



Department of Family Medicine and Community Health

UNIVERSITY OF WISCONSIN

SCHOOL OF MEDICINE AND PUBLIC HEALTH

Madison and Baraboo Family Medicine

Residency Programs

Scholarly Projects and Community Health Learning Experiences

From the Class of 2024

Melanie Biegler, DO

Projects Completed During Residency:

Scholarly Project:

Use of Telemedicine to Provide Linkages from Jail to Primary Care for Persons with Opioid Use Disorder

Community Health Learning Experience:

Opioid Use Disorder Screening and Treatment for Patients That Are Incarcerated and Connections to Primary Care:

For my Community Health Learning Experience, I aimed to better understand how the Green County Jail was currently working to address patients with opioid use disorder and what needs they currently had. This included working with the jail staff and Substance Recovery Navigator to create a flyer to screen for inmates with opioid use disorder and connect them with treatment and a primary care physician. This also included community awareness through giving a presentation on the dangers of fentanyl and how we treat opioid use disorder. I advocated for increasing access to treatment for opioid use disorder and harm reduction strategies at the American Medical Association national and interim meetings.



I would like to thank all my mentors in this experience including Alisha Fishlock for her insight into the role of a Substance Use Recovery Navigator, Hazel Behling for always framing our work from a community perspective and Jillian Landeck for her constant advocacy for vulnerable patient populations. I would also like to thank my family and partner for all their support throughout residency, I could not have done it without them.



Melanie Biegler, DO is drawn to family medicine for its ability to address health in the full context of family and community. Melanie is from Elmhurst, IL, and earned her undergraduate degree in Biomedical Sciences from Marquette University.

While at Marquette, she completed a public health internship where she served as an urban farmer and nutritional instructor in Milwaukee. Prior to starting medical school, Melanie served with the National Health Corps Chicago through AmeriCorps as an asthma educator. Melanie attended AT Still University School of Osteopathic Medicine in Arizona. Melanie developed her interests in providing culturally competent care while completing her clinical rotations in urban, suburban, and rural settings in Ohio, Kentucky, and Virginia. While in medical school, Melanie was involved with the Ohio Academy of Family Physicians in their Public Policy and Social Determinants of Health committee and served as a student board member. Her experiences have led her to interests in advocacy, policy, women's health, community health, and working to address social determinants of health with patients and communities. Melanie enjoys running, reading, and exploring neighborhoods through their coffee shops. She also enjoys painting, writing poetry, and spending time with family and friends.

Title: Use of telemedicine to provide linkages from jail to primary care for persons with opioid use disorder

Author names and affiliations: Jillian Landeck^{a,b}, Brian Kenealy^a, Mary F. Henningfield^a, Meagan Sulikowski^a, Melanie Biegler^a, Hazel Behling^a, Alison Miller^{a,b}

Abstract

Introduction:

Primary care physicians can serve an important role in linking individuals to medication treatment for opioid use disorder by partnering directly with county jails, thereby reducing the risk of opioid-related overdose, recidivism, and return to use.

Methods:

This community-based pilot project evaluated the impact of a pre-release telemedicine visit with a primary care provider and peer-supported care coordination on linkage to care and early opioid use disorder treatment retention. Participants who were soon to be released were recruited from local county jails and enrolled, following informed consent, if they met inclusion criteria of being incarcerated with a diagnosis of opioid use disorder, were incarcerated for an opioid-use offense, or were previously on medications for opioid use disorder and seeking to continue or establish with a primary care clinician. A telemedicine visit was conducted with a primary care physician to evaluate history of substance use disorder and discuss a proposed treatment plan. A follow-up visit was arranged within 1 week of release and transportation was provided.

***Results:** Thirty participants were enrolled over 18 months. High rates of initial 1-week follow-up (28/30; 93%) and treatment retention (22/30, 73%) over 3 months and (19/30, 63%) over 6 months were observed despite 45% of study participants being unhoused on their release.*

Conclusion:

Integrating primary care physicians and peer navigators into jail re-entry programming for individuals with opioid use disorder can improve continuity and successful linkage to care. Future efforts should focus on racial disparities in screening and recruitment to programs for post-release treatment of substance use disorders.

Key Words: (maximum 6 key words): opioid use disorder, telemedicine, jail

Abbreviations: MOUD, medications for opioid use disorder, OUD, opioid use disorder

1. Introduction

Nearly three million people in the United States are living with opioid use disorder (OUD), a disease that killed upwards of 102,000 Americans and 1,656 Wisconsin residents in 2021 alone (Ahmad et al., 2022; Spencer et al., 2022). Medications for opioid use disorder (MOUD) have been shown to reduce overdose deaths, increase treatment retention, and improve well-being (Amura et al., 2022; Evans et al., 2022; Wakeman et al., 2020). Yet, structural barriers continue to impede thousands from accessing these essential services. Barriers to MOUD are only further exacerbated for people who are held in jail or prison-based settings (Grella et al., 2020).

An estimated 30-50% of individuals in US prisons have a substance use disorder, a percentage significantly higher than that of the general population (Fazel et al., 2017). While people in prisons and jails comprise one of the two groups guaranteed healthcare by the US Constitution, their medical needs often go unmet (Wilper et al., 2009). More than two-thirds of persons incarcerated at local jails and one-fifth at state prisons with a chronic medical condition received no medical examinations during their

incarceration. Similarly, more than 80% of individuals with OUD never receive treatment during their incarceration (Aronowitz and Laurent, 2016). Upon entrance to jails and prisons, most individuals on MOUD have their medication discontinued even though this is harmful and typically unsuccessful in preventing relapse (Aronowitz and Laurent, 2016; SAMSHA). Eighty-five percent of those tapered from MOUD (an estimated 183,000 people in the US) will relapse, leading to an increase in overdose hospitalizations and deaths as well as increased recidivism rates. While it is known that initiation or continuation of MOUD reduces the likelihood of both overdose and recidivism, only 30 of 5100, or 0.005% of US prisons and jails, provide MOUD (Dolan et al., 2005; Evans et al., 2022; Hedrich et al., 2012; SAMSHA, 2019).

Due to barriers faced upon re-entry such as lack of housing, healthcare, employment, transportation or money, individuals released from incarceration are at an increased risk for overdose deaths (Ranapurwala et al., 2018). The limited access to MOUD in incarcerated settings, as well as the forced discontinuation of those currently prescribed MOUD increases that risk (Grella et al., 2020; Ranapurwala et al., 2018). Very few jails or prisons offer all 3 FDA-approved medications for opioid use disorder. At the time of this study, 84% of Wisconsin jails and 14% of prisons offered MOUD treatment with IM naltrexone. However only 3% of Wisconsin prisons and 32% of jails offered continuation or initiation of buprenorphine and 12% of jails and no prisons offered methadone (WI Department of Health Services, 2021). Unfortunately, incarcerated people are 40 times more likely to die of an overdose upon release from incarceration (Ranapurwala et al., 2018). Drug overdoses are the leading cause of death among those released from prison (Binswanger et al., 2007; Ranapurwala et al., 2018).

By treating patients within the context of their community and environment, primary care clinicians are in a unique position to connect patients who have been incarcerated with resources critical to their recovery and provide holistic care addressing acute care needs, chronic disease management and preventative health. Our project developed partnerships between primary care clinicians with county jails and identified ways to connect patients with care upon release. The impacts of a community-based integration of a primary care provider team with the jail re-entry process on linkage to care and early OUD treatment retention are presented below.

2. Material and methods

2.1. Program development

Through a collaboration between the University of Wisconsin Department of Family Medicine and Community Health, UW Health, and leadership at jails in Dane and Columbia Counties, WI, we sought to create new linkages to care and to deliver services to persons held in jail. Our project was a pilot study conducted in a real-world setting. The study period was chosen solely based on the length of the supporting grant funding period.

Provided care and services included telemedicine for visits with a single family medicine physician, MOUD, peer support, RN care coordination including appointment scheduling and application for insurance after release, and transportation via cab services to in-person visits after release from jail. Most participants relied on Medicaid coverage, which was suspended within 30 days of incarceration and could not be reinstated until participants reapplied after release. Grant funds paid for visits and

medication during this coverage gap. At the time of this study, buprenorphine and methadone were not permitted to be continued or initiated in either of the participating jails.

Prior to study initiation, a University of Wisconsin-Madison Quality Improvement/Program Evaluation Self-Certification Tool was completed for the collection and reporting of federally required data (Government Performance and Results Act, GPRA) for the treatment services being utilized through State Opioid Response funding from participating sites throughout Wisconsin. The project was deemed exempt by our institutional review board as defined under 45 CFR 46.102(d).

2.2. Participant recruitment

Participants were recruited from the Dane County and Columbia County jails on a rolling basis over a period of 18 months beginning April 2021. Twenty-six participants were enrolled from Dane County jail and 4 participants were from the Columbia County jail. Dane County jail is located in Madison, WI, and has a capacity of 949 beds. Columbia County jail is located in Portage, WI, and has a capacity of 357 beds. Participants were screened by re-entry coordinators and identified during their re-entry interviews and assessments. If they posed medical need for OUD on screening, they were offered the program. The total number of participants who were approached and chose not to participate was not collected. Participants met inclusion criteria if they agreed to participate, were incarcerated with a diagnosis of OUD, incarcerated for an opioid use offense, or were previously on MOUD and seeking to continue or re-establish with a primary care clinician.

2.3. Telemedicine, peer support, and follow-up visits

With assistance from the nurse care coordinator, a telemedicine appointment was offered pre-release with a family medicine physician, an in-person follow up office visit with the same physician was scheduled within 1 week of release from jail, and an application for insurance was completed with the jail re-entry coordinator. Cab vouchers for the initial follow-up visit and ongoing visits were provided. A peer support specialist met with participants at the time of follow-up visit and provided additional outreach to participants through phone calls on an as-needed basis. The nurse care coordinator was employed by the University of Wisconsin Department of Family Medicine and Community Health and the peer support specialist was employed by the UW Department of Behavioral Health. The same nurse care coordinator and peer support specialist continued to work with each client over time.

2.4. Data collection and outcome measures

Demographic data, including age, gender, race, ethnicity, and living situation post incarceration, were collected at the initial telemedicine visit (Table 1). Permission to conduct a GPRA assessment was requested at the time of the initial telemedicine visit (SAMSHA 2022). Study outcomes and data collected included initial attendance at the 1-week post-incarceration follow-up appointment, retention with primary care at 3 months and 6 months, defined as a minimum of 2 follow-up visits, and type of MOUD treatment. Data were entered into a REDCap database.

2.5. Data analysis

Summary statistics were collected and included post incarceration 1-week follow-up rate, rate of retention with primary care, housing status, and mental health diagnoses.

