background

- The ACGME encourages residency programs to conduct milestone-based assessments that incorporate multiple sources, including the patient voice for the competency domain of communication and interpersonal skills.
- Resident attitudes toward and confidence in patient communication have not yet been published in pediatrics.
- The Communication Assessment Tool (CAT) is a validated measure of physician-patient communication that may be useful in evaluating residents in this domain.

Objective

To use a modified CAT to evaluate resident confidence in communication and attitudes toward patient and guardian feedback, then compare across PGY levels.

Methods

- Multi-institution cross-sectional IRB approved study.
- In June-August 2015, residents at Lucile Packard Children’s Hospital Stanford, Phoenix Children’s Hospital/ Maricopa Medical Center, and University of Chicago/Comer Children’s Hospital completed an anonymous modified CAT with 5 point Likert-scale items measuring confidence in communication and attitudes toward patient and guardian feedback.
- We calculated individual resident composite means for confidence, then a composite mean for each PGY level. Means for resident attitudes were also calculated by PGY level.
- Data were analyzed using one-way ANOVAs.

Table 1: Pediatric Resident Confidence Measures

<table>
<thead>
<tr>
<th>PGY Level</th>
<th>Number of Residents</th>
<th>mean confidence</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGY1</td>
<td>93</td>
<td>3.62</td>
<td>0.50</td>
</tr>
<tr>
<td>PGY2</td>
<td>80</td>
<td>3.68</td>
<td>0.48</td>
</tr>
<tr>
<td>PGY3</td>
<td>67</td>
<td>3.76</td>
<td>0.51</td>
</tr>
</tbody>
</table>

p= 0.09
Mean based on Likert scale 1-5
1 = Poor confidence, 5 = Excellent confidence in communication

Table 2: Mean Resident Attitudes Toward Patient/Guardian Feedback and Communication

<table>
<thead>
<tr>
<th>Attitudes Regarding patient/guardian feedback (PGF)</th>
<th>PGY 1</th>
<th>PGY 2</th>
<th>PGY 3</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving PGF is important to my professional development</td>
<td>4.57</td>
<td>4.39</td>
<td>4.43</td>
<td>0.12</td>
</tr>
<tr>
<td>Communication with patients/guardians is important to quality patient care</td>
<td>4.95</td>
<td>4.83</td>
<td>4.77</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>I ask patients/guardians for feedback on my communication skills</td>
<td>2.49</td>
<td>2.67</td>
<td>2.86</td>
<td>0.05</td>
</tr>
<tr>
<td>PGF increases my confidence in my communication skills</td>
<td>3.93</td>
<td>3.86</td>
<td>3.85</td>
<td>0.77</td>
</tr>
<tr>
<td>PGF changes the way I interact with other patients/guardians</td>
<td>4.16</td>
<td>4.01</td>
<td>4.17</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Mean based on Likert scale 1-5
1 = Completely disagree, 5 = Completely agree with statement

Results

• 250/294 (85%) pediatric residents completed the survey.
• There was a general increase in confidence with increasing PGY level but no statistically significant differences were found using one-way ANOVA (PGY1: 3.62, PGY2: 3.68, PGY3: 3.76, p=0.09), Table 1.
• Across all PGY levels the highest-scoring item on the CAT was “Treating [patients] with respect” (4.27), while the lowest was “Spending the right amount of time with [patients]” (3.27).
• We found a statistically significant difference in two attitude questions (Table 2):
  • “Communication with patients/guardians is important to quality patient care.” Agreement decreased with increasing PGY level (p<0.01).
  • “I ask patients/guardians for feedback on my communication skills.” Agreement increased with increasing PGY level (p=0.05), but remained quite low.

Conclusions

• Residents’ confidence in communication skills does not change significantly over the course of residency, however their attitudes toward patient communication and feedback decline in a concerning fashion.
• Next steps include exploring reasons for this decline and examining the relationship between patient/guardian assessment of resident communication skills with resident self-assessment.

Contact: Carrie Rassbach MD, Division of Pediatric Hospital Medicine, Stanford School of Medicine, crassbac@stanford.edu