


Increased prevalence and severity of psychiatric illness in hospitalized youth during COVID-19

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Abstract

Background and objectives: Previous studies have demonstrated an increase in mental health emergencies among youth seen in ambulatory and emergency room settings during the COVID-19 pandemic. This study investigates rates of mental health-related consultation and markers of illness severity since the start of the pandemic.

Methods: We evaluated all pediatric patients admitted to a single children's hospital from March 2019 to March 2021 who received psychiatry and/or psychology consults. We report the absolute number of these patients, as well as the proportion of all study site admissions who received such consults. Severity of psychiatric illness was described in terms of LOS, disposition, and use of restraints and psychotropic medications.

Results: The number and proportion of pediatric patients receiving psychiatry and/or psychology consults rose during the pandemic. Participants also became proportionally more female and older. The study population had higher odds of requiring restraints and antipsychotics during the pandemic.

Conclusions: More pediatric inpatients at the study site have required psychiatric care during the pandemic. The severity of mental illness in this population appears to have worsened based on increased utilization of as-needed psychotropic medications and restraints. These findings highlight the changes experienced by patients and providers during the pandemic and merit further study.

Keywords

Hospital pediatrics, consultation-liaison psychiatry, COVID-19, coronavirus, adolescent medicine

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Introduction

The COVID-19 pandemic has had tragic effects on pediatric mental health. Pre-pandemic, youth—especially adolescents—suffered disproportionate rates of mental illness (Dalsgaard et al., 2020). Adolescents have few effective coping strategies (Thapar et al., 2012), and the pandemic has amplified psychosocial stressors including housing and food insecurity (Elsahoryi et al., 2020), parental substance abuse and mental illness (Gademann et al., 2021), and domestic violence (Moreira & Pinto da Costa, 2020). Youth have also been cut off from extrafamilial social support (Magson et al., 2021). The pandemic's impact on this population has been so severe that the American Academy of Pediatrics, American Academy of Child and Adolescent Psychiatrists, and Children's Hospital Association all jointly declared a national emergency in child and adolescent mental health in October 2021 (American Academy of Pediatrics, 2021).

Pediatric emergency department (ED) visits and inpatient stays relating to mental illness increased in the spring of 2020 (Brooks & et al., 2020; Ghosh et al., 2020; Leeb et al., 2020). Unfortunately, many outpatient mental health facilities closed at this time, and few remaining facilities offered telehealth services (Cantor et al., 2021). Youth increasingly presented in crisis in ED and hospital settings, often subsequently falling under the care of inpatient psychiatry and/or psychology consult-liaison services (Leeb et al., 2020). However, little research has been done to more fully examine the magnitude of this phenomenon.

Here, we describe the population of patients admitted to an academic, tertiary care, children's hospital who received psychiatry and/or psychology consultation from March 2019 to February 2021. We explore changes in consultation volume, and characterize proxies of mental illness severity, prior to and during the pandemic. Overall, we hoped to understand the impact of the pandemic on mental health consultation in the pediatric hospital setting.

Methods

Study design

The study is a single-site, retrospective, descriptive chart review exploring inpatient psychiatry and psychology consultation. We defined three time periods: pre-pandemic (3/1/2019 to 3/15/20), early pandemic (3/16/2020 to 6/30/2020), and mid-pandemic (7/1/2020-2/28/2021). This allowed a comparison of changes in consultation before and during the pandemic, accounting for the fact that from March to June 2020, up to 20% of study site beds were allocated to adult COVID-19 patients at the study site and many psychiatric admissions were being deferred. As such, we felt that, though they are of different lengths, these periods warranted distinction.

We describe and compare participants between these periods using descriptive demographic data and monthly consultation volumes. We further assess the number of patients receiving Psychiatry and/or Psychology consults in each month, as well as the proportion of all-cause pediatric admissions receiving such consultation. In addition, we examine clinical data highlighting potential severity. As there is no validated acuity or severity of mental illness score, we utilized the following proxy measures: antipsychotic (haloperidol, chlorpromazine, quetiapine, risperidone, aripiprazole, olanzapine, and ziprasidone) use, benzodiazepine (midazolam, lorazepam, clonazepam, diazepam, and alprazolam) use, restraint use, length of stay (LOS), and rate of discharge to inpatient psychiatry. Length of stay was measured as the time from admission to the general pediatrics unit to the time of discharge, and excluded any time spent in the emergency department and/or inpatient psychiatry unit. The study was approved by our health system's IRB with minimal risk exemption.