3. Results

3.1 Demographics of participants

Thirty participants were enrolled during the 18-month study period. The demographic characteristics of the study population were mostly males (63.3%), between 26 and 44 years of age (80%), and predominantly white (90%) (Table 1). This contrasts with the Dane county jail population which is predominantly male (80%), but approximately half African American (49%, Supplemental table). Demographic data for the general Columbia County jail population was not obtained. The study population also included a substantially unhoused population (44.8%) and nearly all (96.5%) participants carried a mental health diagnosis (Table 1).

Table 1

Participant demographic data

	n	%
Age Group	30	
Under 18	0	(0)
18 to 25	2	(6.7)
26 to 44	24	(80)
45 to 64	4	(13.3)
65 and over	0	(0)
Gender	30	
Male	19	(63.3)
Female	10	(33.3)
Transgender	1	(3.3)
Race	30	
Black or African American	3	(10.0)
Asian	0	(0)
Native Hawaiian or other Pacific Islander	0	(0)
Alaska Native	0	(0)

White	27	(90.0)
American Indian	0	(0)
Ethnicity	30	
Not Hispanic or Latino	29	(96.7)
Hispanic or Latino	1	(3.3)
Housing post incarceration	29	
Unhoused	13	(44.8)
Residential	5	(17.2)
Sober living	1	(3.5)
With family member	10	(34.5)
Mental health	29	
Comorbid mental health diagnoses	28	(96.5)
ADHD	11	(39.3)
Bipolar	5	(17.9)
Depression	14	(50)
Generalized anxiety disorder (GAD)	22	(78.6)
Post traumatic stress disorder	9	(32.1)

Twenty-eight of 30 participants (93.3%) engaged in an initial post-release follow-up visit within 1 week. Medications used during the study are displayed in Table 2 and include IM naltrexone, oral buprenorphine-naloxone, and IM buprenorphine-naloxone. There was a single known case (1 of 30) of a fentanyl overdose resulting in death of the participant during, and a second mortality case following study completion, however mortality data was not specifically collected for all participants. Ninety-three percent of participants were also prescribed psychiatric medications by the primary care physician to treat additional mental health conditions, as listed in Table 1. Seventy-three percent of participants were retained in care at 3 months (22/30), and 63% were retained at 6 months (19/30).

Table 2

Outcomes measures

	n	%
Telemedicine visit occurred while incarcerated	30	
Yes	22	73.3
No, medical provider already PCP	4	13.3
No, interviewed by partner site	4	13.3
Attendance at first appointment after release	30	
Attended	28	93.3
No show	2	6.7
Medication for OUD prescribed at first appointment after release	28	
Buprenorphine	14	50.0
Vivitrol	12	42.9
Sublocade	2	7.1
Preventive healthcare including immunization and routine screenings accepted by patient	29	
Yes	24	82.7
No	5	17.2
Fatal Overdose	30	
Yes	1	3.3
No	29	96.7
Retention	30	
> 3 month	22	73.3
> 6 month	19	63.3
Prescribed a mental health medication	29	
Yes	27	93.1
No	2	6.9

4. Discussion

While there is strong evidence that providing medications for opioid use disorder in jail settings can reduce recidivism rates (Evans et al., 2022), few studies have evaluated the role that connecting with a primary care clinician prior to release has on treatment retention for OUD. We demonstrated high rates of initial follow-up (93%) and treatment retention (67%) over 3 months in this pilot study. The findings are notable given that 40% of participants in the study were unhoused, which is a significant barrier to accessing care and treatment retention (McLaughlin et al., 2021; Simpson et al., 2022).

Similar to other studies examining reentry programming for individuals with OUD, strong partnerships between jail staff and local treatment providers, intensive follow-up immediately following release and use of community navigators and peer support specialists was critical to the success of our program (Matsumoto et al., 2022). The inclusion of peer support is also believed to have had a positive impact on treatment retention. An advantage of involving primary care clinicians was the ability to offer medical care outside of MOUD including mental health care and preventative health screening, such as immunizations and screening labs. Establishing connections with clinicians while patients were in jail facilitated plans for care after release, which is often a period associated with adverse risks (Ranapurwala et al., 2018). This is especially notable given the prevalence of co-morbid mental health diagnoses (96.5%) amongst study participants and the ability for the primary care clinician to prescribe essential psychiatric medications to 93% of participants. Another important outcome of this study was successful stakeholder engagement between local health care systems, contracted correctional health agencies, county jail staff and community recovery services. This study led to ongoing partnerships to improve access to MOUD and quality of care for individuals with substance use disorders in these communities. Patients continued to be referred by jail staff to the family medicine clinicians who were involved in this study. Unfortunately, telemedicine visits within the jail did not continue after the grant ended due to lack of continued funding.

There were several challenges in implementation which are important to consider. This program required short-interval (1 week) appointment access, a significant challenge in a primary care setting. Our project was fortunate to have close communication between the nurse care coordinator in primary care and the jail reentry coordinator to discuss referrals and coordinate appointment scheduling and transportation. The reentry coordinator was able to work with jail staff to schedule the telemedicine appointment and move patients to a private space to conduct the visit. The grant required collection of extensive demographic and medical data under the GPRA, which resulted in significantly longer visits than would have been required for evaluation of their substance use disorder alone. In addition, it is not clear whether participants felt comfortable being fully candid and honest responding to certain questions regarding their drug use or medical conditions due to the presence of jail staff during telemedicine visits.

Timing of release from jail was an additional barrier. It was standard at the time of the study to release inmates in the early morning between 5-6 AM. The study team worked with jail staff to ensure clients included in the study could be released after 8 AM to ensure they would be able to be transported by cab to the clinic for their initial appointment. Additional challenges related to care coordination pertain to insurance coverage. Within 30 days of entry to jail in Wisconsin, an inmate's Medicaid coverage is suspended and they must reapply for Medicaid prior to or shortly after release. Unfortunately, uncertainties or delays around determining release date often led to coverage gaps. Once a release date is determined, there is little time to assist individuals in regaining insurance coverage prior to release. Grant funding covered the cost of medications and visits in this study during any insurance coverage gaps. Future programs should consider means to cover treatment costs as an essential component to sustainability.

At the time of this study, buprenorphine and methadone were not permitted to be continued or initiated in either of the participating jails. Since study completion, buprenorphine was temporarily continued in Dane County jail for inmates on stable maintenance dosing prior to incarceration; however, this has now been suspended due to insufficient staffing. Despite local advocacy efforts, there has been reluctance from the jails to initiate MOUD for various reasons. Jails can be reluctant to cover costs of certain medications that they deem non-essential. Jail staff also cite challenges around the administration of buprenorphine including the time required for films to dissolve, inadequate staff to assist with medication administration, and fear of medication diversion. Ongoing partnerships with local jails are critical to work towards overcoming these barriers to MOUD access.

As seen in other studies (Ray et al., 2022), white inmates were disproportionately screened for inclusion in this program ; therefore, the findings are less generalizable. Reasons for disproportionate screening rates amongst racial groups in this program are not entirely clear, but may relate to structural racism and mistrust amongst African Americans. Recent literature shows stark disparities in access to medications for OUD treatment amongst racial groups despite a sevenfold rise in opioid overdose deaths for African Americans in the past decade. African American medicare enrollees fill significantly fewer prescriptions for buprenorphine (13% vs. 23%) and naloxone (14% vs. 23%) in the 6 months following an OUD-related event despite frequent contact with healthcare providers (Barnett et al., 2023). Current literature suggest it is essential to sustain relationships with underrepresented populations before, during, and after study completion to build and maintain trust (Getrich et al., 2013) and this study did not make attempts to understand the gap in engagement between racial groups. The development of a community advisory board or focus group should be strongly considered prior to future efforts with this type of project (Mitchell et al., 2020).

While this study is limited by the small sample size and relatively short study period, MOUD treatment retention within the program at 3 months or longer remained high (73%) relative to available comparative data nationally for the general population with OUD, which has varied widely but shown average retention of 59% for buprenorphine and 20-50% for naltrexone after at least 1 month of treatment (Hochheimer and Unick, 2022). This suggests that pre-release telemedicine visits may aid in establishing rapport and ensuring treatment retention. A larger randomized control study would help to establish a direct comparison. The rate of recidivism within this cohort was not measured.

While there have been slow improvements in access to MOUD in the carceral system in certain regions, there is a great need to address systemic barriers to offering MOUD in jails and prisons nationwide and to ensure linkages to ongoing MOUD. Programs that include linkage to primary care clinicians through peer support are especially well-positioned to address these barriers. Primary care clinicians can serve an important role in linking individuals to MOUD and addressing other acute, chronic, and preventative healthcare needs. By treating patients within the context of their community and environment, primary care clinicians are in a unique position to provide holistic, patient-centered care and connect patients with community-based resources critical to their recovery.

5. Conclusion

Our pilot study demonstrated that integration of primary care clinicians and peer support into pre-release and jail re-entry programs can improve treatment and retention of persons with OUD. We observed retention rates with an MOUD prescriber that were greater than historical controls, suggesting the potential for telemedicine within jails could improve continuity and successful linkages to care. Clearly, more work is needed to address racial disparities in recruitment and participation in programs to support medical care of persons with substance use disorders in collaboration with jail systems.

Supplemental table

Overall population in Dane county jail during project period

Age Group	Dane County	
	n= 41574	%
Under 18	0	0
18 to 25	7722	18.6
26 to 44	23381	56.2
45 to 64	7101	17.1
65 and over	563	1.4
Other	2807	6.8
Gender, n (%)	41574	
Male	33367	80.3
Female	8207	19.7
Transgender	0	0
Race	41574	
Black or African American	20178	48.5
Asian	291	0.7
Native Hawaiian or other Pacific Islander	0	0
Alaska Native	0	0
White	20830	50.1
American Indian	265	0.6
Other	10	0.02
Ethnicity	41574	

Not Hispanic or Latino	37797	90.9
Hispanic or Latino	3550	8.5
Unknown	227	0.5

Acknowledgements

This work was supported through partnership with Dane and Columbia county jails, WellPath, the University of Wisconsin Department of Family Medicine and Community Health and the University of Wisconsin Department of Behavioral Health.

Funding source

This work was supported by a State Opioid Response (SOR) Grant from the Wisconsin Department of Health Services (DHS).

