



FY 2023-24 MIDOCs Program Report

Submitted to fulfill the requirements of Public Act 119 of 2023

Section 1870 (6) By September 1 of the current fiscal year, MiDocs shall report to the senate and house appropriations subcommittees on the department budget, the senate and house fiscal agencies, the senate and house policy offices, and the state budget office, on the following: (a) Audited financial statement of per-resident costs. (b) Education and clinical quality data. (c) Roster of trainees, including areas of specialty and locations of training.

(d) Medicaid revenue by training site.



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I. Executive Summary

Over 90% of Michigan's 83 counties have at least a partial designation as a primary care health professional shortage area (HPSA). The state Legislature appropriated \$6,400,000 in FY 2023-24 to provide funding for MIDOCs to recruit and retain physicians to address the physician shortage in both rural and urban underserved areas. The partnership of four medical schools who make up MIDOCs – Central Michigan University College of Medicine, Michigan State University College of Human Medicine, Wayne State University School of Medicine, and Western Michigan University Homer Stryker M.D. School of Medicine – will continue to increase the number of residency slots in the state and retain residents in primary care and other high-need specialties to practice in underserved communities after their training.

Many studies show that resident physicians who train in underserved community settings are nearly three times more likely to practice there after graduation. MIDOCs residencies are geared toward those who have a passion to spend their careers working with underserved and vulnerable populations. Therefore, MIDOCs residency programs include innovative models to support and train physicians to practice in community-based settings. Acceptance of a MIDOCs residency slot includes a two-year commitment to practice in a rural or urban underserved area in Michigan post-residency. MIDOCs also offers a loan repayment program for residents to help alleviate medical debt that may limit their choice of medical specialty or geographic location.

In this sixth year of the program, MIDOCs created eight slots in psychiatry, ten in family medicine, one in internal medicine, one in preventive medicine, one in pediatrics, two in general surgery and one in emergency medicine. Residency rotations take place in primary care and mental health shortage areas that include federally qualified health centers, community-based clinics, inpatient and community mental health centers, and ambulatory care clinics.

This report describes MIDOCs activities and results in FY 2023 to include: continuation of the program, the creation of twenty-four new residency slots, an overview of the MIDOCs residency programs to date, a financial statement that includes MIDOCs program costs, educational and clinical quality data, where MIDOCs graduates are working, and information on the trainees in the sixth cohort that started in July 2024.

II. Program Goals and Objectives

Since 2017, MIDOCs has worked with the Michigan Department of Health and Human Services (MDHHS) on the development of the MIDOCs Program that aims to recruit, train and retain providers with the goal of increasing access to care in rural and urban underserved communities in Michigan.

The goals of the MIDOCs Program are:

- To retain graduates in Michigan and in underserved areas;
- To achieve educational outcomes from an innovative educational curriculum (e.g. interprofessional education, telemedicine, population health, public health and community engagement, patient-centered medical home); and
- To improve clinical quality outcomes for Michigan residents.

To achieve these goals, MIDOCs increases the number of medical residency training slots in primary care and other high-need specialties. As medical school-based programs, the MIDOCs Graduate Medical Education (GME) programs include innovative curriculum elements and community-based models. The MIDOCs program includes a two-year commitment to practice in a rural or urban underserved area in Michigan post-residency. There is also assistance to repay eligible educational loans. The MIDOCs program aims to strengthen the ability of the health care workforce to improve health outcomes and increase access to care for underserved and vulnerable populations in Michigan.

III. Background and Overview

In FY 2017, the Michigan state Legislature appropriated \$500,000 in funds to develop an implementation plan, which included proposals from the four institutions for increasing residency slots to address the needs in their communities. Since then, \$27.9M of state appropriations, combined with contributions from the institutions and associated federal funds have been used to create 124 new residency slots.

With this funding, MIDOCs has expanded and developed Accreditation Council for Graduate Medical Education (ACGME)-accredited residency programs and, to date, recruited 124 new residents in primary care and other high-need specialties to address Michigan's physician shortage in medically underserved rural and urban communities. MIDOCs programs incorporate innovative teaching models with a focus on integrated care, the patient-centered medical home model, and the principles of health care reform, such as population health. In addition, MIDOCs programs utilize the established networks of federally qualified health centers, rural health centers, and other ambulatory clinical sites, as appropriate for each residency program. The residency rotation sites are located in primary care and mental health shortage areas that include federally qualified health centers, community-based clinics, inpatient and community mental health centers, and ambulatory care clinics.

MIDOCs believes that Michigan medical schools are a valuable resource and well-positioned to create innovative models for residency training that can strengthen the ability of the health care workforce to improve the health of Michigan's underserved and vulnerable populations. Through this program, MIDOCs is committed to recruiting and retaining providers to improve health outcomes in underserved communities across Michigan.

IV. FY 2023-24 Program Activities

This report provides an update on the funding and activities of MIDOCs for FY 2023-24 beginning October 1, 2023. The sixth year of the MIDOCs program included the creation of twenty-four new residency slots, and the recruitment of new residents for the sixth cohort that started in July 2024 for the Academic Year (AY) 2024-25.

A. FY 2023-24 Funding

The MIDOCs Program is funded through state appropriation, university funding, and federal sources. In FY 2023-24, the state legislature appropriated \$6,400,000 for the MIDOCs Program, which was combined with university contributions and associated federal funds to create 24 new residency slots. To leverage state funding, the MIDOCs institutions work closely with MDHHS each

year to obtain federal matching funds. In 2019, MDHHS submitted a State Plan Amendment (SPA) to the Centers for Medicare and Medicaid Services (CMS) to add the MIDOCs Program to the Graduate Medical Education (GME) Innovations Sponsoring Institutions Program, which was approved. Including the federal administrative match of fifty percent, up to \$20,000,000 in funding is available for institutions to support the expansion of residencies and retention of providers in high need specialties and areas in the state that will be able to increase access to care for Michigan Medicaid beneficiaries.

B. MIDOCs Administrative Structure

The central administrative functions for MIDOCs are governed by the MIDOCs Authority Board (“Board”) established in June 2018. The Board is comprised of two representatives from medical school leadership at each participating institution, which includes one representative with GME expertise. By majority vote of the other members, the Authority Board appoints one additional member. MIDOCs Board meetings are scheduled as needed to plan and manage the work and oversight of the MIDOCs program.

In addition to the Board, three additional committees guide program implementation. The GME representatives from the Board formed a separate GME Committee in October 2018. GME Committee meetings are scheduled periodically to discuss issues specifically related to the recruitment of residents and the educational components in the MIDOCs GME programs. Board-appointed representatives with finance expertise from each institution form the Finance Committee. The Finance Committee oversees funds flow, financial reporting, and the development of program-specific and shared MIDOCs budgets. A committee for Government Relations also meets as needed. All three committees are governed by charters which outline their duties and authority. Each committee reports to the Board for final approval of designated activities and decisions. A list of Board and committee members can be found in **APPENDIX A**.

To establish the governance of the program and formalize the partnership between the four medical schools, the Board developed an Interlocal Agreement. The Interlocal Agreement was finalized and approved by the Governor July 30, 2020. Per the terms of the Interlocal Agreement, Bylaws, Committee Charters, Officers, Conflict of Interest and Ethics Policies have been established.

C. Management of Central Program Operations

MIDOCs Executive Director: Contracting with an existing entity that is appropriate and qualified to manage the operations of the MIDOCs program has facilitated the implementation of the program and reduced overhead costs. Based on the functions and infrastructure required to achieve the

goals and objectives of the MIDOCs program, the Board developed a description of the qualifications for the MIDOCs administrative entity and the role of an Executive Director. The Board released a Request for Proposals on July 8, 2019 and selected Michigan Health Council (MHC) to serve as their administrative entity. MHC and MIDOCs have been formally working together since April 2020.

MIDOCs Advisory Council: In 2019, key stakeholders were invited to participate in the MIDOCs Advisory Council (“Advisory Council”) to support the activities of the MIDOCs program. Advisory Council members include representatives from the following organizations: the Michigan Area Health Education Center, the Michigan Primary Care Association, the Michigan Center for Rural Health, the Michigan Academy of Family Physicians, and the Michigan State Medical Society. A list of Advisory Council members is provided in **APPENDIX A**.

Communications Plan: To build awareness and share updates with the general public and key stakeholders, MIDOCs distributes a series of press releases and social media posts throughout the year to coincide with residents’ application times, acceptance, program expansion, etc. In addition, MIDOCs maintains a website (michigandocs.org) with program information and resources. MIDOCs will continue to build on these communications for stakeholder engagement and for the recruitment of future cohorts of residents.

D. MIDOCs GME Program Implementation

Implementation of New Residency Slots: Institutions selected the number of new residency slots and specialty areas for the sixth cohort based on community needs and the availability of funding. During the sixth year, the institutions were able to expand existing programs in family medicine, internal medicine, preventive medicine, pediatrics, general surgery, psychiatry and emergency medicine. Additional slots were added to programs at each of the four institutions for a total of twenty-four new residency slots. All MIDOCs residency programs are accredited by the ACGME. An overview of residency slots and training sites is provided in **APPENDIX B**. A map of all MIDOCs training sites to date are provided in **APPENDIX C**. You can also view an interactive map on our website at michigandocs.org/residencies.

Recruitment of the Sixth Cohort: The sixth cohort of residents for the MIDOCs program was selected, once again, through the National Resident Matching Program (NRMP) process which opened in the Fall of 2023. Medical students were invited for virtual interviews in November and December 2023, and ranking took place in January 2024. To help with recruitment, MIDOCs maintains a website (www.michigandocs.org) that includes general information about the program along with Frequently Asked Questions and other resources. The four institutions filled all MIDOCs positions and new resident contracts were signed by June 2024.

Loan Repayment Program: The MIDOCs Program also provides loan repayment assistance for participating residents. MIDOCs residents may receive up to \$75,000 for the repayment of eligible loans. A loan repayment policy and procedure was developed by the finance committee and approved by the Board. Once a resident presents a qualifying employment contract, they are awarded \$5,000. When they begin the job, they are awarded \$35,000. After one year of employment, they are awarded the remaining \$35,000. Disbursements to date total approximately \$750,000.

V. Results from the FY 2023-24 Application Period

A. Financial statements

Figure 1 shows the budget for the fifth year of the second cohort, and the fourth year of the third cohort, the third year of the fourth cohort, the second year of the fifth cohort, and the first year of the sixth cohort of residents for the Academic Year Ending (AYE) in June 2025 (July 2024 to June 2025) The total is just under \$17.5 million and includes estimated MIDOCs shared administrative expenses, residency training program costs, and a portion of the loan repayment incentive program. Annual institution budgets were developed based on the training costs for each program and vary based on specialty and the number of years of training. Emergency Medicine, Family Medicine, Internal Medicine, Preventive Medicine and Pediatrics are three-year programs; Psychiatry, Obstetrics and Gynecology are four-year programs, and General Surgery is a five-year program.

This expenditure summary includes the program costs at each of the four institutions and \$211,960 in shared costs for the administration of the MIDOCs Program for a total of \$17,476,087. Disbursement of loan repayment awards to residents began AY 2021-22 and we are budgeting for the amount that will be needed for each resident and cohort over the course of 3-5 years.

Figure 2 shows the variance in budgeted vs. actual cost from July 1, 2023 to June 30, 2024.

FIGURE 1. MIDOCs Program Budget for the Period July 1, 2024 – June 30, 2025

CENTRAL MICHIGAN	
Resident salaries and benefits	1,523,660
Faculty and other direct costs	1,175,667
Loan repayment	381,250
Overhead costs	752,232
Shared administrative costs	52,830
Under/over-funded prior year costs	(60,418)
Total costs	\$3,825,221
MICHIGAN STATE	
Resident salaries and benefits	1,590,537
Faculty and other direct costs	1,747,915
Loan repayment	475,000
Overhead costs	1,124,057
Shared administrative costs	53,840
Under/over-funded prior year costs	(8,420)
Total costs	\$4,982,929
WAYNE STATE	
Resident salaries and benefits	1,000,344
Faculty and other direct costs	1,104,769
Loan repayment	325,000
Overhead costs	547,330
Shared administrative costs	50,001
Under/over-funded prior year costs	(122,846)
Total costs	\$2,904,598
WMED	
Resident salaries and benefits	1,978,557
Faculty and other direct costs	2,077,053
Loan repayment	550,000
Overhead costs	1,118,616
Shared administrative costs	55,289
Under/over-funded prior year costs	(16,176)
Total costs	\$5,763,339
GRAND TOTAL	\$17,476,087
Shared administrative costs	\$211,960

FIGURE 2. MIDOCs Reconciliation for the Period July 1, 2023 – June 30, 2024

Total residents included in budget: 82 Cost per resident: \$209,014

CENTRAL MICHIGAN	Budget	Actual	Variance
Resident salaries and benefits	1,398,052	1,452,918	(54,866)
Faculty and other direct costs	1,285,474	1,193,185	92,289
Loan repayment	375,000	375,000	0
Overhead costs	670,882	681,170	(10,288)
Shared administrative costs	51,500	50,920	580
Total costs	\$3,780,908	\$3,753,193	\$27,715
MICHIGAN STATE	Budget	Actual	Variance
Resident salaries and benefits	1,690,755	1,844,246	(153,491)
Faculty and other direct costs	1,941,160	1,764,843	176,317
Loan repayment	450,000	450,000	0
Overhead costs	1,199,613	1,091,038	108,575
Shared administrative costs	50,600	51,277	(677)
Total costs	\$5,332,128	\$5,201,404	\$130,724
WAYNE STATE	Budget	Actual	Variance
Resident salaries and benefits	1,140,513	1,156,242	(15,729)
Faculty and other direct costs	1,093,372	774,159	319,213
Loan repayment	300,000	300,000	0
Overhead costs	580,810	482,484	98,326
Shared administrative costs	50,000	267,283	(217,283)
Total costs	\$3,164,696	\$2,980,168	\$184,528
WMED	Budget	Actual	Variance
Resident salaries and benefits	1,766,655	1,766,149	506
Faculty and other direct costs	1,832,160	1,887,921	(55,761)
Loan repayment	500,000	500,000	0
Overhead costs	996,598	996,598	0
Shared administrative costs	53,677	53,677	0
Total costs	\$5,149,090	\$5,204,345	(\$55,255)
GRAND TOTAL	\$17,426,822	\$17,139,110	\$287,712

B. Education and Clinical Quality Data

The data provided in **Figure 3** describes the educational components and evaluation of resident performance for the MIDOCs residency programs for the cohort starting in AY 2024-25.