Setting and population

The study population included all patients of ages 0–21 admitted to the study site from March 2019 to March 2021 who received psychology and/or psychiatry consults. Patients were excluded if they presented to Psychiatric Emergency Services or inpatient psychiatry. Extracted data included demographic data, LOS, disposition, and use of benzodiazepines, antipsychotics, and restraints.

The study site is a 234-bed academic, urban, midwestern children's hospital, receiving approximately 8000 annual admissions. The Pediatric Consultation-Liaison Psychiatry Service includes a child and adolescent psychiatrist, nurse practitioner, child and adolescent psychiatry fellow, and psychiatry social worker. The Pediatric Psychology Service includes a pediatric psychology faculty and fellow. The services commonly collaborate on patients; however, psychiatry is more commonly consulted for patients requiring medication and/or restraints, as well as patients with overlapping mental and physical health needs (including eating disorders, somatic symptom and related disorders, suicide attempts, and substance use concerns). No significant changes to the composition or workflow of the consultation services occurred during the study period.

Statistical analysis

Analyses were performed using R v4.0.5 and package lme4 v1.1-26. Comparisons between periods were performed with chi-squared tests with Bonferroni correction. Mixed effects logistic regression was used to estimate the odds of requiring restraints based on time period, controlling for fixed effects of age, sex, race (white vs. nonwhite), psychology and psychiatry consultation, length of stay, benzodiazepine administration, and psychotherapeutic administration. Mixed effects logistic regression was also used to estimate the odds of requiring as-needed psychotherapeutics and benzodiazepines based on time period, controlling for fixed effects of age, sex, race (white vs. nonwhite), psychology and psychiatry consultation, length of stay, and benzodiazepine or psychotherapeutic administration as appropriate. A linear mixed effects model was used to estimate the LOS, controlling for age, sex, race (white vs. nonwhite), psychology and psychiatry consultation, length of stay, restraint use, psychotherapeutic administration, and benzodiazepine administration.

Results

Participant characteristics

The study sample included 2103 visits from 1636 patients. The average age was 14.0 years, 57.9% were female, and 68.6% identified as White (Table 1). During the pandemic, participants became proportionally more female (64.1%, mid-pandemic vs. 55.3%, pre-pandemic; $p = .001$) and older (average age, 14.8 years during mid-pandemic vs. 13.4 years pre-pandemic, $p < .001$).

Changes during the pandemic

Total hospital admissions averaged 687 per month pre-pandemic, with an average of 51 patients (7.5%) requiring psychiatry consult and 58 (8.5%) requiring psychology consult. These figures all declined during the early pandemic period, with total admissions averaging 463 per month, of whom an average of 31 (6.6%) required psychiatry consult and 41 (8.8%) required psychology consult. During the mid-pandemic period, total admissions recovered to 595 per month, of whom an average of 61 (10.1%) required psychiatry consult and 51 (8.6%) required psychology consult. The

Table 1. Study Participant Demographics and Primary Outcomes Across Pre-Pandemic, Early Pandemic, and Mid-Pandemic Periods. *p*-values are reported for differences between study periods.

	Pre-pandemic	Early pandemic	Mid-pandemic	<i>p</i> -value
N, total	932	153	551	
Age, median, [IQR]	13.4 [1.8, 16.9]	14.6 [8.7, 17.4]	14.8 [9.8, 17.4]	< .001*
Sex, <i>n</i> (%)				.001*
Female	515 (55.3%)	79 (51.6%)	353 (64.1%)	
Male	417 (44.7%)	74 (48.4%)	198 (35.9%)	
Race and Ethnicity				.247
White	637 (68.3%)	111 (72.5%)	374 (67.9%)	
American Indian or Alaskan Native	5 (0.5%)	1 (0.7%)	0 (0.0%)	
Asian or Pacific Islander	27 (2.9%)	5 (3.3%)	8 (1.5%)	
Black	119 (12.8%)	20 (13.1%)	83 (15.1%)	
Multiracial/Unknown/Other	90 (9.7%)	7 (4.6%)	56 (10.2%)	
Hispanic (any race)	90 (9.7%)	7 (4.6%)	56 (10.2%)	
Outcomes, <i>n</i> (%)				
Used restraints	7 (0.8%)	6 (3.9%)	22 (4.0%)	< .001*
Used antipsychotics	280 (30.0%)	59 (38.6%)	207 (37.6%)	.004*
Used benzodiazepines	386 (41.4%)	76 (49.7%)	235 (42.6%)	.16
Discharged to inpatient psychiatry, <i>n</i> (%)	62 (6.7%)	19 (12.4%)	63 (11.4%)	.002*