References

- Ahmad, F. B., Cisewski, J. A., Rossen, L. M., & Sutton, P. (2022). *Provisional Drug Overdose Death Counts*. National Center for Health Statistics. Retrieved from <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>. Accessed March 14, 2022.
- Amura, C. R., Sorrell, T. R., Weber, M., Alvarez, A., Beste, N., Hollins, U., & Cook, P. F. (2022). Outcomes from the medication assisted treatment pilot program for adults with opioid use disorders in rural Colorado. *Substance abuse treatment, prevention, and policy*, 17(1), 1. <https://doi.org/10.1186/s13011-021-00424-4>.
- Aronowitz, S. V., & Laurent, J. (2016). Screaming Behind a Door: The Experiences of Individuals Incarcerated Without Medication-Assisted Treatment. *Journal of correctional health care : the official journal of the National Commission on Correctional Health Care*, 22(2), 98–108. <https://doi.org/10.1177/1078345816634079>
- Barnett, M. L., Meara, E., Lewinson, T., Hardy, B., Chyn, D., Onsando, M., Huskamp, H. A., Mehrotra, A., & Morden, N. E. (2023). Racial inequality in receipt of medications for opioid use disorder. *New England Journal of Medicine*, 388(19), 1779-1789.
- Binswanger, I. A., Stern, M. F., Deyo, R. A., Heagerty, P. J., Cheadle, A., Elmore, J. G., & Koepsell, T. D. (2007). Release from prison- a high risk of death for former inmates. *N Engl J Med*, 356(2), 157-165. doi: 10.1056/NEJMs064115.
- Dolan, K. A., Shearer, J., White, B., Zhou, J., Kaldor, J., & Wodak, A.D. (2005). Four-year follow-up of imprisoned male heroin users and methadone treatment: mortality, re-incarceration and hepatitis C infection. *Addiction*, 100(6), 820-828. doi:10.1111/j.1360-0443.2005.01050.

Evans, E. A., Wilson, D., & Friedmann, P. D. (2022). Recidivism and mortality after in-jail buprenorphine treatment for opioid use disorder. *Drug and alcohol dependence*, 231, 109254. <https://doi.org/10.1016/j.drugalcdep.2021.109254>.

Fazel, S., Yoon, I. A., & Hayes, A. J. (2017). Substance use disorders in prisoners: an updated systematic review and meta-regression analysis in recently incarcerated men and women. *Addiction (Abingdon, England)*, 112(10), 1725–1739. <https://doi.org/10.1111/add.13877>

Getrich, C. M., Sussman, A. L., Campbell-Voytal, K., Tsoh, J. Y., Williams, R. L., Brown, A. E., Potter, M. B., Spears, W., Weller, N., Pascoe, J., Schwartz, K., & Neale, A.V. (2013). Cultivating a cycle of trust with diverse communities in practice-based research: a report from PRIME Net. *Ann Fam Med*, 11(6), 550-558. doi: 10.1370/afm.1543. PMID: 24218379; PMCID: PMC3823726.

Grella, C. E., Ostile, E., Scott, C. K., Dennis, M., & Carnavale, J. (2020). A Scoping Review of Barriers and Facilitators to Implementation of Medications for Treatment of Opioid Use Disorder within the Criminal Justice System. *The International journal on drug policy*, 81, 102768. <https://doi.org/10.1016/j.drugpo.2020.102768>.

Hedrich, D., Alves, P., Farrell, M., Stöver, H., Møller, L., & Mayet, S. (2012). The effectiveness of opioid maintenance treatment in prison settings: a systematic review. *Addiction*. 107(3):501-517. doi:10.1111/j.1360-0443.2011.03676.

Hochheimer, M. & Unick, G.J. (2022). Systematic review and meta-analysis of retention in treatment using medications for opioid use disorder by medication, race/ethnicity, and gender in the United States. *Addictive Behaviors*, 124,107113. doi: 10.1016/j.addbeh.2021.107113.

Matsumoto, A., Santelices, C., Evans, E. A., Pivovarov, E., Stopka, T. J., Ferguson, W. J., & Friedmann, P. D. (2022). Jail-based reentry programming to support continued treatment with medications for opioid use disorder: Qualitative perspectives and experiences among jail staff in Massachusetts. *The International journal on drug policy*, 109, 103823. <https://doi.org/10.1016/j.drugpo.2022.103823>.

McLaughlin, M.F., Li, R., Carrero, N.D., Bain, P.A., & Chatterjee, A. (2021). Opioid use disorder treatment for people experiencing homelessness: A scoping review. *Drug Alcohol Depend*, 224:108717. doi: 10.1016/j.drugalcdep.2021.108717

Mitchell, J., Perry, T., Rorai, V., Ilardo, J., Lichtenberg, P.A., & Jackson, J.S. (2020) *Ethn Dis*, 30(Suppl 2), 755-764. doi: 10.18865/ed.30.S2.755. eCollection 2020.PMID: 33250622

Ranapurwala, S. I., Shanahan M. E., Alexandridis, A. A., Proescholdbell, S. K., Naumann, R.B., Edwards Jr., D., & Marshall, S. W. (2018). Opioid overdose mortality among former North Carolina inmates: 2000-2015. *Am J Public Health*, 108(9), 1207-1213. doi: 10.2105/AJPH.2018.304514.

Ray, B., Victor, G., Cason, R., Hamameh, N., Kubiak, S., Zettner, C., Dunnigan, M., Comartin, E., & Costello, M. (2022). Developing a cascade of care for opioid use disorder among individuals in jail. *J Subst Abuse Treat*, 138, 108751. doi: 10.1016/j.jsat.2022.108751.

Simpson, S. A., Hordes, M., Blum, J., Rinehart, D., & Al-Tayyib, A. (2022). Barriers to Engagement in Opioid Use Disorder Treatment After Buprenorphine Induction. *Journal of addiction medicine*, 16(4), 479–482. <https://doi.org/10.1097/ADM.0000000000000943>.

Spencer, M.R., Miniño, A.M., & Warner, M. (2022). Drug overdose deaths in the United States, 2001–2021. NCHS Data Brief, no 457. Hyattsville, MD: National Center for Health Statistics, <https://dx.doi.org/10.15620/cdc:122556>.

Substance Abuse and Mental Health Services Administration (SAMHSA). Government Performance and Results Act (GPRA) Client Outcome Measures for Discretionary Programs <https://www.samhsa.gov/sites/default/files/csat-gpra-client-outcomes-measures-tool.pdf>.

Wakeman, S. E., Laroche, M. R., Ameli, O., Chaisson, C. E., McPheeters, J. T., Crown, W. H., Azocar, F., & Sanghavi, D. M. (2020). Comparative Effectiveness of Different Treatment Pathways for Opioid Use Disorder. *JAMA network open*, 3(2), e1920622. <https://doi.org/10.1001/jamanetworkopen.2019.20622>.

Wilper, A. P., Woolhandler, S., Boyd, J. W., Lasser, K. E., McCormick, D., Bor, D. H., & Himmelstein, D. U. (2009). The health and health care of US prisoners: results of a nationwide survey. *American journal of public health*, 99(4), 666–672. <https://doi.org/10.2105/AJPH.2008.144279>

Wisconsin Department of Health Services. (2021). *Report on Medication-Assisted Treatment in Prisons and Jails*. (WI DHS Publication No. 02910). <https://www.dhs.wisconsin.gov/publications/p02910-21.pdf>

Ashlyn Brown, MD

Projects Completed During Residency:

Scholarly Project:

Abortion Care Provision in Restrictive Midwest
States Post-Dobbs

Community Health Learning Experience:

Human Growth and Development: A Co-Teaching
Experience at Lakeview Elementary School:

Madison Public Schools all teach the same Human Growth and Development curriculum to their 4th and 5th grade students. Being passionate about reproductive healthcare and early yet appropriate introduction to these topics for the pediatric population, I was fortunately connected with the local elementary school nurse who would be teaching this curriculum. Over the span of 8 weeks, I co-taught lessons on gender identity, sexuality and gender expression, puberty, menstruation, sexual reproduction, and healthy relationships. Some of the best parts were offering my medical perspective to the kids, bringing in a model to help them pretend to deliver a baby, and, of course, hearing them say nearly 40 times a lesson, “EWWWWW!!!!”



To the love of my life, Fig Newton, thank you for your consistently enthusiastic greetings every day I come home and for helping me through residency in more ways than you'll ever know. All of this is for you and all the treats your heart desires. To my Northport Yellow Team, especially Jane and Brenda, you made clinic feel like home and a safe supportive space for me to learn. To my family, thank you for your unconditional love and for providing the grounding I needed when I wasn't sure if I could keep going, especially my dad when he would say, "It's a little too late to be a [whatever alternative career I proposed that phone call]." To my medical school friends, thank you for truly understanding this process, for the constant group chat chatter, and for my many curbside consults. To Nicole and Sarah, thank you for cheering me on every step of the way and visiting me when I couldn't make it to you. Lastly, to Erica, Grant, and Ellie - thank you for making Madison my home.



For Ashlyn Brown, MD, growing up on a pig farm in Avella, PA and participating in 4-H spurred her interests in community health and ultimately led her to a career in family medicine. Ashlyn attended Westminister College in New Wilmington, PA, where she earned her

degree in Neuroscience. While in college, she developed interests in pediatrics and teaching through working in a preschool and alongside an education student to develop a neuroscience curriculum for kids. Ashlyn earned her medical degree from the Drexel University College of Medicine in Philadelphia. She volunteered as a patient advocate at Eliza Shirley Women and Children's Shelter where she helped connect families who were temporarily experiencing homelessness to child and healthcare services. Ashlyn also served as a coordinator for a regional Racism in Medicine Conference to bring together health professionals and community advocates to discuss how racism is prominent in medicine and to develop tools to address these issues and advocate for patients.

Ashlyn is passionate about equitable and socially attentive healthcare and reproductive health. Ashlyn is passionate about reproductive healthcare, including abortion care, gender-affirming care, and trauma-informed care. In her free time, Ashlyn can be found reading, crocheting, puzzling, and spending time with her dog, Fig Newton.

Assessment for patients seeking care before or after medical abortion

General guidance

How do I document patient counseling before and after medical termination of pregnancy done outside of our health system?

See our sample templates. Additional resources: ifwhenhow.org (the Repro Legal Helpline 844-868-2812) for legal advice specific to your state.

What bleeding/cramping can patients expect following medication abortion? At least as much as their menses and typically much heavier, with cramping and passage of clots accompanied by resolution of any pregnancy symptoms. Bleeding can last up to 4 weeks and may stop and start a few times.

What is a self-managed abortion (SMA)? Abortion obtained outside of the medical setting, typically by taking medications (mifepristone used together with misoprostol or misoprostol used alone).