The training curriculum for all fifteen programs includes SUD/opioid treatment, cultural competency, training in practice management and/or leadership, evaluation on ability to practice in teams and training on how to use electronic health records (EHRs). Fourteen of the programs include primary care mental health training, care of the elderly, focused urban training, participation in quality improvement training and projects (CQI activities) and community outreach. Nine programs are focused on rural training.

Other innovative and relevant initiatives in MIDOCs residency programs include mental health clinic rotations, appropriate admissions for psychiatric in-patient facilities, weekly pediatric care through an FQHC, child psychiatry, collaboration with family medicine for mental health services, and street medicine clinics. In addition, MIDOCs residency programs include a significant portion of training at sites that serve racially and ethnically diverse and underserved populations. For example, one of the MIDOCs residency programs is 100% federally qualified health center (FQHC)-based and one program includes the care of primarily Latino and African American populations. Other programs address community mental health in rural areas of the state including the Upper Peninsula. And one program is researching public health at various Michigan Department of Corrections facilities.

As residents complete their training programs and their 2-year post-residency practice commitment, MIDOCs will collect data on educational and program outcomes specific to each residency program. The first MIDOCs residents are scheduled to complete their post-residency commitment in the fall of 2024, and thus, outcomes data is not yet available. Resident performance is evaluated using ACGME educational milestones organized around six ACGME core competencies: patient care, medical knowledge, systems-based practice, practice-based learning and improvement, professionalism, and interpersonal and communication skills. Institutions track the number of residents who successfully complete the program and additional educational outcomes data when available, such as results from residents' clinical quality improvement (CQI) initiatives, and descriptive data on the populations served at main training sites. CQI projects for these residency programs include topics that focus on – among other things – clinical interventions, population health, social determinants of health, and process improvement. Samples of CQI projects are provided in **Figure 3**. Results from several CQI projects are provided in **Appendix E**.

Program outcomes will be collected at selected intervals after the completion of the MIDOCs program post-residency commitment and include, but are not limited to, the number of residents who are practicing in primary care or psychiatry, in rural or urban underserved settings, and in the state of Michigan.

FIGURE 3.

Descriptive Data on MIDOCs Residency Programs*

*Includes four psychiatry programs (MSUCHM (2), CMUCOM, WMed), four family medicine Programs (CMUCOM, MSUCHM, WSUSOM, WMed), and two internal medicine programs (WMed, CMUCOM), one preventive medicine program (WSUSOM), one pediatrics program (WMed), one OB/GYN program (MSUCHM), one general surgery program (WMed) and one emergency medicine program (CMUCOM).

Does your MIDOCs residency program include the following?	Yes
Training on how to use EHRs	15/15
Evaluation on ability to practice in teams	15/15
Training in practice management and/or leadership	15/15
Participation in quality improvement training and projects (CQI activities)	14/15
Curriculum includes community outreach	14/15
Curriculum includes cultural competency	15/15
Curriculum includes focused rural training	9/15
Curriculum includes focused urban training	14/15
Curriculum includes care of the elderly	14/15
Curriculum includes primary care mental health training	14/15
Curriculum includes training in SUD/opioid treatment	15/15

Other innovative/relevant initiatives
CENTRAL MICHIGAN UNIVERSITY
Initiative to assist consult liaison (CL) service residents and outpatient clinic staff to improve the efficiency in which patients seen on the CL Service are able to obtain a follow-up appointment at the ambulatory clinic.
An internal program quality improvement project has been implemented to assist interns on day one with learning the workflow, EMR, and interdisciplinary collaboration for the stand-alone hospital with different processes.
Resident driven initiative for increasing the psychiatric in-patient hospital’s inpatient appropriate admissions by having a midnight census on each unit of an agreed upon staffing.
A resident-based initiative was put together to encourage commencement of research projects along with QI projects.
A simulation-based intervention has been implemented to improve primary care residents comfort and confidence in delivering Advanced Care Planning conversations for older adults.
A poverty simulation has been crafted for the primary care residents in year two and three.
MICHIGAN STATE UNIVERSITY
MSU/Pine Rest (Psychiatry)
Consultation and ongoing lecturing with Family Practice Residency at Munson Medical Center
Longitudinal clinic rotation at the Assertive Community Treatment program with Northern Lakes Community Mental Health in Traverse City and Cadillac
The resident attends weekly case conferences and didactics Wednesday afternoons throughout training each week during their 4 years of training. These seminars and case conferences include areas which focus on addiction, anxiety disorders, CAP, Clinical Neurology, Consult-Liaison Psychiatry, cultural psychiatry, medicine & pediatrics, Medical-Legal, neuroscience, physician development, psychiatric assessment, Psychiatry business & administration, psychological assessment, psychiatry history, psychopharmacology, psychotherapy, research U& scholarly activity, risk/safety/legal, somatic symptom disorders, trauma and women’s health.

Residents will participate in telehealth and child patient experiences
Residents participate in psychiatric integrated care model with Munson Family Practice Clinic
Residents participate in Street Medicine clinic with Munson Family Practice clinic to meet unhoused population where they are at to provide care
Residents will begin working with Munson Outpatient Behavioral Health in late 2023 to expand treatment access for those experiencing substance use disorders under supervision of an Addiction Psychiatry Fellowship trained psychiatrist
Residents working with Child and Adolescent Psychiatry Fellowship trained psychiatrist to provide child and adolescent psychiatry services at Pine Rest Christian Mental Health Services Traverse City location (catchment area limited only to local community for residents)
MSU Psychiatry EL/Marquette
MSU Psychiatry EL/Marquette: Collaborative care longitudinal rotation Family Medicine at UPHS-Marquette. In this setting the resident will work with FM residents during their mental health training.
MSU Psychiatry EL/Marquette: Longitudinal rotation in the Community Mental Health setting-Northern Michigan.
MSU Psychiatry EL/Marquette: The resident attends weekly case conferences and didactics Wednesday mornings and Thursday afternoons throughout training each week throughout their 4 years of training. These seminars and case conferences include areas which focus on, basic medical knowledge, psychiatric knowledge, DSM 5, CQI, research, community care, practice management, outreach, cultural competency, geriatric psychiatry, CAP, SUD, forensic psychiatry, poster presentation, ethnic and cultural diversity, history of psychiatry, medical disparities, psychotherapy, ECT, C/L psychiatry, somatic symptom disorders, eating disorders, psychosis, mood disorders, anxiety disorders.
MSU Psychiatry EL/Marquette: During their PGY4 year each resident is assigned an administrative inpatient rotation.
MSU OB/GYN Corewell Health
Midwifery collaboration
Telehealth
The OBGYN Rural Track resident attends weekly didactics Wednesday mornings and dedicated rotation -specific didactic time throughout training each week throughout their 4 years of training. These seminars and case conferences include areas which focus on, basic medical knowledge, OBGYN knowledge, surgical and acute OB simulations, CQI, research, community care, practice management, outreach, cultural competency, SUD, poster presentation, ethnic and cultural diversity, medical disparities. OBGYN residents exposed to SUD in pregnancy and healthy Beginnings program and implicit bias training.
MSU/MyMichigan Family Medicine-Midland/Alpena
First year residents attend weekly didactic sessions on Wednesday mornings. Topics include procedural training, interviewing skills, behavioral health topics, research training, wellness and longitudinal inpatient topics. Alpena second-year residents came back to Midland to join their class for a month-long rotation called Clinical Seminars where topics are taught classroom style and in the community, including occupational medicine, community medicine, professionalism and ethics, health systems management, practice management, budgets and investments, women’s health, MSK topics, Geriatrics, and research. The third year residents trialed virtual participation in their Clinical Seminars didactic sessions – moving forward, we will always have this in person.

WMED
Outpatient and inpatient care for underserved populations
Extensive involvement with FQHC patients, both outpatient and inpatient
Care of racially and ethnically diverse populations (primarily Latino and African American)
Dedicated care of Veterans
Specialty-specific rural track at critical access sites
WAYNE STATE UNIVERSITY
Preventive Medicine residents have started their public health research at Michigan Dept of Corrections facilities.
Family Medicine residents provide outpatient and inpatient care for underserved communities (primarily Latino and African American) through their work at CHASS and Henry Ford Hospital.
Telehealth – efforts will continue to evolve as the pandemic eases, but the increased access to care has identified the benefits of telehealth opportunities.
Preventive Medicine residents must complete an MPH degree while in residency, they are able to do that tuition free as part of their employment with WSU
Health disparities curriculum – each residency has developed a robust health disparities curriculum to enhance the resident’s education in this area. Residents and faculty collaborate with community partners and university specialists to develop quality improvement projects designed to improve health outcomes for underserved populations.
Preventive Medicine residents may provide patient care and research public health issues through the Detroit and Wayne County Health Departments

Main Site or Continuity Clinic - Patient-centered Medical Home (e.g., NCQA, MI-BCBS)
CENTRAL MICHIGAN UNIVERSITY
Great Lakes Bay Health Centers (Patient Centered Medical Home, Federally Qualified Health Center)
CMU Health Clinic
MICHIGAN STATE UNIVERSITY
MSU/Pine Rest (Psychiatry)
Pine Rest/MSU – PGY1 and 2 at Grand Rapids Pine Rest Campus
Pine Rest/MSU – PGY3 and 4 collaboration with Munson Medical Center in Traverse City
MSU Psychiatry EL/Marquette
Carewell Health United Hospital – Greenville, MI – MSU OB/GYN
MSU-Department of Psychiatry PGY 1 and 2
UPHS-Marquette PGY 3 and 4 - MSU
Midland/Alpena - TBD
MSU OB/GYN Corewell Health
Corewell Health United Hospital – Greenville, MI – MSU OB/GYN
Corewell Health Butterworth hospital - Grand Rapids, MI
Corewell Health Helen de Vos Children's Hospital, Grand Rapids MI
Mercy Health Saint Mary Hospital, Grand Rapids, MI
MSU/MyMichigan Family Medicine-Midland/Alpena
PGY1 – MyMichigan Midland Family Practice Center
PGY2/3 - Alpena – Alcona Health Center Ossineke

WMED
WMed Health - Internal Medicine
Family Health Center – Kalamazoo
WMed Health – Family Medicine – Crosstown Parkway
WMed Health - Psychiatry
WMed Health - Pediatrics
WMed Health - Surgery
WMed Health - Family Medicine
WAYNE STATE UNIVERSITY
Community Health & Social Services Center (CHASS) Detroit – WSU FM
Ascension Providence Rochester Hospital – WSU TY/PM
Covenant Community Care (WSU PM)
Health Centers of Detroit (WSU PM)
Wayne Health, 400 Mack Ave., Detroit (WSU FM)

CQI Projects
CENTRAL MICHIGAN UNIVERSITY
A quality improvement project has been initiated to improve the identification of cognitive impairment in hospitalized adult patients to enhance care and outcomes.
Hypothermic Coma: Should the Arctic Sun Be Utilized More Instead of Invasive Management? Presented at American Thoracic Society Conference
Mind Games – Uncovering the Stealthy Foe of Cryptococcal Meningitis Presented at the Michigan ACP Conference
Comparison of patients with known coronary microvascular dysfunction to control with confirmed absence of micro vascular disease on invasive hemodynamic assessment (gold-standard) for presence of periodontal disease to establish whether an association exists between periodontal disease and coronary microvascular dysfunction.
Centralized vs Decentralized Same-Day Access in a Family Medicine Residency Clinic Presented at 2024 Conference on Practice and Quality Improvement
Stratification and Streamlining of Internal Processes of Psychiatric Night Call , a QI project to review and streamline processes for non-acute standard orders as part of protocol, helpful for the program and general patient population.
Identifying Opportunities to Diagnose and Treat Patients with Hypercholesterolemia , including Familial Hypercholesterolemia (FH) in the Ambulatory Clinic – A QI Project
Sleep, Stress and A Path to Improvement Across Medical Residencies – a QI Project. To create awareness across the residency programs of the quality of sleep and stress experienced during residency across 6 months
MICHIGAN STATE UNIVERSITY
MSU/Pine Rest (Psychiatry)
The role of inpatient psychiatric hospitalization for patients in crisis: A conceptual review – Discussion on the behavioral health continuum of care to enhance continuum of care discussions to ensure patient access at appropriate level of care
Lab ordering in the (inpatient) psychiatric setting – intent to develop best practices and context-specific lab ordering recommendations
Psilocybin’s efficacy with regards to treatment-resistant depression

Chicken or the Egg: Phenytoin Toxicity induced Othello Syndrome in the setting of Right Prefrontal Insult
Concordance of Self-reported Drug Use and Urine Drug Screening at a Psychiatric Urgent Care Center
The psychiatric sequelae of the COVID-19 Pandemic in adolescents, adults, and healthcare workers
Kynurenine Pathway in Suicidal Youth: IDO1 mRNA as a Promising Biomarker for Suicidal Ideation and Attempt
MSU Psychiatry EL/Marquette
DEI Book Drive for Kids In honor of Black History Month, the residents held a book drive to purchase books at the 0-5-year-old reading level focused on Diversity, Equity, and Inclusion and to be handed out in the clinics during children's doctor appointments.
Adulting for Dummies Doctors QI Module to assist resident physicians to understand financial approaches better as new residents are transitioning from full-time students to learner and employee.
Role of IgG against N-protein of SARS-CoV2 in COVID19 clinical outcomes This study recommends that titers of IgG targeting N-protein of SARS-CoV2 at admission is a prognostic factor for the clinical course of disease and should be measured in all patients with SARS-CoV2 infection.
Lack of tocilizumab effect on mortality in COVID19 patients This study discusses off-label tocilizumab use in COVID-19 patients which reflects concern for cytokine release syndrome.
Reconsider Your Pain Killer; A Case of Aspirin Toxicity Poster presentation at ACP Michigan
Simple clinical clues to identify Serotonin syndrome in an unresponsive patient Case Report Presentation at SCCM Michigan Chapter
Coordination and Outreach in the Upper Peninsula Hired an associate program director and assistant coordinator in February 2020 to help develop rotations and make connections in the Upper Peninsula. Rotation development for the rural track was coordinated by the UP program team and East Lansing team through weekly meetings and reaching out to health care centers in the Upper Peninsula to establish rotations: VA Clinic, Outpatient Psychiatry at UPHSM, CMH with Northpointe, Family Medicine Clinic at UPHSM.
Adverse outcomes related to delirium on the inpatient med/surg at UPHS (falls, increased LOS) and current interventions addressing this (or lack of) and potential implementation of a recognized protocol. Review of research on effectiveness both clinically and financially of the Hospital Elder Life Program. With hopes of assessing interest and presentation of data to administrative personnel for potential implantation in the future.
Spravato Quality Improvement Project The aim of this quality improvement project is to measure patient outcomes in a useful way for clinicians with available and validated measurement tools for patients undergoing treatment with Spravato. The PHQ-9 will be used at intake prior to each treatment, including prior to the first treatment with Spravato to establish a baseline and monitor progress over the course of treatment. A brief survey of clinicians will measure the usefulness of the change made to the intake process and monitoring.
Improving Diabetic Control in an Urban FQHC Goal to improve diabetic control in an urban FQHC setting among a large population of diabetic patients. This will encompass traditional medical management and intense patient education with frequent follow-up until A1C goals are met.