proportional increase in patients requiring psychiatry consult between pre- and mid-pandemic periods was statistically significant ($p < .001$). Additionally, a larger percentage of patients were discharged to inpatient psychiatry during the pandemic (6.7%, pre; 12.4%, early; 11.4%, mid, $p = .002$). The proportion of all-cause pediatric admissions requiring psychiatry and/or psychology consultation during each month of the study period is shown in [Figure 1](#).

Severity of mental health needs

During early and mid-pandemic periods, participants had higher odds of requiring restraints (AOR = 3.76 early, $p = .009$; 3.52 mid, $p = .001$) and antipsychotics (AOR = 2.25 early, $p = .002$; 1.81 mid, $p < .001$) compared to pre-pandemic. During early pandemic, participants also had higher odds of requiring benzodiazepines (AOR = 1.90, $p = .002$), and shorter LOS (AOR = 0.85, $p = .035$) compared to pre-pandemic. Neither LOS nor benzodiazepine use differed significantly between pre- and mid-pandemic periods ([Table 2](#)).

Discussion

Pediatric psychiatry consultation among pediatric inpatients increased during the pandemic. To our knowledge, this is the first study to assess the effects of the pandemic on mental health consultation in a pediatric inpatient medical setting.

As of March 2021, all-cause admissions remained below pre-pandemic levels. However, the number of patients requiring mental health consults surpassed pre-pandemic numbers by July 2020, rising since that time with disproportionately more psychiatry consults. As such, a larger share of inpatient care at the study site now involves mental health consultation. The rise was attributable entirely to psychiatry consultation.

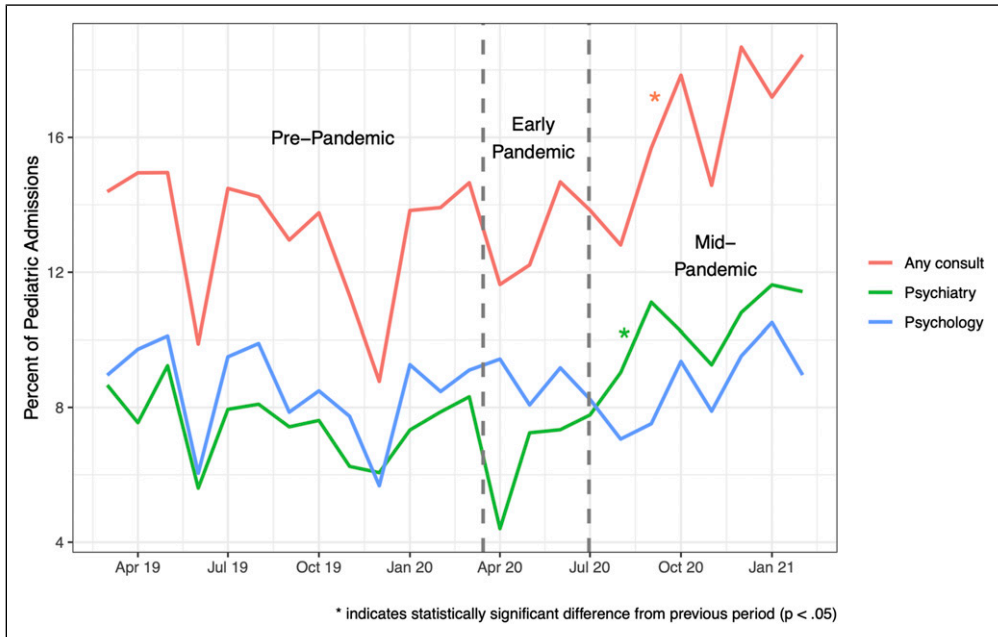


Figure 1. Percentage of all-cause pediatric admissions requiring psychiatry and/or psychology consults. Asterisks denote a statistically significant difference across the three study periods.