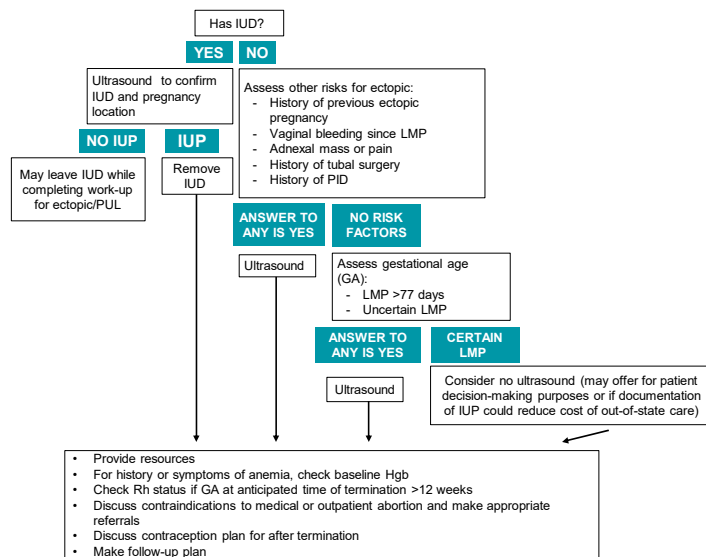
When can a patient start contraception following medication abortion?

Pills Patch Ring Shot	Next day or on the most convenient day after medication abortion, even if bleeding persists Ideally, start within 7 days of medication abortion start
Implant	Same day or on most convenient day after medication abortion, even if bleeding persists
IUD	Once abortion confirmed complete Offer bridge method for the wait time
Sterilization	If patient has Medicaid insurance, complete state mandated sterilization consent. Refer patient promptly to avoid delays Offer bridge method for the wait time
Emergency contraception	Offer with any encounter

Abbreviations

US = ultrasound
GA = gestational age
IUD = intrauterine device
IUP = intrauterine pregnancy
LMP = last menstrual period
POC = products of conception
SMA = self-managed abortion
PUL = pregnancy of unknown location

Patient is pregnant and considering pregnancy termination with medications



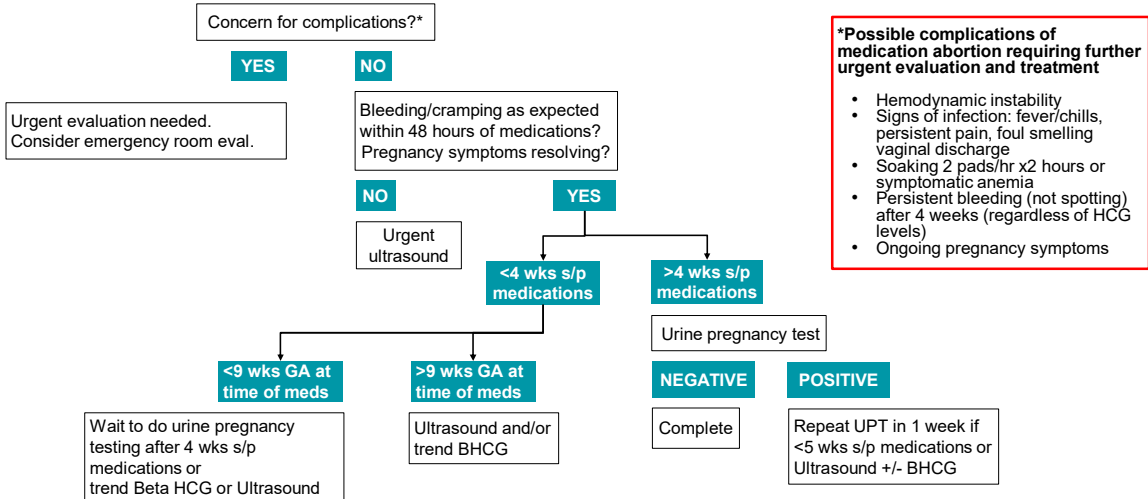
Medical contraindications to *medication* abortion

- IUD in place (needs to be removed)
- Allergy to prostaglandins or mifepristone
- Chronic adrenal failure
- Long-term corticosteroid therapy
- Hgb <8, hemorrhagic disorders, concurrent anticoagulant therapy → refer for surgical abortion out-of-state; coordinate with specialist if indicated

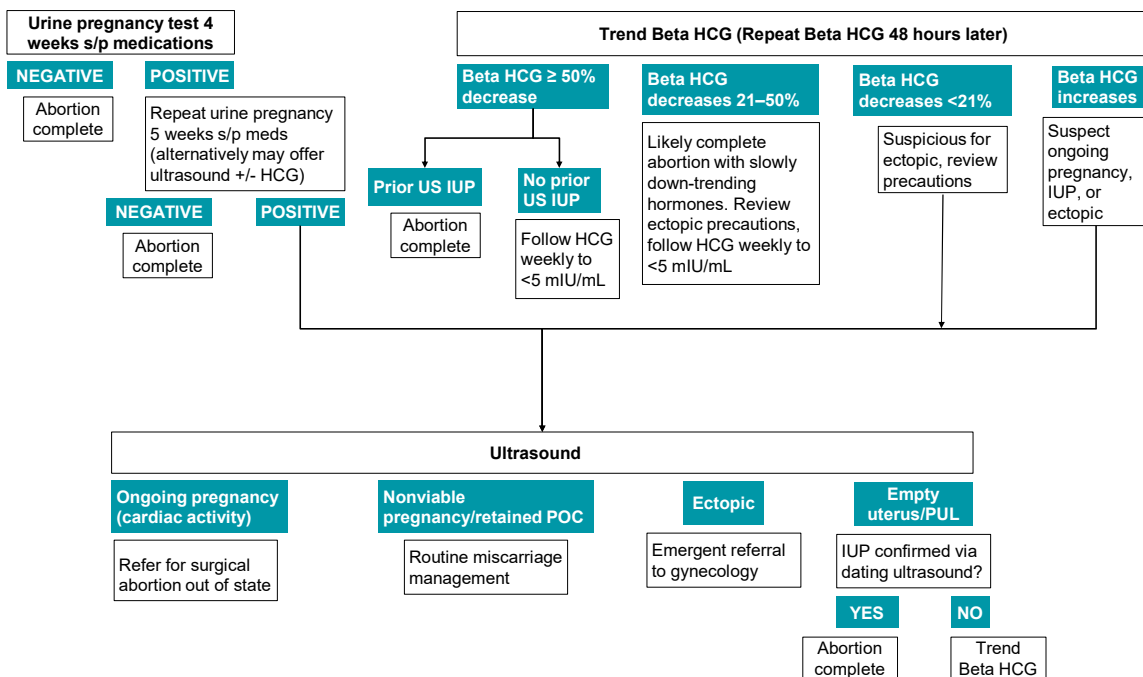
Medical contraindications to *outpatient* abortion care

- Heart failure
 - Bleeding disorder
 - Severe anemia
 - Other significant medical comorbidities
- Refer for hospital-based abortion care out-of-state

Patient has used misoprostol +/- mifepristone



Confirming a patient is no longer pregnant following medication abortion



Jose Carrillo, MD, MS

Projects Completed During Residency:

Scholarly Project:

Health Communication Strategies for the Family Physician

Community Health Learning Experience:

Addressing Health Disparities in the LatinX Community Through Effective Healthcare Communication:

LatinX individuals were disproportionately impacted by covid 19. There is a great need to increase effective healthcare communication in the LatinX community. For this project, I wanted to first understand what makes a healthcare message effective enough to cause behavioral change (vaccine acceptance). This was done by conducting focus groups, gathering data on what kind of healthcare messages people found most impactful, and creating a reference table for physicians to use. The second aim was to increase awareness of disease in the LatinX community by participating in a LatinX health fair and presenting on a variety of healthcare topics. This project gave me tools to become a better communicator and advocate for the LatinX community.



Thank you to my husband, my family, and all the mentors that have guided me throughout the years! Thank you to my patients for allowing me to care for you. You have made me a better doctor.



Jose Carrillo, MD is dedicated to providing care to historically marginalized and low-income populations. He is from Aurora, IL and earned his undergraduate degree in Biomedical Engineering from Northwestern University. He then went on to earn his master's

degree in Bioengineering from the University of Illinois at Chicago and his medical degree from the University of Wisconsin School of Medicine and Public Health. While in medical school, Jose served as the chapter secretary of the Latino Medical Student Association, which allowed him to bring attention to health disparities in the LatinX community. He is interested in diversifying the medical workforce and has mentored high school students interested in health sciences, organized mentorship events for underrepresented undergraduate students, and led discussions about implicit bias and microaggressions for first year medical students. He also volunteered with FOSTER of Dane County as a COVID-19 relief volunteer, where he helped distribute food to children, ran food drives, and distributed information about COVID in Spanish and English. Jose is committed to providing LGBTQ+, gender affirming, and Spanish-speaking care and he is passionate about community engagement, underserved medicine, and integrative health. Jose enjoys cooking and exploring new cuisines, yoga, hiking, traveling, and spending time in Eagle River, WI.

Health Communications Strategies for the Family Physician

Authors: Jose Carrillo, MD;¹ Rebeca Liebl, MD;¹ Ashley Benitez;² Patricia Tellez-Giron, MD;^{1,3} Fernando Cano Ospina;³ Shiva Bidar-Sielaff;³ ; Melissa Metoxen MS;⁴ Carey Gleason, PhD;² Maria Mora Pinzon, MD MS FACPM²

¹*Department of Family Medicine and Community Health, University of Wisconsin Madison, Wisconsin;* ²*Division of Geriatrics and Gerontology, Department of Medicine, School of Medicine and Public Health, Madison, WI;* ³*Latino Health Council of Dane County, Madison, WI;* ⁴*Native American Center for Health Professions, School of Medicine and Public Health, Madison, WI*

Background: Latinx communities have been disproportionately affected by the Covid-19 pandemic. A recognized lack of access to culturally appropriate health information, coupled with an abundance of targeted misinformation, may have played a role in fostering mistrust in the health care system and exacerbating health disparities. Family physicians are in a prime position to counsel their patients and the general public on accurate healthcare information. This emphasizes the need for training family physicians in the effective dissemination of healthcare information, especially in times of public health crisis. The study aimed to explore the key factors within social media messages influencing vaccine acceptance among Latinx individuals in Madison WI.

Methods: Our team conducted 3 focus groups with latinx individuals, examining how their social media experiences during the COVID-19 pandemic shaped their reception of messages regarding vaccine acceptance. They were each shown social media messages and asked to reflect on factors present in each post that made them more or less willing to accept a vaccine. Focus group discussions were transcribed verbatim. Deductive content analysis was performed by two reviewers using the CAUSE model, which explains common goals in communicating risk information to the public. We also used inductive coding to allow for additional identification of factors.

Results: Results were organized into a table and divided into domains of the CAUSE model (Confidence, Awareness, Understanding, Satisfaction, Enactment) with associated strategies that participants identified would make them more likely to accept a vaccine. Messages that created Confidence included those disseminated by trusted healthcare professionals of similar ethnic background and messages in the preferred language of the recipient and their family. Messages that generated Awareness were those that were disseminated widely and were easy to understand using simple terms accessible to those with low health literacy. Messages that generated Understanding included scientific information and relatable stories with real life depictions. Messages that gained Satisfaction included those that dispel myths and outlined the risks of not being vaccinated. Messages that promoted Enactment included those that had clear messages for how to obtain vaccines and with resources for further information.