Barriers to Care for Suicidal Patients Post-Discharge - Address barriers to care upon discharge for patients with suicidal ideations including follow ups and resources upon discharge.
Limited English Proficiency Patients - Discrepancy in duration of hospitalization and readmissions.
Improving BMI Management Plans
MSU OB/GYN Spectrum
Community Outreach with Grace Tables: Helping Teenage Mothers 2020 partnered with MSU grant "The National Alliance for Innovation on Maternal Health—Community Care Initiative (AIM-CCI)"
Resident Bias/Racism training: - 4 sessions with Healthy Start certified health equity trainer through academic year - Data has been pulled and analyzed and abstract submitted to the American Public Health Association
MSU/MyMichigan Family Medicine-Midland/Alpena
PGY3 residents in Alpena completed a local study about the quality and access to care the members of the LGBTQ community have in a rural area. PGY2 residents in Alpena worked on an educational handout about prevention and management of concussion. They surveyed all members of the residency and faculty and developed and shared this document broadly.
WMED
Effect of a Mandatory Study Regimen on ITE Scores The purpose of this study was to evaluate the effects of required and regimented study protocols on ITE scores in family medicine residents.
Assess use of US in outpatient clinic record: patient MRN, provider, when, what was imaged (indication, frequency of use, smart phrase used)
Assess and Improve Colorectal Cancer Screening (age 50-75), UPDATE ages and screening methods, given recent USPSTF 2021 recommendations
Develop, disseminate EPIC templates and smart phrases
Pediatrician Practices Regarding Collection of Educational Information for Patients with ADHD After obtaining baseline data regarding pediatrician practices of collecting educational records, initiate a QI initiative to increase the frequency of educational record incorporation into the EHR using PDSA cycles. This includes sending a reminder 2 weeks prior to their appointment to parents to bring these documents to their upcoming ADHD visit and education regarding standardized naming conventions to be used for documents uploaded to the EHR. <i>(See Appendix E, "Extracting Data from the Electronic Health Record of Patients with ADHD Reveals Pediatricians' Discussions of Educational Support and Document Collection")</i>
Clinical Practice Guideline: Inpatient Pediatric Behavioral Health & Aggressive Patients Developed a clinical practice guideline to help nurses and physicians better care for patients admitted to pediatrics for behavioral health concerns while awaiting inpatient psychiatric placement. <i>(See Appendix E, "Clinical Practice Guideline: Inpatient Pediatric Behavioral Health & Agitated Patients")</i>
Healthy Kids Read This project is seeking to improve children's access to books. As limited access often results in poor health outcomes and educational and earning disadvantages, this program was founded in order to improve community access by providing age-appropriate books free of charge to our patients 6 to 18 years of age seen for their annual physical.

<p>Universal screening of skin condition in adolescent population using Dermatology Life Quality Index (DLQI) questionnaire <i>(See attachment "Results from a CQI Project")</i></p>
<p>Improving access to early childhood educational and mental health community resources for pediatric patients This project seeks to improve patient/family and provider knowledge about community resources, such as Early On, ISK, KRESA, and others. The project is also looking at increased referrals to community resources.</p>
<p>Residents' perceptions of how the number of learners affected their education and how to improve on the experience.</p>
<p>Hepatitis C virus screening quality improvement</p>
<p>Billing Education During Residency</p>
<p>Association between BMI and Rates of Depression</p>
<p>Development of templates for notes used by the Academic Internal Medicine Service, including the H&P, Progress Note, Consult Note, and Discharge Summary.</p>
<p>Improved Education Experience for our Allopathic Residents Starting Osteopathic Recognition</p>
<p>Lactation Spaces on Various Rotation Sites for Psychiatry Residents</p>
<p>Burnout Among Psychiatry Residents</p>
<p>Medical Clearance for Patients being Admitted to Psychiatry Unit</p>
<p>SILS gastrostomy button, a straightforward and efficient technique.</p>
<p>Robotic Spleen-Sparing Distal Pancreatectomy in a Pediatric Patient with a Solid Pseudopapillary Tumor</p>
<p>Risk Factors Associated with Perioperative Complications and Prolonged Length of Stay After Laparoscopic Adrenalectomy</p>
<p>Resident PGY Year Impact on 30-day Outcomes of Esophagomyotomy</p>
<p>Psychological Assessment in Patients Undergoing Bariatric Surgery <i>(See attachment, "Psychologic assessment in patients undergoing bariatric surgery")</i></p>
<p>Presentation On Management of Pediatric Trauma NPRSS 2023</p>
<p>Optimal Approach and Barriers to Learning Rib Stabilization as a Trauma Surgeon: A Mixed Methods Study</p>
<p>In-Person Interview as Sine Qua Non for Fairness and Success of Candidates Applying to Surgery Residency</p>
<p>Inaccuracy of Surgical Irrigation Fluid Temperature Hand Assessment</p>
<p>Does ACS-ERRA Predict New Residents' Performance in ABSITE</p>
<p>Debate on Intraoperative Cholangiogram vs Firefly NPRSS 2024</p>
<p>Confidence, Competence and Autonomy! The Most Desirable Trio in Surgical Training</p>
<p>Association of TEG based resuscitation on outcomes of patients with traumatic brain injury</p>
<p>A Unique Case of Hyperparathyroid Crisis: Presentation and Management</p>

WAYNE STATE UNIVERSITY
Providing RESPITE: Residents Expressing the Stresses of the Profession in a Therapeutic Environment Improving resident wellbeing and fulfillment with structured didactic sessions.
HOCUS POCUS Bingo - Gamification of point-of-care ultrasound to increase resident engagement in a novel diagnostic tool.
Tracking the association between Hospital Readmission and Transition of Care Appointments in a Family Medicine Residency Program Observing rates of hospital readmission while hypothesizing that patients who follow-up outpatient for transition of care appointments are less likely to be readmitted.
Nutrition Knowledge Self Efficacy Insights from a brief-community based Nutritional Educational Quality Improvement Intervention
Empowering Medical Assistants to Identify and Respond to Abnormal Vital Signs: An Educational Intervention. Podium presentation at the Department of Family Medicine & Public Health Sciences Research Day. Detroit, MI. <i>This presentation received an award for best Resident project.</i>

C. Roster of trainees, including areas of specialty and locations of training

Another twenty-four residents entered the MIDOCs Program in AY2024-25. Please see **Figure 4** for the list including areas of specialty and associated sponsoring institutions. A complete list of all MIDOCs residents, including previous cohorts, is available on our website at michigandocs.org.

FIGURE 4.
Sixth Cohort of MIDOCs Residents; Starting AY 2024-25

Name	Area of Specialty	Sponsoring Institution
Bayley Espinoza	Emergency Medicine	Central Michigan University College of Medicine
Patricia Boothe	Family Medicine	Central Michigan University College of Medicine
Ameed Khalil	Family Medicine	Central Michigan University College of Medicine
Reshma Vasu	Family Medicine	Central Michigan University College of Medicine
Abbey Dwinells	Psychiatry	Central Michigan University College of Medicine
Mackenzie McGinn	Psychiatry	Central Michigan University College of Medicine
William Hardy Gatlin	Family Medicine	MyMichigan Medical Center-Midland/Alpena Family Medicine Residency Program/MSUCHM
Garrett Michael Richardson	Family Medicine	MyMichigan Medical Center-Midland/Alpena Family Medicine Residency Program/MSUCHM
Reinholdt Olson	Psychiatry	Michigan State University College of Human Medicine
Colton Prete	Psychiatry	Michigan State University College of Human Medicine
Natasha Heart	Psychiatry	Pine Rest Christian Mental Health Services/MSU Psychiatry Residency

FIGURE 4 (continued)

Name	Area of Specialty	Sponsoring Institution
Erin DuRoss	Psychiatry	Pine Rest Christian Mental Health Services/MSU Psychiatry Residency
Sara Dervishi	Family Medicine, Underserved Track	Wayne State University School of Medicine
Jodi Hastings	Family Medicine, Underserved Track	Wayne State University School of Medicine
Candis Jarbo	Family Medicine, Underserved Track	Wayne State University School of Medicine
Boondarik Phuengsomboonying	Family Medicine, Underserved Track	Wayne State University School of Medicine
Tanzeela Jafri	Preventive Medicine	Wayne State University School of Medicine
David Ngo	Family Medicine	Western Michigan University Homer Stryker M.D. School of Medicine
Meredith Essandoh	General Surgery	Western Michigan University Homer Stryker M.D. School of Medicine
Kara Anderson	General Surgery	Western Michigan University Homer Stryker M.D. School of Medicine
John Brown	Internal Medicine	Western Michigan University Homer Stryker M.D. School of Medicine
Vikramjeet Saraan	Pediatrics	Western Michigan University Homer Stryker M.D. School of Medicine
Peter Ewing	Psychiatry	Western Michigan University Homer Stryker M.D. School of Medicine
Rayann Reid	Psychiatry	Western Michigan University Homer Stryker M.D. School of Medicine

D. Medicaid Revenue by Training Site

MIDOCs residents train in a variety of sites including hospitals, FQHCs and VA clinics. While Medicaid revenue is not available to MIDOCs, we have provided a detailed list of training sites by institution in **Appendix B** as well as a map in **Appendix C**.

E. MIDOCs Physicians Go To Work in Michigan

MIDOCs participants with signed employment contracts are listed in **Figure 5** along with where they are working. In 2022, our first four MIDOCs physicians went to work around the State. In 2023, an additional 13 primary care physicians from the program began working in underserved rural and urban areas of Michigan. This year another 22 started working around Michigan bringing our total of working MIDOCs physicians to 39. Next year, twenty-three more physicians will complete residency and are currently interviewing for employment. A map showing where MIDOCs physicians are working is provided in **Appendix D** and an interactive version can be found on our website at michigandocs.org.

**FIGURE 5.
MIDOCs Physicians Working in Michigan**

Began work in 2022

Name	Specialty/Residency	Employer
Brandon Manderle	Family Medicine/WMed	Portage Physicians PC, Portage
Michael Baumgartner	Internal Medicine/WMed	Lakeland Hospitals, Niles and St. Joe
David Kazanowski	Family Medicine/Wayne	Alcona Health Center, Cheboygan
Alicia Steele	Family Medicine/Wayne	American Indian Health & Family Svcs, Detroit

Began work in 2023

Name	Specialty/Residency	Employer
Christopher Robertz	Family Medicine, CMU	Great Lakes Bay Health Centers Saginaw
Fermin Rankin	Family Medicine, CMU	Great Lakes Bay Health Centers Saginaw
Shweta Kambali	Internal Medicine, CMU	McLaren Bay Region – Bay City
Nadim Kanaan	Internal Medicine, CMU	MyMichigan Medical Group - Midland
Jissely Salcedo	Psychiatry, CMU	Saginaw Cooperative Hospitals, Inc. Saginaw
Christopher Le	Psychiatry, CMU	Macomb County Community Mental Health - Clinton Township
Tovah Aho	Psychiatry, MSU	Wellpath/Kinross Correctional Facility - Marquette
Martin Dukaj	Family Medicine Urban Track, Wayne	Ascension Medical Group Cornerstone Garfield Family Practice - Clinton Township
Abdullah Hafid	Preventive Medicine, Wayne	Veterans Evaluation Services -statewide
Beza Sahlie	Preventive Medicine, Wayne	Southeastern Michigan Health Assoc. Wayne-JDF Clinical Services Program - Detroit
Nathan Demchuk	Internal Medicine, WMed	Bronson Internal Medicine-John St. Kalamazoo
Nicole Garton	Pediatrics, WMed	WMED Pediatric & Adolescent Medicine - Kalamazoo
Yan Qi	Pediatrics, WMed	Bronson Methodist Hospital (Bronson Newborn Hospital Specialists) - Kalamazoo

Beginning work in 2024

Name	Specialty/Residency	Employer
Elizabeth McIntyre	Family Medicine	Spectrum Health Medical Group Grand Rapids
Cuong La	Family Medicine	Great Lakes Bay Health Center Saginaw
Yuri Kim	Internal Medicine	CMU IM Clinic & Ascension St. Mary's Hospital - Saginaw
Ashley Jones	Psychiatry	McLaren Medical Group - Flint
Matt Vartanian	Psychiatry	CMU, Saginaw
David E. Westphal	MyMichigan Health – Midland Family Medicine Residency Program	Alcona Health Center - Alpena
Christian T. Grant	MyMichigan Health – Midland Family Medicine Residency Program	Alcona Health Center – Alpena
Michele Bautista	OB/GYN	Corewell Health Gerber Memorial Hospital - Fremont
Joana Barth	OB/GYN	Eastside Gynecology and Obstetrics Roseville
Logan Hanert	Psychiatry	DLP Marquette Physician Practices, Inc. & private practice in Norway, MI
James O'Brien	Psychiatry	Pathways Community Mental Health Marquette
Cory Manoogian	Psychiatry at Pine Rest	Clarkston Medical Group - Clarkston
Emilia Mattioli	Psychiatry	MyMichigan Psychiatry - Kincheloe
Lauren Hodge	Family Medicine, Urban Track	Trinity Health Medical Group, Primary Care & Pediatrics - North Muskegon
Donald Johnson	Family Medicine, Urban Track	Covenant Medical Center - Saginaw
Rasha Abdulridha	Preventive Medicine	Health Centers Detroit Medical Group Greenfield Office - Detroit
Mohamad Hamdi	Preventive Medicine	Stellantis (Chrysler) - Warren
Codi Sharp	Family Medicine	Bronson Primary Care Partners
Stephen Ames	Internal Medicine	Bronson Battle Creek Hospital
Bilal Assi	Pediatrics	The Pediatric Center of Jackson
Linda Saju	Psychiatry	Lieutenant Colonel Charles S. Kettles VA Medical Center - Ann Arbor
Simeen Khan	Family Medicine	MyMichigan Medical Center - Mt. Pleasant

VI. Plans for FY 2024-25 Application Period

New residency slots will be added based on the availability of additional funding from state, local and federal sources, assessment of community needs, and the feasibility of implementation. MIDOCs is continually researching innovative ways to expand the number of residency slots and training sites with other funding.