The effects of the pandemic were not uniform across the study population. During the pandemic, participants were older on average. This may be due in part to a disproportionate increase in problems such as self-harming behavior and disordered eating, which are more common among adolescents than younger children. Patients exhibiting these symptoms are more commonly seen by the psychiatry service rather than psychology, which could also have contributed to the disproportionate increase in psychiatry consultation. Eating disorders in particular are seen more commonly in female patients, and so an increase in these conditions may have caused our sample to become proportionately more female during the pandemic (Otto et al., 2021; Schwartz & Costello, 2021; Smink et al., 2012).

The disproportionate rise in psychiatry consults may indicate increased mental illness severity, as psychiatry is more commonly consulted in cases of suicidal ideation and behavior, aggression, and eating disorders. Utilization of restraints, benzodiazepines, and antipsychotics also rose. Restraints are employed only when less restrictive interventions cannot ensure safety (Masters et al., 2002). The nearly four-fold increase in patient restraint suggests worsening behavioral dysregulation and severity of mental health presentation among participants. The increased utilization of antipsychotics and benzodiazepines is another possible marker of increased severity. It may also indicate difficulties delivering non-pharmacologic intervention due to infection control measures, but this has not yet been formally studied (Li, 2020).

Admission or transfer to inpatient psychiatry occurs when a minor is at risk of imminent harm to themselves or others or cannot provide basic self-care due to psychiatric illness; as such, higher rates of discharge to inpatient psychiatry during the pandemic may also suggest greater severity of illness among our study sample. However, this effect is complicated by efforts from the site to discharge patients earlier in order to reduce viral transmission. The same need to vacate beds and mitigate infection risk likely led to decreased LOS during the early pandemic, despite indications that the

Table 2. Adjusted Odds Ratios (AOR) of Participant Length of Stay, Restraint Use, Benzodiazepine Use, and Antipsychotic Use During the Early and Mid-Pandemic Periods, Compared to the Pre-Pandemic Period.

	Early pandemic		Mid-pandemic	
	AOR	p-value	AOR	p-value
Use of restraints	3.76	.009*	3.52	.001*
Use of antipsychotics	2.25	.002*	1.81	< .001*
Use of benzodiazepines	1.90	.002*	1.21	.140
LOS	0.85	.035*	0.92	.820

severity of illness among inpatients was increasing. While these are not standard practices under normal circumstances and the study site has no specific policy encouraging them, physicians may have felt greater urgency to either discharge or transfer patients to mitigate the risk of viral transmission among inpatients, and patients and families may have advocated for earlier discharge for the same reason. In addition, reduced availability of outpatient services may have influenced disposition choice. During the early pandemic period in particular, resources were overwhelmingly being redirected toward treating COVID-19 patients, including the allocation of pediatric beds to adult patients as noted above. As a result, the decline in psychiatry and psychology consultation during this period may be partially attributable to reduced study site capacity for pediatric patients with mental health needs. State policy regarding psychiatric admission of minors did not change during the pandemic, and likely played no role in the observed findings.

This study does have several limitations. We describe inpatients at a single tertiary care center and do not capture changes in other settings. The retrospective nature of this study precludes drawing causative conclusions for observed changes. Finally, our conclusions about illness severity are limited by the accuracy of restraint, antipsychotic, and benzodiazepine utilization as proxies. Specific indications for these interventions may not always be accurately documented, and our results may be due in part to changing practice among care teams. In addition, increased utilization of these interventions may be related to non-psychiatric factors such as delirium and COVID-related encephalopathy; however, this is less likely as these conditions do not commonly warrant psychiatry and/or psychology consultation, and as a result such patients would be largely excluded from our study sample.

Further study is needed to more fully examine the causes of these changes. Prospective and survey-based studies investigating remote schooling, access to care, social distancing, and other social stressors would help elucidate these factors' effects on participants' mental health. While our demographic findings are suggestive of an increase in self-harming behavior and/or disordered eating, greater insight is needed into the specific illnesses and symptoms driving our results. Additional research should investigate whether psychiatric emergency services and inpatient psychiatric units have seen similar increases to utilization during the pandemic, or if certain settings are facing disproportionate increases in patient volume. Finally, multisite studies are necessary to corroborate and generalize our results among a larger population.

Conclusions

This study demonstrates an increased rate of inpatient psychiatric consultations in the pediatric hospital setting since the start of the COVID-19 pandemic. Our findings also suggest increased

severity of mental health comorbidity among study participants. Future studies should investigate causes of these changes, their impact on inpatient healthcare delivery, and strategies for improving access to healthcare to mitigate delays in care and overutilization of the inpatient setting.