Conclusion: Family physicians have a high degree of trust within the Latinx community, rendering messages from them crucial for creating awareness. Training curricula for physicians are necessary for them to acquire skills to create effective messages that could lead to behavioral change, such as obtaining a vaccine. Effective messages that could create behavior change should incorporate various strategies from the CAUSE model and the more domains incorporated, the more effective the message may be. Effective healthcare communication has the potential to improve healthcare outcomes and decrease health disparities in our communities.

References

- Andrade, E. L., Evans, W. D., Barrett, N., Edberg, M. C., & Cleary, S. D. (2018). Strategies to increase Latino immigrant youth engagement in health promotion using social media: mixed-methods study. *JMIR Public Health and Surveillance*, 4(4), e9332.
- Kain, N. A., & Jardine, C. G. (2020). "Keep it short and sweet": Improving risk communication to family physicians during public health crises. *Canadian family physician*, 66(3), e99-e106.
- Korda, H., & Itani, Z. (2013). Harnessing social media for health promotion and behavior change. *Health promotion practice*, 14(1), 15-23.
- Ledford, C., & Anderson, L. (2020). Communication strategies for family physicians practicing throughout emerging public health crises. *Family Medicine*, 52(5), 48-50.
- Moorhead, S. A., Hazlett, D. E., Harrison, L., Carroll, J. K., Irwin, A., & Hoving, C. (2013). A new dimension of health care: systematic review of the uses, benefits, and limitations of social media for health communication. *Journal of medical Internet research*, 15(4), e1933.
- National Academies of Sciences, Engineering, and Medicine. (2021). Strategies for building confidence in the COVID-19 vaccines.
- Nguyen, B.-M., Lu, E., Bhuyan, N., Lin, K., & Sevilla, M. (2020). Social Media for Doctors: Taking Professional and Patient Engagement to the Next Level. *Family Practice Management*, 27 (1), 19-24. <https://www.aafp.org/pubs/fpm/issues/2020/0100/p19.html>
- Solnick, R. E., Chao, G., Ross, R. D., Kraft-Todd, G. T., & Kocher, K. E. (2021). Emergency physicians and personal narratives improve the perceived effectiveness of COVID-19 public health recommendations on social media: a randomized experiment. *Academic Emergency Medicine*, 28(2), 172-183.



Department of Family Medicine and Community Health

UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Health Communication Strategies for the Family Physician

Jose Carrillo, MD;¹ Rebecca Liebl, MD;¹ Ashley Benitez;² Patricia Tellez-Giron, MD;^{1,3} Fernando Cano Ospina;³ Shiva Bidar-Sielaft;³ ; Melissa Metoxen MS;⁴ Carey Gleason, PhD;² Maria Mora Pinzon, MD MS FACP;²

¹Department of Family Medicine and Community Health, University of Wisconsin Madison, Wisconsin; ² Division of Geriatrics and Gerontology, Department of Medicine and Public Health, Madison, WI; ³ Latino Health Council of Dane County, Madison, WI; ⁴ Native American Center for Health Professions, School of Medicine and Public Health, Madison, WI



Background

Latinx communities have been disproportionately affected by the Covid-19 pandemic. A recognized lack of access to culturally appropriate health information, coupled with an abundance of targeted misinformation, may have played a role in fostering mistrust in the health care system and exacerbating health disparities. Family physicians are in a prime position to counsel their patients and the general public on accurate healthcare information. This emphasizes the need for training family physicians in the effective dissemination of healthcare information, especially in times of public health crisis.

Objective

This study aimed to explore the key factors within social media messages influencing vaccine acceptance among Latinx individuals in Madison WI and to create a framework that family physicians can reference when creating effective healthcare messages

Methods

Our team conducted 3 focus groups with Latino/a/x individuals, examining how their social media experiences during the COVID-19 pandemic shaped their perception of messages regarding vaccine acceptance. They were each shown social media messages (Images 1-4) and asked to reflect on factors present in each post that made them more or less willing to accept a vaccine. Focus group were transcribed verbatim. Deductive content analysis was performed by two reviewers using the CAUSE model, which explains common goals in communicating risk information to the public. We also used inductive coding to allow for additional identification of factors.

Image 1: Post shown

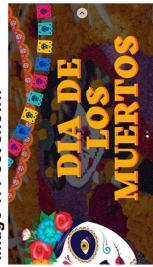


Image 2: Post shown

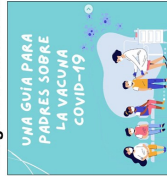


Image 3: Sample post shown

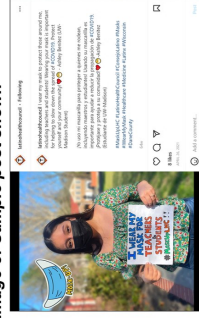
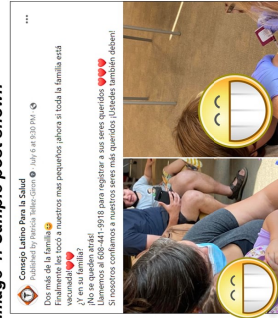


Image 4: Sample post shown



Results

Overall, 26 individuals participated in the focus groups, two of them held in Spanish, and one in English. Table 1 shows the domains of the CAUSE model (Confidence, Awareness, Understanding, Satisfaction, Enactment) with some example quotes from the participants. The strategies that participants identified would make them more likely to accept a vaccine were divided into each domain of the model and further expanded into proposed actions.

Conclusions

Family physicians have a high degree of trust within the Latinx community, rendering messages from them crucial for creating awareness. Training curricula for physicians are necessary for them to acquire skills to create effective messages that could lead to behavioral change, such as obtaining a vaccine. Effective messages that could create behavior change should incorporate various strategies from the CAUSE model and the more domains incorporated, the more effective the message may be. Effective healthcare communication has the potential to improve healthcare outcomes and decrease health disparities in our communities.

Table 1. Communication strategies according to the CAUSE framework

Strategy	Proposed action
Create Confidence	<ul style="list-style-type: none">→ Message dissemination by trusted healthcare professionals of similar ethnic background→ Message is endorsed by public figure or community leader→ Disseminate messages in the preferred language of the recipient and their family→ Disclose professional affiliations
Generate Awareness	<ul style="list-style-type: none">→ Make messages easy to understand using simple terms accessible to those with low health literacy→ Disseminate messages using various social media platforms, posters, handouts→ Disseminate messages using TV and radio tailoring to patients that cannot read
Enhance Understanding	<ul style="list-style-type: none">→ Include scientific information with simple visuals and simple statistics→ Use eye catching infographics→ Include relatable stories with real life depictions→ Include messages targeting cultural practices (ie familismo)→ Clarify information patients may have already heard from other outlets or countries→ Dispel myths
Gain Satisfaction	<ul style="list-style-type: none">→ Hear patient's concerns and fears with an open mind→ Tell patients their specific risk of disease/hot obtaining vaccine
Motivate action Enactment	<ul style="list-style-type: none">→ Disseminate clear messages for how to obtain vaccines→ Provide resources for how to obtain further information→ Avoid medical jargon

"But what helped me too was that my kids had a doctor from the university and she is...latina, so she would tell me...vaccinate them, vaccinate yourself, you are at risk because of age, I have already vaccinated myself." (FG3)

"[I] like real-life pictures or definite proof that it happened... [I] believe the stories that are said a little bit more if there's like real-life proof." (FG2)

"reduce the amount text...there are some people [with] certain abilities...[who] cannot read...[or have] dyslexia." (FG3)

"In my country, someone who had great influence was Lopez Obrador, he said the virus was a great lie, that it didn't exist, we held on to that concept, because he knew more and we didn't investigate if it was true or not." (FG3)

"Answering all the questions like the what, why, when, where, and how. I think just answering all those in easy way so that everyone can understand is one of the best ways to like get everyone's attention..." (FG-2)

Future Directions

The effectiveness of health messages created using the CAUSE model could be studied as it relates to other health conditions such as diabetes, hypertension. Additionally, the effect of Latino/a/x culture on how messages are interpreted, accepted, and lead to behavioral change could be investigated

Acknowledgement

This project was funded through a COVID-19 Response Grant from the Wisconsin Partnership Program at the University of Wisconsin School of Medicine and Public Health. Dr. Mora Pinzon was supported during this study period by the University of Wisconsin Department of Family Medicine and Community Health Primary Care Research Fellowship, funded by grant T32HP10010 from the Health Resources and Services Administration.

Camille Gonzalez, MD

Projects Completed During Residency:

Community Health Learning Experience:

Volunteering at MEDiC, a Free Walk-In Clinic

Scholarly Project:

FPIN: Utility of FSH in Determining Menopausal Status in a Woman with a Levonorgestrel IUD:

A 2022 practice guideline regarding contraception during perimenopause was composed. The practice guideline recommends continuing contraception through the age of 55 at which 95% of women are menopausal. The authors note there is very little scientific evidence to inform guidance on when to discontinue hormonal contraception after the age of 50 and cite indirect evidence from one study of the etonogestrel implant and two studies of the LNG-IUS. The level of Follicle Stimulating Hormone (FSH) in women at 50 years of age and older using a levonorgestrel intrauterine system (LNG-IUS) for contraception can be used to guide management of the IUS (SOR: C, practice guidelines and expert opinion). When the FSH level is >30 IU/L, the levonorgestrel IUS can be discontinued after waiting 1 year (SOR: C, practice guidelines and expert opinion).



I would like to first thank my parents and sisters who I am so blessed to call my family. I would not have continued to have the drive and determination without their love and support. I am so thankful for my co residents that have been there during the fun and the hard times of residency. Furthermore, I could not have asked for a better mentor, she was always there to cheer me on and be a positive presence with all of her kindness and guidance.



Camille Gonzalez, MD is drawn to family medicine because of the trusting, caring relationships that she is able to build with her patients. Camille claims Oconomowoc, WI as her hometown. She earned her undergraduate degree in Nutritional Science from the University of Wisconsin – Madison and she earned her medical degree from Geisinger Commonwealth School of Medicine in Scranton, PA. While in medical school, Camille helped at a youth homeless shelter and helped translate information at the health fair so participants could more easily understand the information being shared. Camille volunteered with Alley-Oop for Autism; she created a tournament where community members could donate and participate in friendly games of basketball. Camille's medical interests include women's health, preventative healthcare and integrative medicine. She is passionate about helping her patients develop and maintain healthy diets and lifestyles for their long term health. She relaxes by spending time outdoors, traveling and cooking, and enjoys staying active playing soccer, running, cross country skiing, and cycling.