Participating institutions continue to look at adding additional slots in psychiatry, family medicine, internal medicine, preventive medicine, pediatrics, OB/GYN, and general surgery. Institutions who do not already have them, continue to explore the feasibility of starting new residency programs, such as preventive medicine or a track with a rural focus, that will be tailored to training residents to practice in underserved areas and to address critical health care needs. This has already been done with UP Health System-Marquette and Pine Rest for psychiatry, and MyMichigan Medical Center for family medicine in Alpena and Midland. Further evaluation of residency program capacity and budgets are currently being conducted and the Board will make the final determination of slots prior to the start of the 2025 Match process.

**APPENDIX A.
MIDOCs ADVISORY COUNCIL MEMBERS**

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Francis P. Rhoades Center
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Project Manager
Michigan Area Health Education Center
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Homer Stryker M.D. School of Medicine

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Alpena, MI 49707

APPENDIX A. (continued)
MIDOCs AUTHORITY BOARD MEMBERS

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Western Michigan University
Homer Stryker M.D. School of Medicine

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Director of State Affairs
Wayne State University

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MSMS Foundation Director
PCVS CEO
Michigan State Medical Society

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Vice Chair of Education for the Department of
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MSU College of Human Medicine

Toby Roth, Jr.
Associate Vice President
Government & External Relations
Central Michigan University

Mary Jo Wagner, MD
Chief Academic Officer/DIO
Central Michigan University
CMU Medical Education Partners

Non-Voting Members

Bethany Figg
Graduate Medical Education Accreditation Manager
Central Michigan University
CMU Medical Education Partners

Amy Hoge
Michigan Health Council
Director, Physician Services
MIDOCs Executive Director

Fred Schaible
Assistant Vice President of Government Affairs
Western Michigan University

Megan Morris
Government Relations Associate
Central Michigan University

APPENDIX A. (continued)
OTHER MIDOCS COMMITTEES REPORTING TO THE AUTHORITY BOARD

Finance Committee

Carly Burkett
Manager, Finance & Accounting
Western Michigan University
Homer Stryker M.D. School of Medicine

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Administrative Director
Graduate Medical Education
Wayne State University

Rio Benavidas
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Randy Pearson, MD
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David Forsythe
Assistant Dean, Finance
Central Michigan University
CMU, College of Medicine

JD McBrayer
Director of Finance
Central Michigan University
CMU Medical Education Partners

Ryan Marlette
Chief Financial Officer
Central Michigan University
CMU Medical Education Partners

Amy Hoge
Michigan Health Council
Director, Physician Services
MIDOCs Executive Director

Government Relations Committee

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Director of State Affairs
Wayne State University

Mark Brieve
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Western Michigan University

Megan Morris
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Central Michigan University

Toby Roth, Jr.
Interim Vice President
Government & External Relations
Central Michigan University

Amy Hoge
Michigan Health Council
Director, Physician Services
MIDOCs Executive Director

APPENDIX A. (continued)
OTHER MIDOCS COMMITTEES REPORTING TO THE AUTHORITY BOARD

Graduate Medical Education Committee

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CMU Medical Education Partners

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Director of Academic Affairs
Pine Rest Christian Mental Health Services
Michigan State University – College of Human
Medicine

Bethany Figg
Graduate Medical Education Accreditation Manager
Central Michigan University
CMU Medical Education Partners

Amy Hoge
Michigan Health Council
Director, Physician Services
MIDOCs Executive Director

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Wayne State University School of Medicine

Martha Jordan
Administrative Director
Graduate Medical Education
Wayne State University

Randy Pearson, MD
Assistant Dean, Graduate Medical Education
Michigan State University
College of Human Medicine

**APPENDIX B.
OVERVIEW OF MIDOCs RESIDENCY SLOTS FOR ALL COHORTS BY INSTITUTION**

Central Michigan University College of Medicine

RESIDENCY TYPES (# OF YEARS) AND NUMBER OF RESIDENTS:	Psychiatry (4 years)	8
	Family Medicine (3 years)	7
	Internal Medicine (3 years)	2
	Emergency Medicine (3 years)	1
TOTAL NUMBER OF CURRENT RESIDENTS:		18
TRAINING SITES AND ADDRESSES:		
Psychiatry	HealthSource Saginaw 3340 Hospital Road, Saginaw, MI 48603	
	Community Mental Health for Central Michigan 301 South Crapo Street, Suite 200, Mt. Pleasant, MI 48858	
	Aleda E. Lutz VA Medical Center 1500 Weiss Street, Saginaw, MI 48602	
	Victory Clinic 508 Shattuck Road, Saginaw, MI 48604	
	Great Lakes Bay Health Centers 501 Lapeer Avenue, Saginaw, MI 48607	
	Westlund Guidance Clinic 203 S. Washington Avenue, Saginaw, MI 48607	
	Covenant Healthcare 900 Cooper Avenue, Saginaw, MI 48602	
	Ascension St. Mary's 800 S. Washington Avenue, Saginaw, MI 48601	
	CMU Health 1000 Houghton Avenue, Saginaw, MI 48602	
Family Medicine	CMU Health 1000 Houghton Avenue, Saginaw, MI 48602	
	Great Lakes Bay Health Centers 501 Lapeer Avenue, Saginaw, MI 48607	
	Covenant Healthcare 900 Cooper Avenue, Saginaw, MI 48602	
	Ascension St. Mary's 800 S. Washington Avenue, Saginaw, MI 48601	
	HealthSource Saginaw 3340 Hospital Road, Saginaw, MI 48603	
Internal Medicine	CMU Health 1000 Houghton Avenue, Saginaw, MI 48602	
	HealthSource Saginaw 3340 Hospital Road, Saginaw, MI 48603	
	Aleda E. Lutz VA Medical Center 1500 Weiss Street, Saginaw, MI 48602	

Internal Medicine (cont.)	Covenant Healthcare 900 Cooper Avenue, Saginaw, MI 48602
	Ascension St. Mary's 800 S. Washington Avenue, Saginaw, MI 48601
Emergency Medicine	Covenant Healthcare 900 Cooper Avenue, Saginaw, MI 48602
	Ascension St. Mary's 800 S. Washington Avenue, Saginaw, MI 48601

Michigan State University College of Human Medicine

RESIDENCY TYPES (# OF YEARS) AND NUMBER OF RESIDENTS:	Psychiatry (4 years)	16
	OB/GYN (4 years)	2
	Family Medicine (3 years)	6
TOTAL NUMBER OF CURRENT RESIDENTS:		24
TRAINING SITES AND ADDRESSES:		
Psychiatry	UP Health System-Marquette 580 W. College Avenue, Marquette, MI 49855	
	Pathways Community Mental Health 200 W. Spring Street, Marquette, MI 49855	
	Marquette County 25th Circuit Court, Family Division 234 W. Baraga Ave., Marquette, MI 49855	
	MSU Health Practices 909 Wilson Rd. B119, East Lansing, MI 48824	
	Livingston Community Mental Health 622 East Grand River Howell, MI 48843	
	Hurley Medical Center 1 Hurley Plaza Flint, MI 48503	
	Sparrow Health System 1215 E. Michigan Ave. Lansing, MI 48912	
	Clinton Eaton Ingham County Community Mental Health 812 E. Jolly Rd., Lansing, MI 48910	
	McLaren GEMS Unit 2727 S. Pennsylvania Ave., Lansing, MI 48910	
	Marquette Branch Prison 1960 US Highway 41 S, Marquette, MI 49855	
	Lake Superior Life Care & Hospice 914 W Baraga Ave, Marquette, MI 49855	
	Northpointe Behavioral Healthcare Systems 401 10th Ave, Menominee, MI 49858	
	Upper Great Lakes Marquette Family Health Center 1414 W Fair Ave Ste 249, Marquette, MI 49855	

	Pine Rest 300 68th Street SE, Grand Rapids, MI 49548
	Spectrum Health Butterworth Hospital 100 Michigan Street NE, Grand Rapids, MI 49503
	Munson Medical Center 1105 6th Street, Traverse City, MI 49684
	Mercy Health Saint Mary's 200 Jefferson Avenue SE, Grand Rapids, MI 49503
	Network180 790 Fuller Avenue NE, Grand Rapids, MI 49503
	Kent County Correctional Facility 701 Ball Avenue NE, Grand Rapids, MI 49503
	Northern Lakes Community Mental Health 105 Hall St Suite A, Traverse City, MI 49684
	Northern Lakes Community Mental Health 527 Cobb St, Cadillac, MI 49601
OB/GYN	Corewell Health Butterworth 100 Michigan St NE, Grand Rapids, MI 49503
	Mercy Health 200 Jefferson Ave SE, Grand Rapids, MI 49503
	Corewell Health United Hospital 615 S Bower St, Greenville, MI 48838
	Corewell Health Big Rapids 605 Oak St, Big Rapids, MI 49307
	Helen Devos Children's Hospital 100 Michigan St NE, Grand Rapids, MI 49503
Family Medicine	PGY1 Residents MyMichigan Medical Center – Midland 4000 Wellness Drive, Midland, MI 48670
	PGY2 and PGY3 Residents MyMichigan Medical Center – Alpena 1501 W Chisholm St, Alpena, MI 49707

Wayne State University School of Medicine

RESIDENCY TYPES (# OF YEARS) AND NUMBER OF RESIDENTS:	Family Medicine-Urban Track (3 years)	11
	Preventive Medicine (3 years)	2
TOTAL NUMBER OF CURRENT RESIDENTS:		13
TRAINING SITES AND ADDRESSES:		
Family Medicine	Henry Ford Hospital – Detroit 2799 W. Grand Blvd, Detroit, MI 48202	
	Children's Hospital of Michigan 3901 Beaubien, Detroit, MI 48201	
	Ascension Providence Rochester Hospital 1101 W. University, Rochester, MI 48307	

Family Medicine (cont.)	The Community Health and Social Services Center (CHASS) 5635 W. Fort Street, Detroit, MI 48209
Preventive Medicine – Transitional Year	Ascension Providence Rochester Hospital 1101 W. University, Detroit, MI 48307
	John D Dingell VA Medical Center 4646 John R St, Rochester, MI 48201
Preventive Medicine – Categorical Years	Health Centers of Detroit 4201 St. Antoine, 7A UHC Detroit, MI 48201
	Detroit Department of Health and Wellness 1151 Taylor St Detroit, MI 48202
	Wayne County Health, Veterans, and Community Wellness 33030 Van Born Wayne, MI 48184
	Michigan Department of Corrections Various site in Southeastern MI

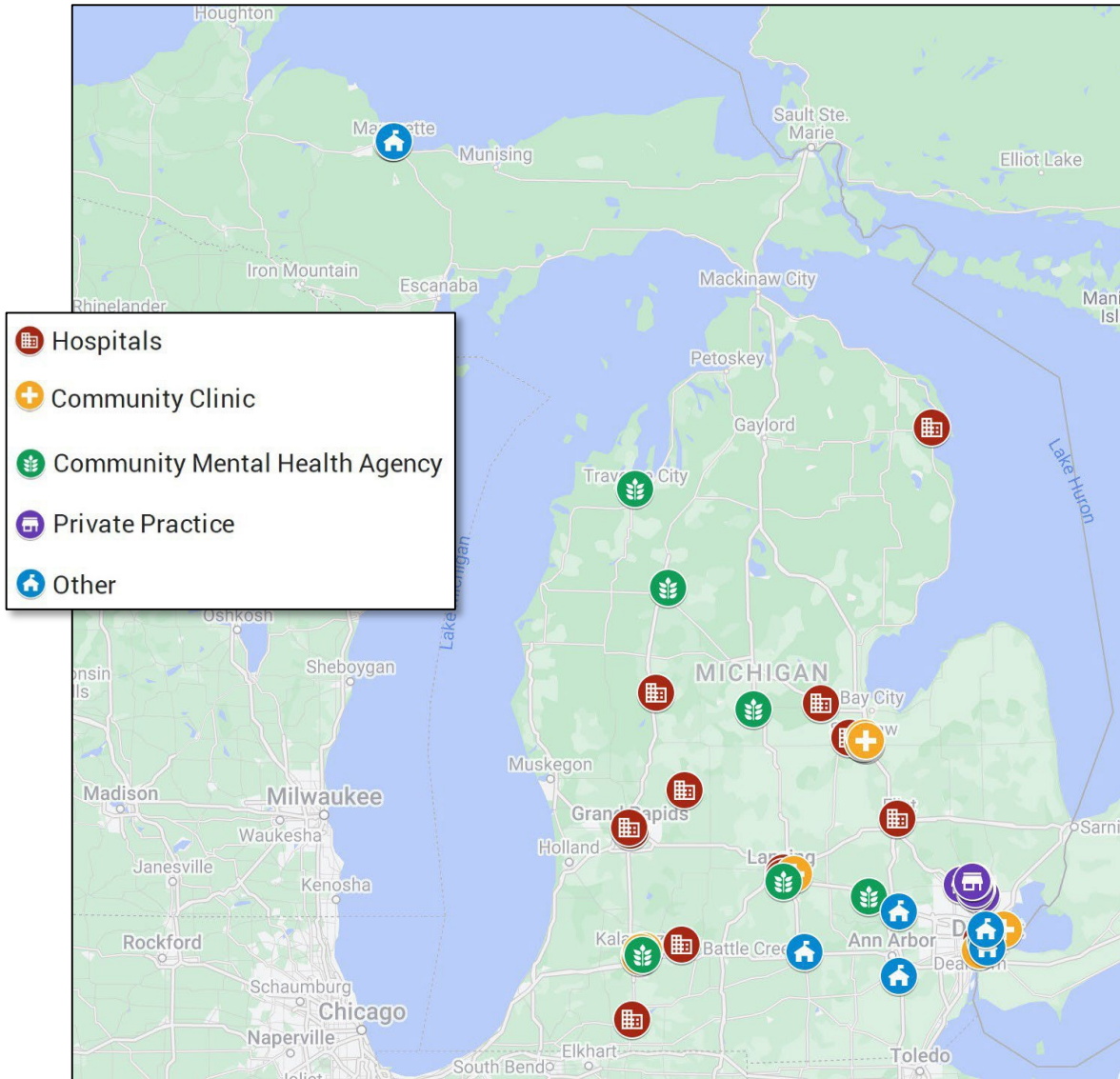
Western Michigan University Homer Stryker M.D. School of Medicine