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Author contributions

Thomas Leith performed the background literature review, partially drafted the initial manuscript, and made revisions as suggested by co-authors.

Katharine Brieger drafted the remainder of the initial manuscript and assisted with data analysis.

Harlan McCaffery performed primary data analysis and visualization.

Dr Monroe and Dr Kullgren assisted with initial scoping of the study and revised the manuscript.

Dr Rappaport and Dr Malas conceptualized and designed the study and assisted with manuscript revisions; Dr Rappaport approved the final manuscript as submitted.

Declaration of conflicting interests

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References

- American Academy of Pediatrics (2021). *AAP-AACAP-CHA declaration of a national emergency in child and adolescent mental health*. <http://www.aap.org/en/advocacy/child-and-adolescent-healthy-mentaldevelopment/aap-aacap-cha-declaration-of-a-national-emergency-in-child-and-adolescentmental-health/>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Grrenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*, 395(10227), 912–920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Cantor, J. H., McBain, R. K., Kofner, A., Stein, B. D., & Yu, H. (2021). Availability of outpatient telemental health services in the United States at the outset of the COVID-19 pandemic. *Medical Care*, 59(4), 319–323. <https://doi.org/10.1097/MLR.0000000000001512>
- Dalsgaard, S., Thorsteinsson, E., Trabjerg, B. B., Schullehner, J., Plana-Ripoll, O., Brikell, I., Wimberley, T., Thygesen, M., Madsen, K. B., Timmerman, A., Schendel, D., McGrath, J. J., Bo Mortensen, P., & Pedersen, C. B. (2020). Incidence rates and cumulative incidences of the full spectrum of diagnosed

- mental disorders in childhood and adolescence. *JAMA Psychiatry*, 77(2), 155–164. <https://doi.org/10.1001/jamapsychiatry.2019.3523>
- Elsahoryi, N., Al-Sayyed, H., Odeh, M., McGrattan, A., & Hammad, F. (2020). Effect of Covid-19 on food security: A cross-sectional survey. *Clin. Nutr. ESPEN*, 40, 171–178. <https://doi.org/10.1016/j.clnesp.2020.09.026>
- Gadermann, A. C., Thomson, K. C., Richardson, C. G., Gagné, M., McAuliffe, C., Hirani, S., & Jenkins, E. (2021). Examining the impacts of the COVID-19 pandemic on family mental health in Canada: Findings from a national cross-sectional study. *BMJ Open*, 11(1), e042871. <https://doi.org/10.1136/bmjopen-2020-042871>
- Ghosh, R., Dubey, M. J., Chatterjee, S., & Dubey, S. (2020). Impact of COVID -19 on children: Special focus on the psychosocial aspect. *Minerva Pediatrica*, 72(3), 226–235. <https://doi.org/10.23736/S0026-4946.20.05887-9>
- Leeb, R. T., Bitsko, R. H., Radhakrishnan, L., Martinez, P., Njai, R., & Holland, K. M. (2020). Mental Health-Related Emergency Department Visits Among Children Aged <18 Years During the COVID-19 Pandemic - United States, January 1-October 17, 2020. *MMWR. Morbidity and Mortality Weekly Report*, 69(45), 1675–1680. <https://doi.org/10.15585/mmwr.mm6945a3>
- Li, L. (2020). Challenges and Priorities in Responding to COVID-19 in Inpatient Psychiatry. *Psychiatr. Serv. Wash. DC*, 71(6), 624–626. <https://doi.org/10.1176/appi.ps.202000166>
- Magson, N. R., Freeman, J. Y. A., Rapee, R. M., Richardson, C. E., Oar, E. L., & Fardouly, E. (2021). Risk and Protective Factors for Prospective Changes in Adolescent Mental Health during the COVID-19 Pandemic. *Journal of Youth and Adolescence*, 50(1), 44–57. <https://doi.org/10.1007/s10964-020-01332-9>
- Masters, K. J., Bellonci, C., Bernet, W., Arnold, V., Beitchman, J., Benson, R. S., Bukstein, O., Kinlan, J., McClellan, J., Rue, D., Shaw, J. A., & Stock, S. (2002). Practice parameter for the prevention and management of aggressive behavior in child and adolescent psychiatric institutions, with special reference to seclusion and restraint. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41(2 Suppl), 4S–25S. <https://doi.org/10.1097/00004583-200202001-00002>
- Moreira, D. N., & Pinto da Costa, M. (2020). The impact of the Covid-19 pandemic in the precipitation of intimate partner violence. *Int. J. Law Psychiatry*, 71, 101606. <https://doi.org/10.1016/j.ijlp.2020.101606>
- Otto, A. K., Jary, J. M., Sturza, J., Miller, C. A., Prohaska, N., Bravender, T., & Van Huysse, J. (2021). Medical admissions among adolescents with eating disorders during the COVID-19 Pandemic. *Pediatrics*, 148(4), e2021052201. <https://doi.org/10.1542/peds.2021-052201>
- Schwartz, M. D., & Costello, K. L. (2021). Eating disorder in teens during the COVID-19 pandemic. *J Adolesc Health Off Publ Soc Adolesc Med*, 68(5), 1022. <https://doi.org/10.1016/j.jadohealth.2021.02.014>
- Smink, F. R. E., van Hoeken, D., & Hoek, H. W. (2012). Epidemiology of eating disorders: Incidence, prevalence and mortality rates. *Current Psychiatry Reports*, 14(4), 406–414. <https://doi.org/10.1007/s11920-012-0282-y>
- Thapar, A., Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *Lancet*, 379(9820), 1056–1067. [https://doi.org/10.1016/S0140-6736\(11\)60871-4](https://doi.org/10.1016/S0140-6736(11)60871-4)