MEDiC

Camille Gonzalez, MD

Primary Community Member Contact: Tom Hahn, MD

Faculty Partner: Tom Hahn, MD

Situation: At MEDiC free clinics, which in my experience was specifically the Southside clinic, we were able to work amongst other healthcare workers in various fields and provide free healthcare to the underserved population in the Madison area while providing valuable education to the medical students through the UW system.

Background: The individuals engaged in this project include the UW Medical school students and some UW PA students in the UW system, along with volunteer attending physicians in the community and volunteer resident physicians like myself. The aims of the project are to help provide healthcare to those with several barriers to obtaining adequate management of their health concerns and/or chronic conditions. This free clinic aims to be a bridge and assist those who may otherwise not have any access to healthcare whether it be due to financial, language, transportation or other reasons. It also provides a very unique learning opportunity for medical students and PA students working alongside medical resident physicians and attendings in navigating the complexity of the social aspects of healthcare.

Assessment: After every MEDiC shift/day there is a summary that is provided to us reflecting on the patients we saw, what the visit was for, how many walkins we saw, how they were managed, how many people we referred to Access Clinic, how many prescriptions were sent, etc. It is a good reflection on all the hard work and time and coordination that takes place for these more socially complex patients that already have a huge barrier to adequate healthcare.

Recommendation/Reflections: I believe that appropriate next steps would be seeing if this clinic can be run more days or at more locations. The medical care that we provide is so beneficial to these patients and I always finish the day wishing I could see more patients or volunteer more often. I also find there are some limitations in the physical exam that can be performed specifically when it comes to women's health and I wish that this was not a barrier. Especially since oftentimes there are chief complaints that would benefit from being able to do a more thorough exam for women. I understand that there would be a lot of coordination and finding enough people to support running more locations but I know transportation is probably a huge barrier for most of these patients and I wonder if there is another location that would provide even more benefit to the community. I also think that there are so many more patients that would come to this clinic if they were aware of it. I think having good advertisements or more ways that the communities in need could know about this clinic then the more people that we would be able to reach. I think there are so many strengths to the MEDiC clinics. It's an amazing training opportunity for students and patients who are receiving healthcare that they may otherwise not have had at all. This experience certainly has impacted my envisionment of family medicine post residency. I am so incredibly thankful for all of the individuals that I did my best to set up for success. It helped me learn how to navigate medically and socially difficult situations. It has caused me to look for similarly run clinics in the area of my future practice so that I can continue to help serve all individuals in my community. I see the importance of this clinic on several levels and I know that I will always be grateful for the time I was

able to spend at the Southside clinic.

Alex Hanna, MD

Projects Completed During Residency:

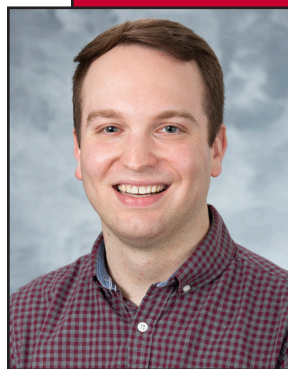
Scholarly Project:

“Eyes” from The Youth Athlete: A Practitioner’s Guide to Providing Comprehensive Sports Medicine Care

Community Health Learning Experience:

Verona Clinic Fitness and Lifestyle Challenge:

The Verona Clinic Fitness and Lifestyle Challenge engages patients with type 2 diabetes in a group medical visit model in pursuit of diet and exercise SMART goals over a 6 month period. Numerous community partners were recruited to help in this effort. Through their generosity, patients were given a 6 month free membership to the Princeton Club, discounts on produce and at a number of Madison area restaurants such as Forage Kitchen, and access to a Hy-Vee dietician. Perhaps most inspiring to see was the accountability and community that arises when patients come together in pursuit of a common goal together.



Alex Hanna, MD’s approach to medicine is through the lens of the story that connects us with one another and teaches us what it means to be human. Alex’s hometown is Muskego, WI, and he earned his undergraduate degree in Preprofessional Studies

and Theology from the University of Notre Dame. After college, he spent a year living and working in a school and parish in Wexford, Ireland, during which he learned more about the power of fostering and investing in relationships within a local community. Alex earned his medical degree from the Loyola University Chicago – Stritch School of Medicine. While in medical school, he participated in a global health service immersion trip in Corozal, Belize, where he worked with and learned from local physicians as well as community health workers in the surrounding villages. Alex also served as his campus’ Family Medicine Interest Group president and helped create shadowing and mentoring opportunities for students interested in family medicine. Alex’s interests also include sports medicine, integrative medicine, and community health and he strives to create lifelong partnerships with his patients. Alex relaxes by playing piano and guitar, singing, cooking, recreational biking, going on family vacations in Door County, and yelling at the TV during Packers games. He is also a self-proclaimed Disney trivia expert.



First, I would like to thank my parents Dennis and Jan without whom I could have never pursued this career. Second, thank you to the incredible faculty and mentors of this department who have helped to form me into the kind of Family Medicine physician that I am and will continue to become. Finally, thank you to my girlfriend-turned-fiancée, Babs, with whom I shared this journey over these past 3 years. Through both the joys and successes as well as the frustrations and challenges of residency, you have been there closest by my side.



The Youth Athlete

A Practitioner's Guide to Providing Comprehensive Sports
Medicine Care



Edited by
Brian J. Krabak and Alison Brooks



The Youth Athlete

A Practitioner's Guide to Providing Comprehensive Sports Medicine Care

Edited by

Brian J. Krabak

Rehabilitation, Orthopedics and Sports Medicine, University of Washington, Seattle, WA,
United States

Sports Medicine, Seattle Children's Hospital, Seattle, WA, United States

Alison Brooks

Department of Orthopedics & Rehabilitation, Division of Sports Medicine, School of Medicine &
Public Health, University of Wisconsin—Madison, Madison, WI, United States



ACADEMIC PRESS

An imprint of Elsevier

Academic Press is an imprint of Elsevier
125 London Wall, London EC2Y 5AS, United Kingdom
525 B Street, Suite 1650, San Diego, CA 92101, United States
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom

Copyright © 2023 Elsevier Inc. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: www.elsevier.com/permissions.

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

Notices

Knowledge and best practice in this field are constantly changing. As new research and experience broaden our understanding, changes in research methods, professional practices, or medical treatment may become necessary.

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds, or experiments described herein. In using such information or methods they should be mindful of their own safety and the safety of others, including parties for whom they have a professional responsibility.

To the fullest extent of the law, neither the Publisher nor the authors, contributors, or editors, assume any liability for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

ISBN: 978-0-323-99992-2

For information on all Academic Press publications visit our website at
<https://www.elsevier.com/books-and-journals>

Publisher: Stacy Masucci
Acquisitions Editor: Elizabeth A. Brown
Editorial Project Manager: Pat Gonzalez
Production Project Manager: Omer Mukthar
Cover Designer: Mark Rogers

Typeset by TNQ Technologies



Chapter 11

Eyes

Erin Hammer¹ and Alex Hanna²

¹Orthopedics and Rehabilitation, University of Wisconsin–Madison, Madison, WI, United States; ²Department of Family Medicine and Community Health, University of Wisconsin, Madison, WI, United States

Anatomy of the eyes

The structure and function of the eyes are complex. In addition to trauma to the eye itself, injuries to the structures of the orbital compartment or the bony orbit can also impact vision. The roof of the orbit is mainly formed by the frontal and sphenoid bones, while the floor is primarily formed by the maxilla, palatine, and zygomatic.¹ The maxilla of the orbital floor is thin and abuts the maxillary sinus inferiorly. The thin nature of the orbital floor has implications for its likelihood to sustain fracture with blunt trauma to the eye, which will be discussed in more detail in a later section. Medially, the ethmoid is the predominant bone, with contributions from the frontal, maxilla, lacrimal, and sphenoid bones. Akin to the orbital floor, the medial wall is thin and therefore more susceptible to fracture. Finally, the lateral wall is formed by the zygomatic and sphenoid bones and is the thickest of the orbital walls.

The orbital compartment contains the globe of the eye, four rectus and two oblique extraocular muscles, the optic nerve, the ophthalmic artery, and the superior and inferior orbital veins.² The retro-orbital fat occupies the remaining space of the posterior orbit, whereas the globe itself fills most of the anterior space.

The eye is composed of three layers: the external fibrous layer including the cornea and sclera, the middle vascular layer (also known as the uvea) containing the choroid, ciliary body, and iris, and the internal layer comprised of the retina (Fig. 11.1). The eye may also be anatomically demarcated by the lens into anterior and posterior compartments. The pupil and iris lie on the anterior aspect of the lens, and the anterior chamber is filled with aqueous humor. The posterior compartment of the eye contains the vitreous humor, retina, and optic nerve.

Vision development

Some features of vision including temporal resolution, stereoacuity, and accommodation approach adult levels in infancy or early childhood.³ Disparity sensitivity, the difference between the two eyes' images, is integral to depth perception and forming a 3D image in the mind, develops around three to 5 months of age and improves linearly over

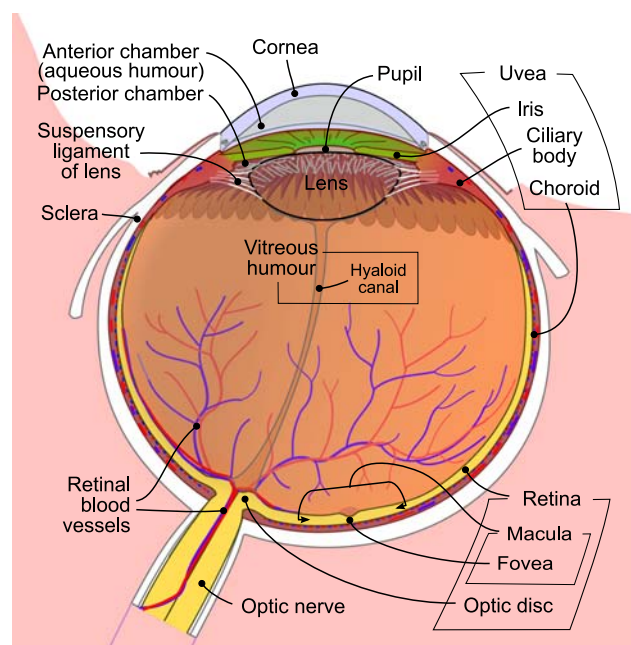


FIGURE 11.1 Cross-sectional anatomy of the eye including the external fibrous layer, middle vascular layer, and the internal layer. Rhcastilhos and Jmarchn, licensed under Creative Commons Attribution-Share Alike 3.0 Unported.

time.⁴ At the age of five or 6 years, disparity sensitivity is still about a factor of three poorer than in adults.^{5,6} Similarly, Vernier acuity, or the ability to discern alignment of two objects, continues to develop into early childhood and perhaps adolescence.⁷ In addition to the ongoing development of motor and behavioral skills, visual development has implications for expectations for sport readiness, especially in sports that rely on hand-eye coordination and accuracy.