RESIDENCY TYPES (# OF YEARS) AND NUMBER OF RESIDENTS:	Internal Medicine (3 years)	4
	Family Medicine (3 years)	3
	Pediatrics (3 years)	5
	Psychiatry (4 years)	6
	General Surgery (5 years)	7
TOTAL NUMBER OF CURRENT RESIDENTS		25
TRAINING SITES AND ADDRESSES:		
Internal Medicine	Bronson Methodist Hospital 601 John Street, Kalamazoo, MI 49007	
	Ascension Borgess Hospital 1521 Gull Road, Kalamazoo, MI 49048	
	WMed Health, 1000 Oakland Drive, Kalamazoo, MI 49008	
	Battle Creek Veterans Administration Medical Center 5500 Armstrong Rd, Battle Creek, MI 49037	
Family Medicine	Family Health Center of Kalamazoo 117 W. Paterson Street, Kalamazoo MI 49007	
	Bronson Methodist Hospital 601 John Street, Kalamazoo, MI 49007	
	Ascension Borgess Hospital 1521 Gull Road, Kalamazoo, MI 49048	
	Kalamazoo Community Mental Health 418 W. Kalamazoo Avenue, Kalamazoo MI 49007	
	WMed Family Medicine – Crosstown Parkway 555 Crosstown Parkway, Kalamazoo, MI 49008	
	WMed Health, 1000 Oakland Drive, Kalamazoo, MI 49008	

Pediatrics	Bronson Methodist Hospital 601 John Street, Kalamazoo, MI 49007
	Spectrum Health – Helen DeVos Children’s Hospital, 100 Michigan St NE, Grand Rapids, MI 49503
	WMed Health, 1000 Oakland Drive, Kalamazoo, MI 49008
Psychiatry	WMed Health 1000 Oakland Drive, Kalamazoo, MI 49008
	Ascension Borgess Hospital 1521 Gull Road, Kalamazoo, MI 49048
	Kalamazoo Community Mental Health 418 W. Kalamazoo Avenue, Kalamazoo MI 49007
	Battle Creek Veterans Administration Medical Center 5500 Armstrong Rd, Battle Creek, MI 49037
	Pine Rest Christian Mental Health Services 300 68th Street SE, Grand Rapids, Michigan
	Forest View Hospital 1055 Medical Park Dr SE, Grand Rapids, MI 49546
General Surgery	WMed Health 1000 Oakland Drive, Kalamazoo, MI 49008
	Bronson Methodist Hospital 601 John Street, Kalamazoo, MI 49007
	Ascension Borgess Hospital 1521 Gull Road, Kalamazoo, MI 49048
	Ascension Borgess Allegan Hospital 555 Linn St, Allegan, MI 49010
	Three Rivers Health 701 S Health Pkwy, Three Rivers, MI 49093
	Henry Ford Health System 2799 W. Grand Blvd, Detroit, MI 48202

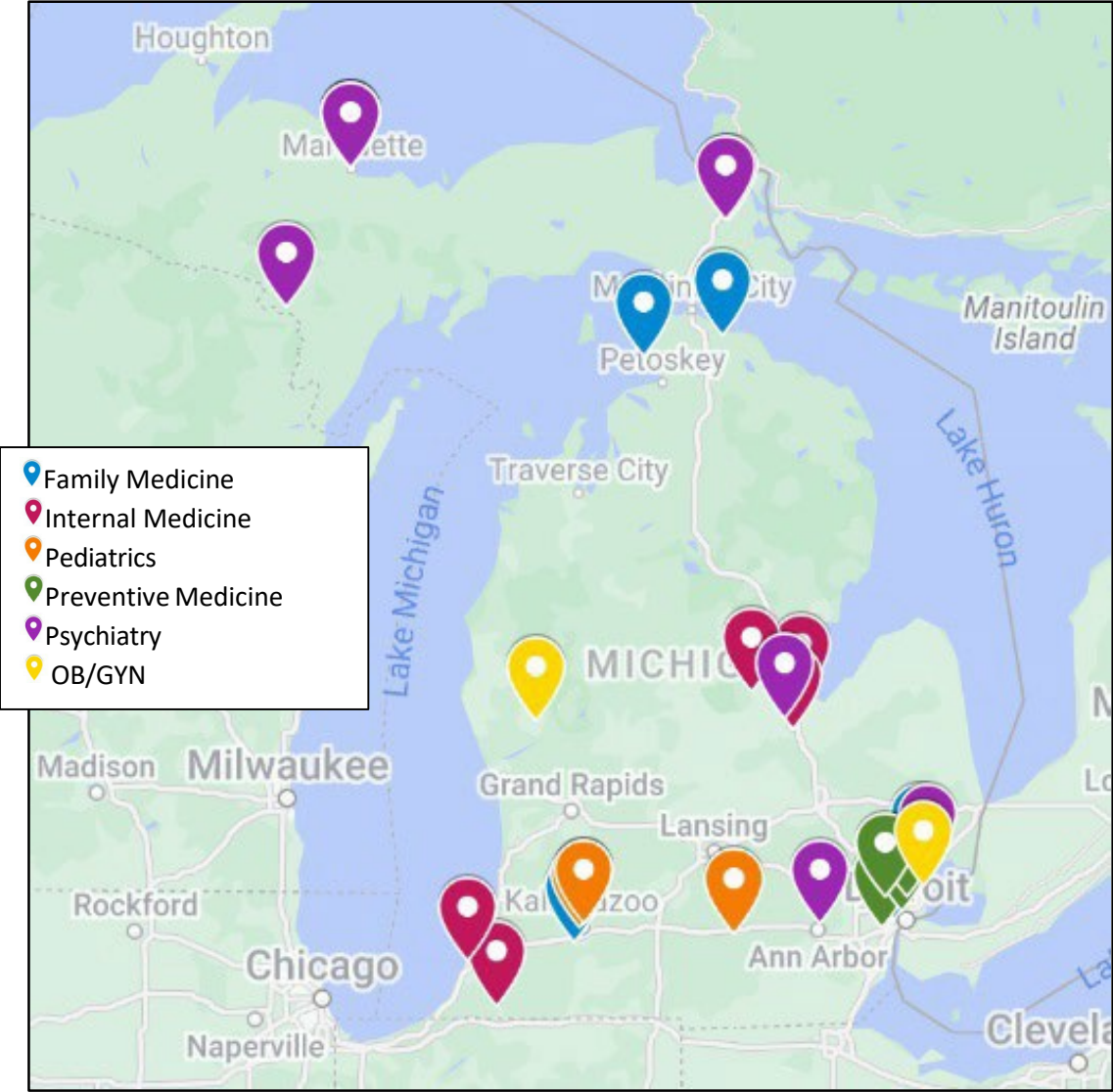
**APPENDIX C.
MAPS OF MIDOCs TRAINING SITES**

To help address community need and provide the best training possible to MIDOCs residents, new residency training sites are continually being added and expanded as resources allow. MIDOCs residency rotation sites are in primary care and mental health shortage areas and provide care to Michiganders through hospitals, community clinics, community mental health agencies, private practices and more. View an interactive map of current training locations on our website at www.michigandocs.org



APPENDIX D.
MAP OF MIDOCs EMPLOYMENT SITES

MIDOCs residents have a passion for working with vulnerable populations and received specific training during residency to work in rural and urban underserved areas. Post-residency, MIDOCs doctors go to work in primary care and mental health shortage areas and provide care to Michiganders through hospitals, community clinics, community mental health agencies, private practices and more. View an interactive map of current employment locations on our website at www.michigandocs.org



APPENDIX E.
Continuous Quality Improvement (CQI) PROJECTS

PERSPECTIVES

IN HEALTH INFORMATION MANAGEMENT

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Volume 20, Issue 2

Extracting Data from the Electronic Health Record of Patients with ADHD Reveals Pediatricians' Discussions of Educational Support and Document Collection

Katherine Tennant Beenen, PhD, Nicole Garton, MD, Emily Carroll, BA, Ashley Tang, BS, Shamsi Berry, PhD, Kevin H. Lee, PhD, Theresa McGoff, MBA, RN, Neelkamal Soares, MD

Abstract

Primary care physicians (PCPs) have an important role in the identification and management of Attention Deficit Hyperactivity Disorder (ADHD). There is a paucity of research on PCPs' practices related to the discussion of educational interventions. We conducted a retrospective chart review using Natural Language Processing to extract data on how often PCPs in an outpatient clinic: 1) discuss educational support with patients and caregivers; and 2) obtain educational records. About three-quarters of patients had at least one term related to educational support included in at least one note, but only 13 percent of patients had at least one educational record uploaded into the electronic health record (EHR). There was no association between having an educational document uploaded into the EHR and inclusion of a term related to educational support in a note. Almost half (48 percent) of these records were unclearly labeled. Further education of PCPs is warranted to increase discussions of educational support and obtaining educational records, as is collaboration with health information management professionals around labeling.

Key words: Attention deficit hyperactivity disorder; educational records; electronic health record; primary care pediatricians; natural language processing

Background

Attention Deficit/Hyperactivity Disorder (ADHD) is among the most highly diagnosed and treated mental health disorders in children and adolescents¹. To diagnose ADHD, data from multiple sources (including educational records) are needed to demonstrate that symptoms cause functional impairment². For youths who have ADHD, impairment in academic performance often warrants educational interventions and related instructional supports³. School supports may include environmental accommodations,

modifying assignment presentation, and positive behavior support plans, to name a few⁴. Some youths require a greater level of support under either the Individuals with Disabilities Education Act⁵ or Section 504 of the Rehabilitation Act of 1973⁶. Primary care physicians (PCPs) are expected to be knowledgeable about these programs and services⁷, and have an important role in counseling caregivers of patients with ADHD on obtaining such support⁸.

In this study, we determined the extent to which PCPs in a single outpatient clinic bring up school supports during office visits for their patients with ADHD, and the extent to which they obtain educational records for their patients (e.g., report cards, 504 Plans, individualized education plans, etc.). We examined PCPs' documentation within the electronic health record (EHR) to approximate their behavior in patient encounters. Previous studies have examined the EHR for PCPs' medication prescribing practices^{9,10} and recommendation of behavior therapy¹¹, additional mainstays of ADHD management. To screen PCPs' documentation for mentions of school support, we used Natural Language Processing (NLP), which systematically breaks down text into components using algorithms, methodologies, and tools¹². Previously, NLP has been used in a wide range of clinical specialties, primarily for the purposes of disease classification¹³.

While the aforementioned studies have involved examination of the EHR to understand PCP practices in medication and therapy recommendations for patients with ADHD, the extent to which PCPs address educational supports in patient encounters, and collect educational documentation, is unknown. Previous studies of PCPs' practices in recommending school support have focused on different patient populations or relied on self-report of practices, for example^{14,15}. Given the crucial role for educational support in ADHD management, we sought to better understand PCPs' practices in this area.

Methods

We conducted a retrospective chart review of patients, ages 6-18, with an ADHD diagnosis using the Western Michigan University Homer Stryker M.D. School of Medicine EHR, Epic (Epic Systems, Verona, WI). The list of eligible patients was queried through the Virtual Data Warehouse using ICD-10 codes and SNOMED terms for ADHD. To be eligible, patients needed to attend at least two appointments for an ADHD-related or well-child office visit at a single outpatient clinic during the date range of July 1, 2018 to Dec. 31, 2019. We examined an 18-month timeframe to have the greatest opportunity of capturing multiple visits during the school year when educational documents are renewed and more easily obtained.

Patient descriptive data were extracted, including age, sex, race, ethnicity, insurance type, language preference, prescription of an ADHD-related medication, and whether they saw one of the institution's mental/behavioral health specialists (i.e., pediatric psychology or developmental-behavioral pediatrics [DBP]) during the study period. We also determined whether patients had neurodevelopmental disorders with high rates of comorbidity to ADHD, including autism spectrum disorder (ASD), specific learning disorder (SLD), and intellectual disability (ID). These were queried using the relevant ICD-10 codes.

To review provider notes for documentation of ADHD-specific educational support terms, encounter notes were electronically extracted from the EHR for analysis using Canary Natural Language Processing (NLP) Software. Canary was selected due to its performance compared to other software and NLP models¹⁶. Testing of the NLP algorithm was completed using a test sample of 50 notes (outside the

timeframe of the study) known to include at least one of the search terms. The analysis was run iteratively until all instances of the chosen study terms were identified. For the full study data set, we reviewed appointment documentation for 25 percent of the subjects (15 percent of total notes) for accuracy of the NLP algorithm.

From these data, we determined the frequency with which educational support terms were documented in providers' notes. Dependent on sample size, the following categorical variables were analyzed using Chi square or Fisher's tests: gender, race, ethnicity, ADHD medication prescription, specialist involvement, comorbid diagnoses, insurance category, and presence of uploaded educational support documents. Age was the only continuous variable. It was not normally distributed; therefore, a Wilcoxon Rank Sum analysis was performed. All NLP-related analyses were performed using SAS v 9.4.