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Katharine Brieger attended Pomona College, where she earned a bachelor's degree in Environmental Analysis. She then pursued a Fulbright Scholarship at the University of Geneva, studying NADPH oxidase enzymes and their role in psychiatric disease. Katharine is now finishing the MD/PhD program at the University of Michigan, where her doctoral work in the Department of Epidemiology focused on modifiable environmental influences on health, particularly neurodevelopmental disorders and women's health. She is pursuing a research residency in General Psychiatry, followed by fellowship in Child and Adolescent Psychiatry.

Nasuh Malas received his Doctor of Medicine and Master of Public Health from the University of Wisconsin School of Medicine and Public Health. He completed combined training in Pediatrics, General Psychiatry, and Child and Adolescent Psychiatry at the University of Pittsburgh Medical Center. He currently holds a dual appointment in the Division of Child and Adolescent Psychiatry and the Department of Pediatrics. Dr. Malas serves as the Director of the Pediatric Consult and Liaison Psychiatry Service and Child and Adolescent Psychiatry Service Chief for the C.S. Mott Children's and Women's Hospital. His areas of clinical and academic interest include pediatric delirium, neuropsychiatric disease, agitation and aggression care, somatic symptom and related disorders and motivational interviewing. Harlan McCaffery is a statistical consultant for the Biostatistics and Data Management Unit in the Department of Pediatrics at University of Michigan. He received a Master of Science in Biostatistics from Northwestern University in 2018. He has assisted medical researchers with data analysis, and has contributed to numerous peer-reviewed publications. His interests include methods for longitudinal data analysis and methods for dealing with missing data and multiple comparisons.

Kimberly Monroe A graduate of Wayne State University School of Medicine, completed a Pediatrics Residency at the University of Chicago and a Master's Degree in Healthcare Quality and Patient Safety at Northwestern University. She now holds a faculty position at the University of Michigan as a Pediatric Hospitalist and Medical Director of a general care floor. Her clinical and research interests include patient safety and quality of care, procedural sedation, sepsis, family centered rounds, newborn care, and cue-based feeding.

Kristin Kullgren received her bachelor's degree in psychology from the University of Michigan and her doctoral degree in clinical psychology from Georgia State University in Atlanta, GA. She completed an internship in pediatric psychology at the University of Maryland School of Medicine and her fellowship in pediatric psychology at Emory University. Dr. Kullgren joined the faculty at the University of Michigan to direct the inpatient pediatric psychology consultation liaison program. She is particularly interested in helping youth and families cope with chronic illness and physical complaints in order to return to typical functioning. Dr. Kullgren works closely with the inpatient medical staff at C.S. Mott Children's Hospital to help address the psychosocial needs of youth admitted to the hospital. Leah Rappaport is originally from Boston, MA and attended the Warren Alpert Medical School of Brown University followed by a Pediatrics Residency at the University of Michigan. Following completion of residency, she joined the faculty at the University of Michigan as a Hospitalist. Her clinical interests include medical student and resident education as well as health services research. In addition, she is the Medical Champion of the Medical Legal Partnership of University of Michigan.