Epidemiology and risk factors

As of 2014, there were over 23,000 pediatric sport-related ocular injuries evaluated in emergency departments in the United States per year, an estimate which appeared to have increased by 12.8% from the previous decade.⁸ One study found that over 90% of sport-related eye injuries were preventable.⁹ The U.S. emergency department data from 1990 through 2012 averages 26.9 sports and recreation-related eye injuries per 100,000 children, with children from ages 10 to 14 and 15 to 17 accounting for the highest rates of injury.¹⁰ Over two-thirds of ocular sport-related injuries occur in male athletes.^{10,11}

Incidence of ocular injury varies by age and geographic location, relative to sport participation. For example in the United States, basketball, baseball, and softball account for the most sport-related ocular injuries in pediatric athletes.¹⁰ However, in South Korea, soccer and badminton were the most common sports to be associated with ocular injury and injuries resulting in impaired vision.¹² A joint consensus statement between the American Academy of Pediatrics (AAP) and the American Academy of Ophthalmology (AAO) last updated in 2004 classified sports into low, moderate, and high risk for eye injury in the unprotected athlete.¹³ Low-risk sports do not involve a ball, puck, or handheld equipment. Such sports include swimming, bicycling, and track and field. Moderate-risk sports include the use of a ball, puck, or handheld item such as a bat or racquet and/or body contact between athletes. Many sports fall into this category, including tennis, football, soccer, golf, and badminton. Finally, high-risk sports involve small, fast projectiles (air rifle, paintball), hard projectiles, sticks, and close contact (basketball, baseball/softball, ice hockey, squash, and lacrosse), or those with intentional injury as a feature (boxing, mixed martial arts).

Injuries and illnesses of the eyes

Sideline assessment of an athlete who has sustained an eye injury requires consideration as to the mechanism of the injury, as well as an efficient, focused history and physical exam. There are a number of questions that might help to

determine the urgency of the eye injury and the next steps. Is the injury due to blunt or penetrating trauma? What size object made contact with the athlete, and from what direction did the force come? Is there a grossly obvious deformity that requires immediate ophthalmologic intervention? Is the athlete experiencing any vision loss, diplopia, or headache? Does the athlete wear glasses or contact lenses? Are they wearing their contact lenses? Is the athlete experiencing photophobia or pain when moving their eyes?

Subconjunctival hemorrhage

A subconjunctival hemorrhage refers to pooling of blood between the sclera and the conjunctiva, resulting in visible bright red blood superficial to the anterior sclera (Fig. 11.2). While they are often benign and painless if due to an isolated injury,¹⁴ subconjunctival hemorrhages can be disconcerting in appearance. Subconjunctival hemorrhages can occur with minimal trauma to the eye and can be associated with increased intraocular pressure from coughing, sneezing, vomiting, or straining.¹⁵ Though less common in an athletic pediatric population, hypertension is also associated with subconjunctival hemorrhage.¹⁶ However, trauma accounts for the majority of cases in a pediatric and athletic population.^{15,17} In cases of trauma, especially if 270 degrees or more of the sclera is involved, careful assessment is paramount to evaluate for blowout fracture or globe rupture.^{15,18,19} Most subconjunctival hemorrhages appear flat and focal, though an elevated-appearing bullous hemorrhage can appear if the underlying sclera is lacerated or ruptured.

If an athlete is noted to have a subconjunctival hemorrhage, a thorough assessment is required to rule out more serious injuries such as globe rupture, discussed separately. If there is suspicion of more serious injury, an eye shield should be placed over the affected eye, ensuring that no external pressure or eye drops are applied. If the subconjunctival hemorrhage is determined to be due to an isolated injury, the athlete can be reassured that the subconjunctival hemorrhage will self-resolve without treatment over 2–3 weeks.¹⁴



FIGURE 11.2 Subconjunctival hemorrhage. Suzanne W. van Landingham, MD Assistant Professor of Oculoplastics, Orbital, and Facial Cosmetic Surgery University of Wisconsin-Madison.

Conjunctival laceration

Laceration of the conjunctiva or sclera is more likely to occur in the setting of penetrating trauma rather than the blunt trauma that is most often associated with sports injuries.¹⁴ Due to the defect created in the conjunctiva, an associated subconjunctival hemorrhage will typically be noticed on the exam. Unlike subconjunctival hemorrhage, conjunctival lacerations are painful and often induce blepharospasm. A thorough evaluation for a possible underlying globe rupture or foreign body is required. Regardless of clinical suspicion of more severe injury, the athlete should undergo dilated fundus exam under topical or general anesthesia.¹⁹ The laceration should be explored to ensure that the sclera itself is intact and that there is no evidence of prolapse of the uvea. If present, the exam should be stopped and treatment for a ruptured globe initiated.

Same-day urgent consultation is warranted with an uncomplicated conjunctival laceration measuring >1 cm in length, as this will require surgical repair.²⁰ If smaller than 1 cm, superficial, and not associated with any underlying injury, the patient can be treated with prophylactic topical antibiotics.

Corneal abrasion

Corneal abrasions are injuries to the superficial corneal epithelium that most commonly occur due to mechanical trauma, such as a finger to the eye, poor contact lens hygiene, or other foreign bodies.²¹ These are common injuries in all pediatric age groups, accounting for a quarter of sport-related eye injuries treated in U.S. emergency departments.¹⁰ These injuries often occur during participation in basketball, softball, and baseball.^{10,17} Athletes who sustain a corneal abrasion endorse eye pain, foreign body sensation photophobia, and may present with blepharospasm.¹⁹ The cornea is generously innervated by fibers of the V1 branch of the trigeminal nerve, accounting for blepharospasm.

Initial examination of an athlete with a suspected corneal abrasion should include an assessment for penetrating eye injury or hyphema. After completing a full exam including visual acuity and pupillary response, a fluorescein exam should be performed.¹⁹ A drop of saline eye drops or anesthetic is applied directly into the eye. Then the patient's lower lid is pulled inferiorly, and the fluorescein strip lightly touched to the bulbar conjunctiva. The fluorescein will spread over the cornea when the patient blinks a few times. The abrasion will fluoresce due to staining of the exposed basement membrane under Woods lamp or cobalt blue light (Fig. 11.3). The final step in evaluation is the eversion of the upper eyelid to look for a foreign body and removed if present.²¹



FIGURE 11.3 Corneal abrasion. James Heilman, MD, licensed under Creative Commons Attribution-Share Alike 3.0 Unported.

Nonsteroidal antiinflammatory drops like diclofenac 0.1% or ketorolac 0.4% may be prescribed for symptom management,²² but patients should never be prescribed anesthetic drops as they delay epithelial healing and might mask the progression of a corneal abrasion to ulcer or keratitis.¹⁹ Topical antibiotics are typically prescribed as prophylaxis against superinfection. If the patient wears contacts or if the abrasion was water sport-associated, *Pseudomonas* coverage with aminoglycoside or fluoroquinolone agent should be used until 24 h after the eye is asymptomatic.²¹ Antiinfective prophylaxis is essential as superinfection leading to keratitis can result in permanent corneal scarring and vision loss. Corneal abrasions typically heal quickly owing to the rapid re-epithelialization of the corneal surface. The athlete should be reexamined in one to 2 days and referred to ophthalmology for further evaluation if they continue to have symptoms beyond 3 days.¹⁴

Foreign body

Foreign bodies in athletes are often incidental and not related to sport-related blunt force trauma.²³ Symptoms are similar to that of corneal abrasion with pain, photophobia, tearing, and blepharospasm.¹⁹ If there is a history of penetrating trauma, a shield should be placed over the eye and the patient should be urgently referred to ophthalmology.¹⁴ In the case of incidental foreign body, such as dust in the eye on a windy day, a thorough exam should be performed to find and remove the object. The foreign body might be hidden under the upper eyelid, so examination should include an eversion of the upper lid.²⁴ A sterile cotton-tipped can be used to gently swipe away a foreign body on the eye or eyelid. Foreign bodies can cause corneal abrasions, so if

there is persistent pain after the foreign body has been removed, a fluorescein exam should be performed.

Lens subluxation

Lens subluxation or dislocation is a rare ocular injury in the pediatric population overall.²⁵ These injuries occur with blunt trauma to the eye, which disrupt the zonules which tether the lens to the ciliary body.²⁶ Athletes with preexisting weakness of the zonules, such as those with Marfan's syndrome, may have greater propensity to dislocate the lens (Fig. 11.4).¹⁹ There are few reports of lens subluxation or dislocation in the sports epidemiology literature outside of boxing. A case series performed on 1032 Italian boxers reported lens dislocation in 7.3% of examined athletes.²⁷ A retrospective chart review of ocular trauma secondary to injuries due to exercise bands found that nearly a quarter required treatment for lens dislocation.²⁸ Athletes with lens subluxation or dislocation will have decreased visual acuity and might even report vision loss or diplopia of the affected eye.²⁶ Urgent ophthalmologic evaluation is required in cases of visual acuity changes or where lens dislocation is suspected.

Retinal detachment

Blunt trauma to the eye reliably prompts evaluation of the structures in the anterior compartment. Ocular contusions also threaten the retina and optic nerve in the posterior compartment due to indirect injury by transmitted force.²⁹ There are no comprehensive epidemiologic studies describing the prevalence of sport-related retinal detachment in a pediatric population. There is a case series of retinal detachment associated with basketball-related eye trauma with a mean subject age of 18 years.²⁹ Similarly, there is a case series of soccer ball-related ocular injuries from a single institution in Israel of which one of 14 subjects presented with retinal detachment.³⁰ Retinal tears and

detachments are also observed in boxers.²⁶ Outside of trauma, retinal detachment is typically a painless event with multiple potential causes.¹⁹ Regardless of the cause, acute painless vision loss should raise suspicion for a retinal detachment. The patient may initially describe floaters, bright flashes, or black dots in the visual field. They may also describe an entire portion of their visual field being blacked out. When examining an athlete on the sideline with an isolated retinal detachment, the eye exam may be grossly normal. If suspicion is high for a retinal detachment based on report of these symptoms the patient must be evaluated by an ophthalmologist urgently.¹⁹ Retinal tears can occur days or weeks after the initial trauma, so symptoms of vision loss or flashes should prompt evaluation even if the trauma was remote.³¹