In addition, we manually screened all uploaded documents in patients' EHRs within the study period for educational documents, including those related to special education. We then determined whether the pertinent documents had been assigned clear titles in the EHR for ease of identification by clinicians. Clearly labeled documents were defined as those that had a match between the title on the originating document and the file upload title. To ensure data validity, a senior author cross-checked 10 percent of the data set. A concordance rate of 77.42 percent was achieved and the discrepancies were reconciled through consensus.

We used multivariable logistic regression models to determine patient factors associated with having at least one educational record uploaded into the EHR. The logistic regression model was fit with seven patient factors including sex, age, ADHD medication prescription, specialist involvement, and comorbid diagnoses (ASD, SLD or ID). Insurance, race, and ethnicity were not included in the model due to the small sample size in certain categories. We also calculated the odds ratios (OR) for interpretation of the results. Logistic regression analyses were conducted using R software (version 4.0.0).

The Western Michigan University Homer Stryker M.D. School of Medicine Institutional Review Board approved the study and informed consent was waived as the study involved no more than minimal risk to the subjects and appropriate steps were taken to ensure confidentiality.

Results

During the 18-month timeframe, 314 unique patients were identified with a total of 1,459 ADHD-related visits. On average, each patient had 4.6 visits (SD=2.4). The mean age was 11.2 years (SD=3.39 years), 69.7 percent were male, 99.4 percent indicated their preferred language was English, and 76.4 percent had public insurance. Approximately 90 percent of the patients were prescribed an ADHD medication, 64.3 percent had seen a behavioral health specialist at our institution, and 13.4 percent had a comorbid neurodevelopmental diagnosis. See [Table 1](#) for details of the patient sample.

Overall, 231 (73.57 percent) patients had at least one mention of educational support in a clinical note during the study timeframe. The most frequently used educational terms for each patient are listed in [Table 2](#).

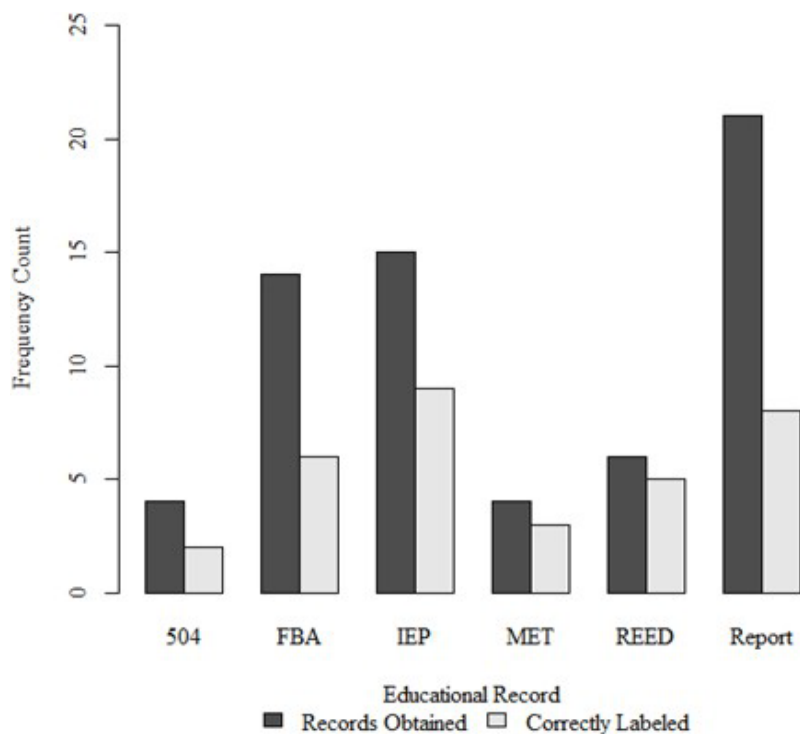
Engagement with a behavioral health specialist increased the odds that a patient had at least one educational term included in at least one note ($p<0.01$). Race was significant with more White patients than Black patients having a mention of educational support in their notes ($p<0.05$) ([Table 3](#)). There was

also a significant difference in age, with younger children more likely to have educational terms documented (M=10.94 years, SD=3.31 years for those with documentation compared to M=11.98 years, SD=3.53 years for those without; $p < 0.05$). There was no association between inclusion of an educational support term in the encounter note and having an educational record uploaded into the EHR ($p = 0.4852$).

A total of 64 uploaded educational records were identified in the EHR (see Table 4). Forty-one patients (13 percent) had at least one type of educational record uploaded into the EHR. Engagement with a behavioral health specialist increased the odds that a patient had at least one educational record uploaded to the EHR by 2.7667 times ($p < 0.05$). One-unit increase in age decreased the odds that a patient had at least one educational record uploaded into the EHR by 0.9844 times ($p < 0.05$).

Fifty-two percent of educational records were clearly titled within the EHR. See the Figure for details on the number of records obtained and labeling for each type of document. Unclear or incorrect titles were most often "outside correspondence" or an arbitrary document identification number. Some were also incorrectly labeled as a different type of educational document.

Figure: Educational Records Correctly Labeled in Electronic Health Record



Legend:

504=504 Plan

FBA=Functional behavioral assessment or behavior plan

IEP=Individualized education program

MET=Multidisciplinary evaluation team report

REED=Review of existing evaluation data

Report=Report card or progress report

Discussion

We examined PCPs' notes for pediatric patients with ADHD at an outpatient clinic to determine the extent to which they addressed educational support and obtained educational records during patient encounters. Overall, one-quarter of patients did not have any terms related to educational support in any of their notes, suggesting their PCP did not discuss this in either initial or ongoing treatment planning. This is concerning as educational interventions are recommended by the American Academy of Pediatrics (AAP) as part of the treatment of ADHD. Furthermore, only a minority of patients had any educational records uploaded to their EHR. There was no association between the presence of an educational document in a patient's chart and the inclusion of an educational support term in at least one note.

White patients and younger patients were more likely to have at least one educational support term included in a note, suggesting PCPs in our clinic addressed supports more with these populations. Younger patient age and involvement of a mental/behavioral health specialist increased the odds that educational records were uploaded. This may reflect PCPs' assumptions that older patients already have established educational supports so therefore do not discuss supports or solicit updated educational records. Studies on race and disproportionality in special education have yielded inconclusive results¹⁷, but our small study would suggest that PCPs are less likely to counsel caregivers of Black youths on obtaining educational support, thus resulting in an incomplete discussion of ADHD treatment components. Future research could investigate the relationship of patient race, age, and PCPs' practices in recommending educational supports.

To our knowledge, this is the first study to investigate the presence of educational records in the EHR. This involved manual screening of each document uploaded during the study timeframe. This reflects the burden on investigators as well as clinicians; the EHR can contain many records, which may be either unclearly labeled or comprise hundreds of pages without clear document boundaries, making it hard to find specific records^{18,19}. Another limiting factor of conducting research on uploaded documents in the EHR is that such documents are often viewable only in a specific institution's context, and not to researchers in other institutions who may share an EHR²⁰. Often, the documentation is stored as a PDF or another image format, which does not export easily for database inclusion/analysis²¹.

Our study also revealed the challenges of identifying records due to inconsistent health information management (HIM) standard labeling practices when adding documents into the EHR, necessitating manual search through numerous uploaded documents. In our study, only about half of the relevant documents had upload titles congruent with the originating document. In the future, appropriate training of HIM staff on the labeling of received educational records will allow more efficient access for clinicians (and researchers). Another approach would be using NLP approaches to reduce the burden of having to manually name and add individual educational records, though it is easier to conduct NLP with text than uploaded documents as the latter may require both NLP and optical character recognition with

machine learning²². It may also help to provide a separate “tab” for educational information, like that which exists for laboratory and radiologic information.

Some limitations to our study include the fact that data were only from a single, small institution in the Midwest, and therefore reflected local practices that may not be generalizable to other locations or organizations. Also, given the retrospective chart review design, we assumed PCP behavior by their EHR documentation where inclusion of terms was used as a proxy for discussion of such topics during the actual encounter, which may not have reflected all actions or discussions that occurred during the encounter. There may be some instances when a PCP did obtain educational records and review them, but they were not saved to the EHR due to the PCP returning them to the family without obtaining a copy, or due to an uploading error.

Future studies should evaluate methods of care coordination that may enhance the number of records obtained. Often the burden of coordinating care falls to the caregiver, which is challenging to navigate for those unfamiliar with such processes or coping with multiple stressors and limited resources²³. Teachers and caregivers both express an interest in sharing educational documentation with PCPs, and there have been some efforts to integrate medical and educational records²⁴. However, school districts' electronic management systems for educational documentation are not always interoperable with medical EHRs. There is also the issue of the two privacy laws, Health Insurance Portability and Accountability Act (HIPAA)²⁵ for medical settings, and Family Educational Rights and Privacy Act (FERPA)²⁶ for school settings, which may be perceived as a barrier to sharing information. We suggest that while PCPs have tools available for ongoing treatment monitoring (e.g., follow-up rating assessments for parent and teacher), collection of educational information should be considered another “vital sign” of treatment as it provides valuable information about child academic and behavioral functioning. Pending any efforts for interoperability between school electronic systems and EHRs, this will require care coordination and system-level efforts as current ADHD portals also are unable to import educational data other than teacher rating scales (e.g., mehealth for ADHD tool)²⁷.

Conclusion

Our study demonstrates that PCPs do not appear to consistently address educational supports during visits with patients with ADHD based on NLP analysis. Furthermore, PCPs do not obtain educational records for most patients with ADHD, though involvement of specialists did increase the likelihood the records were obtained. There are currently several barriers to obtaining and locating educational records in the EHR, which need to be addressed for PCPs to advocate for families and optimize the care of pediatric patients with ADHD. Additionally, while NLP improves the efficiency of EHR analysis, caution should be exercised when interpreting results of these analyses as documentation may not be a true reflection of topics discussed at the visit.

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References

1. Costello EJ, He JP, Sampson NA, Kessler RC, Merikangas KR. Services for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey-Adolescent. *Psychiatr Serv.* 2014; 65(3):359-366.

2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. Arlington, VA: American Psychiatric Pub; 2013.
3. Wolraich ML, Hagan JF, Allan C, et al. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. *Pediatrics*. 2019; 144(4).
4. Pfiffner L, DuPaul G. Treatment of ADHD in School Settings. In: RA Barkley, ed. . 4th ed. New York: The Guildford Press; 2015: . In: Barkley R, ed. *Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment*. 4th ed. Guilford; 2015:596-629.
5. *The Individuals with Disabilities Education Act*. 20USC X1400.; 2004.
6. United States Oice for Civil Rights. *Section 504 of the Rehabilitation Act of 1973*.; 1973.
7. American Academy of Pediatrics Committee on Children With Disabilities. The Pediatrician's Role in Development and Implementation of an Individual Education Plan (IEP) and/or an Individual Family Service Plan (IFSP). *Pediatrics*. 1999; 104(1):124-127.
8. Lipkin PH, Okamoto J, Norwood KW, et al. The Individuals With Disabilities Education Act (IDEA) for Children With Special Educational Needs. *Pediatrics*. 2015; 136(6):e1650-e1662.
9. Kazda L, Bell K, Thomas R, McGeechan K, Sims R, Barratt A. Overdiagnosis of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents: A Systematic Scoping Review. *JAMA Netw Open*. 2021; 4(4):e215335-e215335.
10. Morkem R, Patten S, Queenan J, Barber D. Recent Trends in the Prescribing of ADHD Medications in Canadian Primary Care. *J Atten Disord*. 2017; 24(2):301-308.
11. Bannett Y, Gardner RM, Posada J, Huffman LC, Feldman HM. Rate of Pediatrician Recommendations for Behavioral Treatment for Preschoolers with Attention-Deficit/Hyperactivity Disorder Diagnosis or Related Symptoms. *JAMA Pediatr*. 2021; 176(1):92-94.
12. Joseph S, Hlomani H, Letsholo K, Kaniwa F, Sedimo. K. Natural language processing: A review. *Int J Res Eng Appl Sci*. 2016; 6(3):207-210.
13. Koleck TA, Dreisbach C, Bourne PE, Bakken S. Natural language processing of symptoms documented in free-text narratives of electronic health records: a systematic review. *J Am Med Informatics Assoc*. 2019; 26(4):364-379.
14. Masterton JM, Savage TA, Walsh SM, Guzman AB, Shah R. Improving Referrals to Preschool Special Education in Pediatric Primary Care. *J Pediatr Heal Care*. 2021; 35(5):461-470.
15. Sheppard ME, Vitalone-Raccaro N. How physicians support children with disabilities and their families: Roles, responsibilities and collaborative partnerships. *Disabil Health J*. 2016; 9(4):692-704.
16. Malmasi S, Ge W, Hosomura N, Turchin A. Comparing information extraction techniques for low-prevalence concepts: The case of insulin rejection by patients. *J Biomed Inform*. 2019; 99:103306.
17. Cruz RA, Rodl JE. An Integrative Synthesis of Literature on Disproportionality in Special Education. *J Spec Educ*. 2018; 52(1):50-63.
18. Kostrinsky-Thomas AL, Hisama FM, Payne TH. Searching the PDF Haystack: Automated Knowledge Discovery in Scanned EHR Documents. *Appl Clin Inform*. 2021; 12(02):245-250.

19. Goodrum H, Roberts K, Bernstam E V. Automatic classification of scanned electronic health record documents. *Int J Med Inform.* 2020; 144:104302.
20. Payne TH, Lovis C, Gutteridge C, et al. Status of health information exchange: a comparison of six countries. *J Glob Health.* 2019; 9(2).
21. Hsu E, Malagaris I, Kuo Y-F, Sultana R, Roberts K. Deep learning-based NLP data pipeline for EHR-scanned document information extraction. *JAMIA Open.* 2022; 5(2).
22. Hom J, Nikowitz J, Ottesen R, Niland JC. Facilitating clinical research through automation: Combining optical character recognition with natural language processing. *Clin Trials.* 2022; 19(5):504-511.
23. Power TJ, Michel J, Mayne S, et al. Coordinating systems of care using health information technology: development of the ADHD Care Assistant. *Adv Sch Ment Health Promot.* 2016; 9(3-4):201-218.
24. Michel JJ, Mayne S, Grundmeier RW, et al. Sharing of ADHD Information between Parents and Teachers Using an EHR-Linked Application. *Appl Clin Inform.* 2018; 9(4):892-904.
25. *Health Insurance Portability and Accountability Act.*
26. *Family Educational Rights and Privacy Act.*
27. Epstein JN, Langberg JM, Lichtenstein PK, Kolb RC, Simon JO. The myADHDportal.Com Improvement Program: An innovative quality improvement intervention for improving the quality of ADHD care among community-based pediatricians. *Clin Pract Pediatr Psychol.* 2013; 1(1):55-67.

Tables & Figures

Table 1: Patient Characteristics (N = 314)

Characteristic	Variable	n (%)
Sex	Male	219 (69.7)
	Female	95 (30.3)
Race	White or Caucasian	186 (59.2)
	Black or African American	99 (31.5)
	Multiracial	16 (5.1)
	Unknown	5 (1.6)

	Other	8 (2.5)
Ethnicity	Hispanic/Latinx	21 (6.7)
	Not Hispanic/Latinx	285 (90.8)
	Unknown	8 (2.5)
Preferred Language	English	312 (99.4)
	Sign language	1 (0.3)
	Unknown	1 (0.3)
On ADHD Medication	Yes	283 (90.1)
	No	31 (9.9)
Insurance	Commercial	70 (22.3)
	Public	240 (76.4)
	Self-Pay	4 (1.3)
Seen By Specialist	Yes	202 (64.3)
	No	112 (35.7)
Has an Additional Diagnosis	Autism Spectrum Disorder	20 (6.4)
	Specific Learning Disorder	16 (5.1)
	Intellectual Disability	6 (1.9)

Note: "Specialist" refers to developmental behavioral pediatrics or pediatric psychology

Table 2. Frequency of educational terms in notes by patient.

Term	Patients with mention in note, N (# patients)	Percent of patients with mention in note, % (N/231)
1:1 Aide/One-to-One Aid/Aide	13	5.63%
Accommodations	5	2.16%
Paraprofessional/Parapro	4	1.73%
Academic Intervention Service/AIS	1	0.43%
Academic Learning Plan/ALP	2	0.87%
504 Plan/504	99	42.86%
Individualized Education Plan/IEP	179	77.49%
School Assessment	1	0.43%
School Testing	1	0.43%
School Evaluation	5	2.16%
School Support	0	0.00%
School Programming	26	11.26%
Special Education	32	13.85%
Resource Room	3	1.30%
Behavioral Intervention Plan	12	5.19%
Functional Behavioral Analysis	0	0.00%
Psychoeducational	1	0.43%

Table 3. Frequency of educational support note documentation by characteristic.

Characteristic	Variable	Educational support term included in note	Educational support term not included in note	p-value
		n (%)	n (%)	
Sex	Male	165 (75.3)	54 (24.7)	0.2787
	Female	66 (69.5)	29 (30.5)	
Race	Multiracial	9 (56.3)	7(43.8)	0.0198*
	Black	73(73.7)	26 (26.3)	
	White	140 (75.3)	26 (14.0)	
	Other	6 (75.0)	2 (25.0)	
	Unknown	3 (60.0)	2 (40)	
Ethnicity	Hispanic	19 (90.5)	2 (9.5)	0.1688
	Not Hispanic	206 (72.3)	79 (27.7)	
	Unknown	6 (75.0)	2 (25.0)	
Prescribed ADHD Medication	Yes	211 (74.6)	72 (25.4)	0.2823
	No	20 (64.5)	11 (35.5)	
Seen By Specialist	Yes	163 (80.7)	39 (19.3)	0.0001*
	No	68 (60.7)	44 (39.3)	
Comorbid Diagnosis	Yes	33 (84.6)	6 (15.4)	0.0945
	No	198 (72.0)	77 (28.0)	
Insurance	Public or Self-pay	185 (75.8)	59 (24.2)	0.0910
	Commercial	46 (65.7)	24 (34.3)	

Uploaded Educational Record	Present	32 (78.0)	9 (22.0)	0.4852
	Not present	199 (72.9)	74 (27.1)	

Note: *Significance at $p < 0.05$

Table 4. Educational records upload frequency.

Document Type	N
Review of Existing Evaluation Data	6
Eligibility Recommendation	0
Multidisciplinary Evaluation Team Report	4
Individualized Education Program Report	15
IEP Progress Report OR Report Card	21
504 Plan	4
Functional Behavioral Assessment	14
Behavior Support Plan	0

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Psychologic assessment in patients undergoing bariatric surgery

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Abstract

Background: Psychological Clearance level (PCL) for patients undergoing metabolic and bariatric surgery (MBS) is a critical step for successful postoperative outcomes. This study aims to assess the relationship between the level of psychologic fitness and postoperative outcomes in patients undergoing MBS.

Methods: We retrospectively analyzed the data of patients who underwent MBS (laparoscopic sleeve gastrectomy [LSG] and laparoscopic Roux-en-Y Gastric Bypass [LRYGB]) and completed two years follow-up, between 2012 and 2019, in a single medical center. The patients were divided into four groups based on PCL, suggesting level of readiness for surgery: Group A (PCL-0: guarded), group B (PCL-1: Fair/reasonable), group C (PCL-2: Good/appropriate), and group D (PCL-3: Strong/excellent). Primary outcome was the percent of total body weight loss (%TWL), and the absolute change in BMI units. Secondary outcomes were missed postoperative visits and patient compliance. Differences between the groups were analyzed using a generalized linear model (GLM), chi-squared and exact Fisher tests, as appropriate.

Results: Of 1411 total patients, 607 (43.20%) had complete data at two years follow-up. 512 (84.34%) were females. LSG was performed in 361 (59.5%). No difference was found in %TWL between the four groups (22.14% vs. 28.0% vs. 26.0% vs. 24.8%, $p = 0.118$). We found a small difference in the mean (SD) of absolute change in BMI between the groups, and on post-hoc analysis it was found between groups B (PCL-1) and D (PCL-3). Overall, no difference between the groups in number of follow-up visits, or compliance issues. However, patients who attended more follow-up visits had less compliance issues ($p < 0.001$). PCL is inversely correlated with number of psychologic diagnoses ($r = -0.41$, $p < 0.001$) and medical comorbidities ($r = -0.20$, $p < 0.001$).

Conclusion: We found no difference in the percent of TWL in patients who underwent MBS based on PCL at two -years follow-up. Medical comorbidities and psychiatric diagnoses impact the PCL.

Keywords: Bariatric; Compliance; Postoperative; Psychological; Weight loss.

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BACKGROND/HYPOTHESIS

Postpartum hemorrhage (PPH) is defined as a cumulative blood loss of greater than or equal to 1,000 mL or blood loss accompanied by signs or symptoms of hypovolemia within 24 hours after the birth process

Postpartum hemorrhage is the leading cause of maternal mortality worldwide. Results in approximately 70,000 maternal deaths per year

TXA has been shown to be most effective in reducing bleeding when given close to the time of childbirth, it would be beneficial to know whether prophylactic administration of TXA is helpful in decreasing the rate of postpartum hemorrhage

METHODOLOGY

Study Design: Retrospective chart review of all patients who delivered at Butterworth hospital from 2017 – 2023; results presented as descriptive summary

Study Population: patients who delivered at Butterworth hospital from 2017 – 2023

Inclusion Criteria: Patients who delivered a term infant or preterm infant (alive at the time of birth) at Butterworth Hospital from 2017 – 2023 will be included

Patients who received tranexamic acid from prior to birth time until 2 mins after delivery of the infant were regarded as having received prophylactic tranexamic acid

Exclusion Criteria: We excluded those who had a fetal demise due to potential confounders

Primary outcome: rate of postpartum hemorrhage (blood loss \geq 1,000 mL)

Secondary outcomes: Blood transfusion requirement, thromboembolic events, length of hospital stay

The prophylactic administration of tranexamic acid in reducing rate of postpartum hemorrhage

Joana Barth MD

PGY-4 Corewell Health/ MSU OBGYN resident



RESULTS:

Primary outcome: No statistically significant difference seen in rate of postpartum hemorrhage between the two groups

Secondary outcomes: Rate of blood transfusion was significantly higher in the group the received prophylactic TXA than in the group that did not

No significant difference in thromboembolic events, hysterectomy, arterial embolization, ICU admission, length of hospital stay.

It is estimated that the group that received prophylactic TXA had a 3.1 times risk of having a postpartum hemorrhage

Clinical Practice Guideline: Inpatient Pediatric Behavioral Health & Agitated Patients



Admission Criteria:

- Inability to secure safe disposition from Emergency Department
 - Encourage at least 48 hours of exploring placement
 - Exceptions to timeline may be considered at discretion of social work and medical team
 - [System ED Protocol-26](#) will provide guidance for children in regional Emergency Departments
- Patient is not medically cleared (i.e. overdose requiring treatment or monitoring, lab abnormalities requiring medical intervention)

On admission:

- Initiate [system protocol - Suicide Precautions](#).
*Appendix A
- Pediatric Resident team to review and sign “Contract for Recovery”
- Pediatric Resident team to complete “Broset Violence Checklist” in Epic. Refer to algorithm on pages 4-6.
- Consult: Child Life, Art Therapy, Music Therapy (CLAM Team), and Social Work
 - Consult to Psychiatry vs. CMH pending social work evaluation
- Ensure “Get To Know Me” poster placed at doorway by CLAM Team within first 24 hours of admission
- ALL patients start at Level 1
- Place patient in hospital provided gown.
- Baseline EKG
- Covid-19 PCR swab, if not obtained in ED
- Labs & treatment per unique medical condition, if present (to be outlined in H&P)



Level One (all patients start here with hour "0" at the time of admission to pediatric floor):

- Strict bed rest *with supervised privileges*. No bathing or showering.
- Patient must remain in room without any wheelchair or walking privileges.
- No play room use.
- Approved bedside activities (see Appendix A)
- No electronics, including personal cell phone, computer or hospital provided video game equipment.
- No school participation for 48 hours. Further participation at discretion of the care team. Encourage parents to communicate with school to develop plan with CLAM team.
- Visitation limited to immediate family or primary caregiver (+1). Both must be > 18 years of age.
 - Exceptions may be made if patient is admitted from group home or residential facility.

In order to **ADVANCE** to **LEVEL TWO**, all of the following must be met over the last 48 hours:

- No security called to the bedside
- Patient has not required IM medication for escalating behavior
- Patient has not required more than verbal encouragement to take PO PRN

Note that levels are updated each day at 12pm (NOON). If patient meets criteria for level change after 1200, level change will occur the following day at 1200.

Patient will **DECREASE** to **level 1** if any of the following happens at any given time:

- Security called to the bedside
- Patient has required IM medication for escalating behavior
- Patient has required more than verbal encouragement for more than 5 minutes to take PO PRN
- Threatening or hurting others
- Requires restraints / transfer to PICU

If level is decreased, hour "0" is at time of incident. Patient cannot advance levels for at least 48 hours with parameters as noted.

Level Two:

- Activity advance per approved list
- One walk per day (10 minutes) at time determined by staff
- Patient may take bath or shower WITH bathroom door remaining open
- Play room by appointment only (maximum: 15 minutes)
- Video games permitted: PS2 (non-violent games) or Wii U only. Consoles must have NO internet access. System must be within reach of sitter. The system will be removed immediately if behavior escalates. Maximum time: TWO (2) hours per 24 hour period. No gaming after 7pm.
- School work may be permitted at the discretion of the team (including caregiver) if determined to not serve as trigger or cause increased stress.
 - If using laptop or Chromebook, the screen MUST face the sitter so they can see content accessed. Any content not related to school work will result in immediate removal of device.

Level Three: Patient may advance after 48 stable hours at Level 2

- Activity per approved list. At this time, care team MAY consider items from home.
- Two+ walks per day (10 minutes each) at times determined by staff
- Playroom by appointment (maximum: 30 minutes)
- Video games continue to be permitted. Maximum: FOUR (4) hours per 24 hour period. No gaming after 7pm.

Broset Scoring (Violence Risk Assessment Tool)

Confused	Appears obviously confused and disorientated. May be unaware of time, place or person.
Irritable	Easily annoyed or angered. Unable to tolerate the presence of others.
Boisterous	Behaviour is overtly "loud" or noisy. For example slams doors, shouts out when talking etc.
Physically threatening	Where there is a definite intent to physically threaten another person. For example the taking of an aggressive stance; the grabbing of another persons clothing; the raising of an arm, leg, making of a fist or modelling of a head-butt directed at another.
Verbally threatening	A verbal outburst which is more than just a raised voice; and where there is a definite intent to intimidate or threaten another person. For example verbal attacks, abuse, name-calling, verbally neutral comments uttered in a snarling aggressive manner.
Attacking objects	An attack directed at an object and not an individual. For example the indiscriminate throwing of an object; banging or smashing windows; kicking, banging or head-butting an object; or the smashing of furniture.

Enter score in Epic:

1 = present

0 = not present

Minimum score: 0

Maximum score: 6

Assessment frequency:

- On admission and then subsequently qShift if score is zero (0)
- With event and then Q1h if intervention required until score zero (0) THEN back to qShift or with event

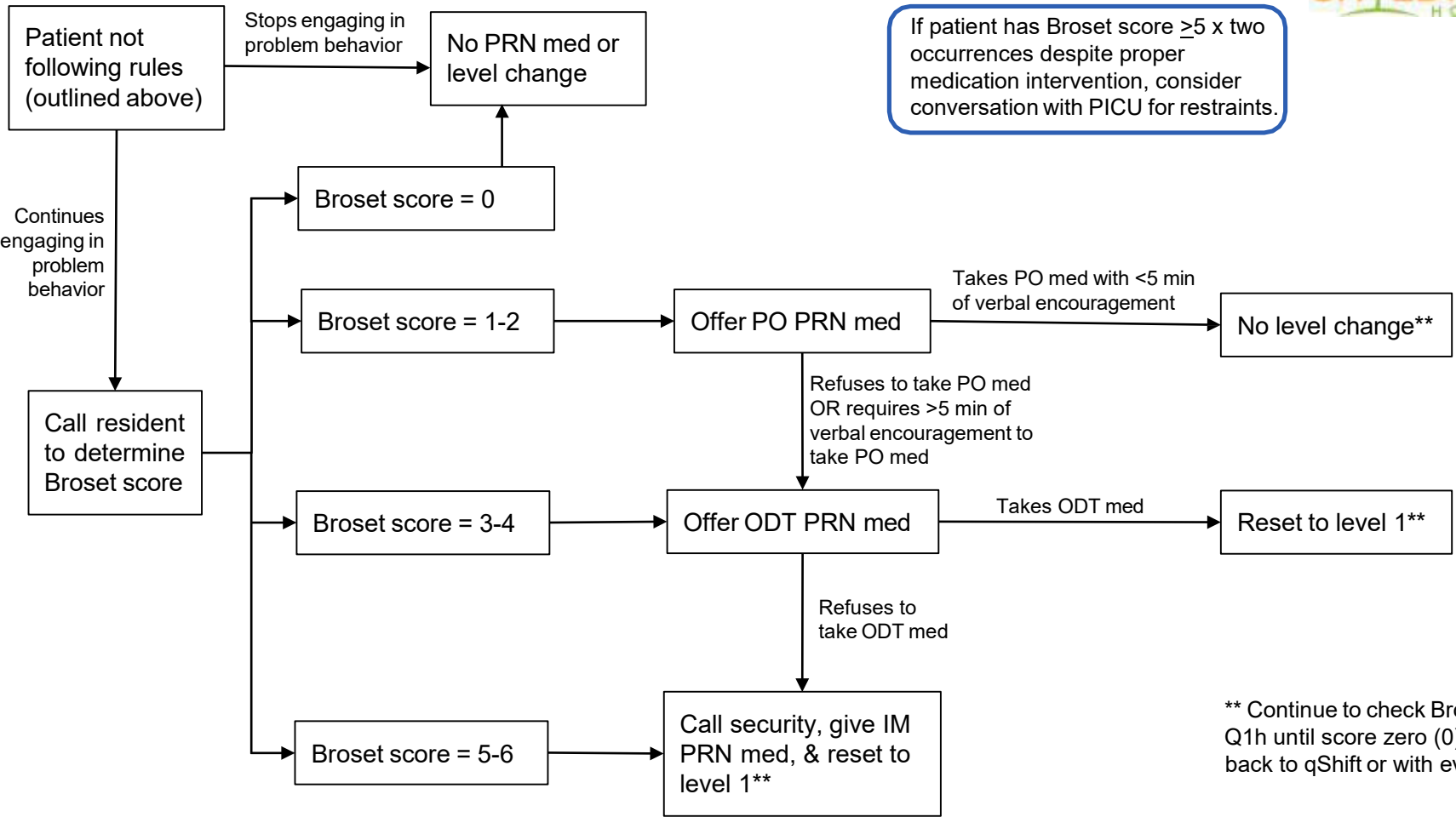
Score	Risk	Medication options
Sum = 0	None	N/A
Sum = 1-2 (mild)	No imminent danger but unable to cooperate with necessary medical care	PO Ativan OR PO Hydroxyzine
Sum = 3-4 (moderate)	Potential to escalate to violence. Preventative measures should be taken	Olanzapine ODT
Sum = 5-6 (severe)	Imminent risk of danger to staff, self or property.	IM Olanzapine OR IM Haloperidol lactate AND IM Ativan* *consider instead 1mg/kg diphenhydramine (max: 50mg/dose) if concern for EPS with haloperidol

Medication Dosing	Pharmacology	Cautions
PO Ativan 0.05 mg/kg Maximum: 2 mg/dose	Onset: 30-60 minutes Duration: 60-120 minutes Can repeat in 30 minutes x1 dose	N/A
PO Hydroxyzine 0.5 mg/kg q6h PRN Maximum: < 6yo 12.5 mg/dose ≥ 6yo 25 mg/dose)	Onset: 15-30 minutes Duration: 60-120 minutes	N/A
Olanzapine ODT • ≤ 10yo – 2.5mg q1h PRN Maximum 10 mg/day • > 10yo – 5mg q1h PRN Maximum: 30 mg/day IM Olanzapine 0.1 mg/kg q2h PRN Maximum: 30 mg/day	Onset: 15-30 minutes Duration: up to 30 hours	Do NOT give more than two (2) doses in 4 hours Avoid administration within 1 hour of benzodiazepine due to increased risk of respiratory suppression
IM Haloperidol lactate 0.075 mg/kg q1h PRN Maximum: < 60kg – 2mg/dose > 60kg – 5mg/dose AND IM Ativan* 0.05 mg/kg q1h PRN Maximum: 2 mg/dose ^Above meds can be given IV if access available. Pharmacodynamics will be different.	Onset: 20-30 minutes Duration: 3-6 hours Can repeat in 60 minutes x1 dose ----- Onset: 15-30 minutes Duration: 1-2 hours Can repeat in 60 minutes x1 dose	QTC prolongation. Extra-pyramidal symptoms. *Consider instead 1mg/kg diphenhydramine (max: 50mg/dose) if concern for EPS with haloperidol

Consider repeat EKG if >4 PRN meds for score 3+ given in 24 hours

Consider alternative plan if patient has scheduled medication that is part of this algorithm

What to do if patient is not following the rules?



If patient has Broset score ≥ 5 x two occurrences despite proper medication intervention, consider conversation with PICU for restraints.

** Continue to check Broset score Q1h until score zero (0) THEN back to qShift or with event

Appendix A: Approved Activities for safety precaution patients



Level One

- Blanket/comfort item
- Crayons
- Markers
- Coloring books/sheets/paper
- Sticker by number sheets
- Safety pencil/pen
- Board games
- Deck of cards
- Puzzles
- Books
- Movies from list
- Session with: Art Therapy, Music Therapy or Child Life if available.

Appendix B

Suicide Checklist

Remove these items from patient room:

- All patient belongings
- All plastic bag liners
- Patient room phone and cord
- Patient cell phone and charger
- Shoe laces, belts, sashes, ties, etc
- Suction regulator (if not in use)
- Bottles/Containers or solutions (Except running IV's)
- Any equipment with cords (if not in use)
- Blood pressure monitoring devices (if not in use)

Additional tasks:

- Doors and Curtains need to remain open (Unless care is being provided with staff present)
- Confirm diet order within HER to include tray for suicide precautions (plastic cutlery required)
- Patient must be accompanied by PCA, PSA, or RN to the bathroom and visual contact must be maintained
- Nurse call cord may stay in room with a sitter present

Appendix C

Behaviors* that may lead to being asked to take an as needed medication if unable to de-escalate behavior with support from the team:

- Talking in a loud voice or yelling/screaming
- Taking off safety tag
- Not meeting safety goals
 - Not keeping oneself safe
 - Threatening or hurting self
 - Standing on the bed
 - Not keeping others safe
 - Threatening or hurting others
 - Name calling
 - Not keeping space safe
 - Damaging property
 - Throwing items
 - Using items in a harmful way to self or others
- Not following instructions
 - Going into offices or staff work areas
 - Arguing with family or staff

*These are examples. This list is not all-inclusive

References

- [Risk Assessment - Broset Violence Checklist \(BVC\) \(risk-assessment.no\)](#)
- Monroe Carell Jr Children's Hospital at Vanderbilt Behavioral Health Response (PHM & SHM Conferences, 2021-2022)
- Chun TH, Mace SE, AAP FACEP, Katz ER, Evaluation and Management of Children and Adolescents With Acute Mental Health or Behavioral Problems. Part 1: Common Clinical Challenges of Patients with Mental Health and/or Behavioral Emergencies. *Pediatrics*. 2016; 138 (3):e20161570
- Adimando, AJ, PMHNP-BC, MSN, Poncin, YB, Baum, CR, MD, FAAP, FACMIT, Pharmacological Management of the Agitated Pediatric Patient. *Pediatric Emergency Care*. 2010; 26 (11): p 856-860.
- Jared P. Austin, Rebecca Marshall; How Pediatric Hospitals Must Adapt to the Adolescent Mental Health Crisis. *Hosp Pediatr* 2021; <https://doi.org/10.1542/hpeds.2021-006229>

Evaluation of IUD Expulsion Rates After Immediate Post-Placental Placement: A Retrospective Study

Michele Bautista, MD MPH

INTRODUCTION

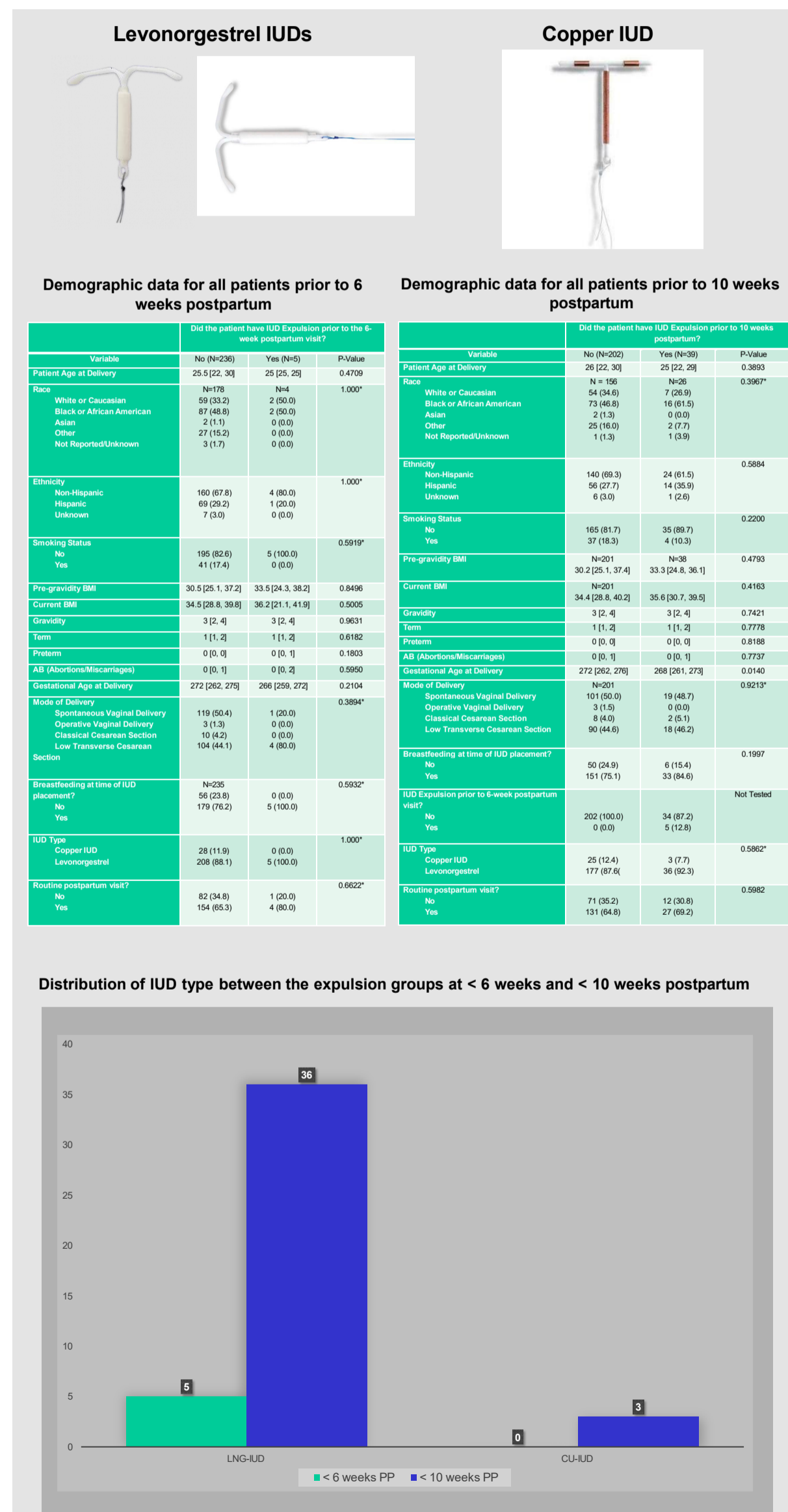
- Postpartum IUDs are a highly effective and convenient form of contraception for patients within the postpartum period but come with increased risk of expulsion with rates varying widely, between 10-27% [ACOG, 2016].

OBJECTIVE

- The primary objective is to determine the expulsion rate for post-placental IUDs since protocol implementation for the OBGYN residency program in 2019.

METHODS

- Retrospective cross-sectional record review of women who delivered at Spectrum Health Butterworth hospital between the dates of 7/1/2019 to 12/6/2021.
- Inclusion criteria:
 - Women who were at least 18 years of age
 - Delivered at Spectrum Health Butterworth Hospital who had received a post-placental LNG or Cu IUD placed after vaginal or cesarean delivery
 - Patients of the OBGYN residency clinic prior to delivery or provided care while inpatient by the OBGYN residency program with postpartum follow up
- Primary endpoints were rates of IUD expulsion (both complete and partial expulsion) at < 6 weeks and < 10 weeks postpartum
- The secondary endpoint was comparison of expulsion rates between IUD type and delivery type
- Clinical and demographic factors that could be possible confounders were also included



RESULTS

- 241 patients included in the final analysis
- IUD expulsion rate of 2.1% (5 out of 241) at < 6 weeks postpartum
- IUD expulsion rate increased to 16.2% (39 out of 241) up to 10 weeks postpartum
- No statistically significant difference in relation to age, race, breastfeeding status, smoking status, mode of delivery or BMI at both time points
- Statistically significant difference in median GA between in the expulsion and non-expulsion group at 10 weeks postpartum [268 vs 272 days, $p = 0.0140$]
- At both time points, Levonorgestrel IUDs were expelled more often than the Copper IUD but was not statistically significant
- Of note, 34.4% of patients (83 out of 241) did not attend their routine postpartum visit

CONCLUSION

- IUD expulsion rate since program implementation is 2.1% at < 6 weeks postpartum and 16.2% at < 10 weeks postpartum
- Immediate post-placental IUD expulsion rates vary widely between studies ranging from 10-27% which this study demonstrated improved rates.
- A limitation includes limited sample size due to recent program implementation (since 2019)
- Although statistically significant, the difference between GA is not clinically significant
- Future research could be whether there are differences in expulsion rates between resident physician placement vs placement by a senior attending; evaluating additional complications rates beyond expulsion; difference in expulsion rates based on IUD type