Traumatic iritis

Iritis, or anterior uveitis, refers to inflammation of the anterior uveal tract.¹⁹ Iritis accounted for 1.7% of emergency department sport-related pediatric ocular injury.¹⁰ Of those, 41% were due to injuries from baseball or softball. A case series of ocular injuries in the National Basketball Association (NBA) demonstrated that traumatic iritis accounted for 11.9% of injuries.¹⁷ Athletes with iritis present similarly to those with a corneal abrasion, though they do not always endorse a foreign body sensation. Typical symptoms include pain, photophobia, and blurred vision.¹⁹ Conjunctival injection with ciliary spasm and resultant ciliary flush and miosis indicates iritis.^{14,21} Ciliary spasm also induces photophobia in both the affected and unaffected eye. Patients who have an injury consistent with traumatic iritis should be formally assessed by an ophthalmologist who will often manage symptoms with topical corticosteroid or cycloplegic drops.¹⁴

Traumatic hyphema

Blunt trauma to the eye resulting in accumulation of blood in the anterior chamber is known as a hyphema. Blood settles in the gravity-dependent area of the anterior chamber, so the appearance will differ depending on patient positioning.²⁶ Hyphema accounted for 3.7% of pediatric sport-related ocular injuries presenting to the emergency department, but 16.8% of injuries resulting in hospitalization, so they represent more severe injury.¹⁰ Common symptoms include blurred vision, pain, and light sensitivity.¹⁹ Rapid recognition and referral for ophthalmologic evaluation is vital as permanent vision loss can result from sustained increased intraocular pressure and corneal blood staining.^{14,19,32} Rebleeding of the hyphema is possible days after the initial injury, and this event carries a worse prognosis than the initial bleed, so should also prompt



FIGURE 11.4 Dislocated lens. Clare Gilbert. International Centre for Eye Health www.iceh.org.uk, London School of Hygiene & Tropical Medicine, licensed under Creative Commons Attribution-Share Alike 3.0 Unported.

urgent ophthalmologic evaluation.^{26,33,34} Rebleeding is also more common among athletes with sickle cell disease or other hemoglobinopathies, and these patients also seem to be more susceptible to develop higher intraocular pressures due to hyphema.²⁶ Hyphema can also be a sign of globe rupture, so if transporting the patient for further evaluation, an eye shield should be applied.

Globe rupture

Globe rupture, or open globe injuries, results from a full-thickness defect of the cornea or sclera, exposing the intraocular structures to the external environment.¹⁹ Any blunt trauma to the eye should prompt an evaluation for an open globe injury.³³ About half of golf-related ocular injuries resulted in globe rupture,³⁵ and children are often affected.³⁶ Globe ruptures, especially those with a corneal wound length of >6 mm or scleral wound involvement, are at high risk for severe visual impairment,³⁷ so rapid identification of these injuries is crucial. Signs of an open globe rupture that can be identified by basic exam include pupillary distortion, or “teardrop” pupil, decreased visual acuity, relative afferent pupillary defect, and extrusion of vitreous humor.¹⁹ Similarly, if a subconjunctival hemorrhage accounting for more than 270 degrees of the sclera is present, there should be a high index of suspicion for globe rupture. If globe rupture is suspected, a protective shield should be applied to the eye leaving any foreign bodies undisturbed, ensuring that no pressure is exerted on the globe.^{14,19} Any increased pressure could cause extrusion of intraocular contents or contaminate the wound and increase the risk of infection. Globe rupture requires emergent ophthalmologic evaluation and surgical intervention.¹⁹

Orbital fracture

The bony orbit is especially susceptible to fracture at its thinnest and weakest points. This includes the floor of the orbit, made up of the maxilla, and the medial wall, made up primarily of the ethmoid. As such, orbital fractures were the most common operative pediatric sport-related facial fractures in one retrospective review at a single U.S. institution.³⁸ Orbital fractures occur with force directly to the orbital rim or via compression of the soft tissues of the orbit indirectly pushing the walls of the orbit out.¹⁴ Orbital fractures in the sport setting usually are due to blunt trauma from a ball, commonly baseball.^{38,39} Just over 5% of eye injuries in a case series from the NBA were orbital fractures, all of the medial wall, and due to contact with an opponent’s elbow or hand.¹⁷ There is also a case series of surfboard-related eye injuries, of which four of 10 sustained an orbital fracture.⁴⁰ Orbital fractures commonly affect the orbital floor and may result in entrapment of the soft tissues

such as the extraocular muscles between the fracture fragments. This injury may not be accompanied by other signs of soft tissue injury such as red eye, particularly in children.¹⁹ Symptoms related to extraocular muscle entrapment include restriction of upward gaze and diplopia (Fig. 11.5).⁴¹ The infraorbital nerve can be injured if the maxillary bone is fractured and impinges the nerve as it exits the infraorbital foramen.¹⁴ Trauma significant enough to cause an orbital fracture may also cause globe rupture, hyphema, or an intracranial bleed.¹⁴ Athletes who are suspected of having an orbital blowout fracture should be transported to a tertiary care facility to allow for appropriate evaluation including a CT scan of the head and orbits.¹⁹

Conjunctivitis

Conjunctivitis, or inflammation of the conjunctiva, is the most common eye disease worldwide,¹⁹ and accounts for 10% of pediatric sport-related eye injuries treated in U.S. emergency departments.¹⁰ Among the 659 Italian athletes that made up the 2012 Olympic delegation, the prevalence of conjunctivitis over the 6 months leading up to the Olympic Games was 20%.⁴²

Infectious conjunctivitis may be viral or bacterial in nature but is often challenging to discern. Viral conjunctivitis is often characterized by profuse tearing, minimal exudate, and preauricular lymphadenopathy.¹⁹ This is in contrast to bacterial conjunctivitis which can be differentiated by profuse exudate and rare preauricular



FIGURE 11.5 Extraocular muscle entrapment. Suzanne W. van Landingham, MD Assistant Professor of Oculoplastics, Orbital, and Facial Cosmetic Surgery University of Wisconsin-Madison.

lymphadenopathy. Clinical cases are more ambiguous than indicated by this traditional characterization of clinical findings. A metaanalysis of 27 studies found that pediatric cases of conjunctivitis are more likely to be due to bacteria than in adults.⁴³ The clinical findings that best distinguished a viral etiology in that study were preauricular lymphadenopathy [likelihood ratio (LR) 2.5–5.6] and pharyngitis (LR 5.4–9.9). Eyelids stuck together on awakening [LR 2.1 (95% CI 1.7–2.6)] was associated with bacterial conjunctivitis. Another study found that specifying both eyelids matted shut had an odds of 7.78 (95% CI 3.39–17.87) of being associated with bacterial conjunctivitis.⁴⁴ Bacterial conjunctivitis can be treated with broad-spectrum polymyxin B/trimethoprim ophthalmic drops.⁴⁵ There are no rules regarding return to sport with bacterial conjunctivitis in National Collegiate Athletics Association (NCAA) athletes, but high school athletes should wait 24 h after the initiation of treatment to return to sport per National Federation of High School (NFHS) Association guidelines.

Noninfectious conjunctivitis occurs in the sport setting due to exposure to chlorinate pool water, soil, or other substances in the environment.^{10,46} Water polo athletes are at particular risk of chemical conjunctivitis related to chlorine exposure as they are not allowed to wear goggles due to the risk of ocular injury.⁴⁷

HSV conjunctivitis

Herpes simplex virus (HSV) conjunctivitis is most likely to occur during primary HSV infection.⁴⁸ Oral HSV-1 infections can reactivate from the trigeminal V1 branch sensory ganglion, affecting the ocular mucosa.⁴⁹ Additionally, any herpes infection in the V1 distribution should increase suspicion of ocular involvement. HSV conjunctivitis can lead to herpes simplex keratitis, characterized by corneal lesions called dendritic ulcers which can lead to scarring and permanent clouding of the cornea.^{19,45} Common symptoms include eye pain, light sensitivity, discharge, and foreign body sensation.⁴⁹ Because vision loss is a risk associated with HSV conjunctivitis and keratitis,⁴⁸ prompt evaluation and treatment are crucial.

Herpes gladiatorum refers to outbreaks of cutaneous HSV infection acquired during participation in contact sports, particularly wrestling. The majority of herpes gladiatorum cases are due to HSV-1 infection.^{19,48,50,51} In one outbreak of herpes gladiatorum at a high school wrestling camp, 8.3% of athletes developed HSV conjunctivitis.^{48,50} If herpes conjunctivitis is suspected, examination with a slit lamp should occur to evaluate for dendritic ulcers (Fig. 11.6). Oral or topical antivirals should be initiated to prevent or treat corneal involvement.¹⁹

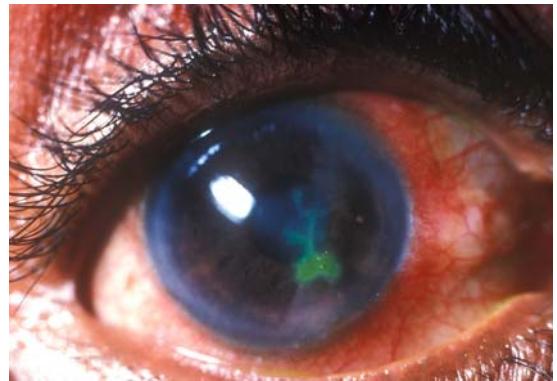


FIGURE 11.6 Dendritic ulcer. International Centre for Eye Health www.iceh.org.uk, London School of Hygiene & Tropical Medicine, licensed under Creative Commons Attribution-Share Alike 3.0 Unported.

Prevention of ocular injury in sport

Most sport-related eye injuries are preventable.⁹ A thorough preparticipation history and exam can identify risk factors for future eye injury. Any personal history of eye illness, including impairments in visual acuity, should be elicited, as should any remarkable family history such as retinal detachment, which might trigger an evaluation for Marfan's syndrome.¹⁹ Physical examination should consist of an assessment of visual acuity, visual fields, extraocular movements, pupillary response, and fundoscopy. If the athlete is planning on participating in a high-risk sport,¹³ the screening provider should consider formal ophthalmology consultation if any significant history or exam findings are noted during the preparticipation assessment.

Additionally important in prevention of such injuries is the use of appropriate eye protection. When properly fitted, such devices have been found to reduce the risk of significant eye injury by 90%.¹³ Polycarbonate lenses at least 3 mm thick are recommended for high-risk sports. They are not only thin and light, but quite impact-resistant. For comparison, normal eyeglasses offer just 4%–5% of the impact resistance that polycarbonate does.³³ Head protection does not preclude an athlete from also needing eye protection. For example, a football helmet with a faceguard does not prevent blunt eye injury from another athlete's finger. In general, protective eyewear should never be without lenses and should shift the impact of a blunt force from the eyes and face to the skull in a way that does not risk intracranial injury. Both the AAP and AAO have published a joint policy statement emphasizing this guidance, and that all sports eyewear conform to the standards of the American Society for Testing and Materials Standard F803.¹³

There is evidence that eye protection is effective in real-world sporting scenarios. Visor use in the National Hockey

League has increased from 32% in 2002–03 to 73% in 2012–13.⁵² In that study, the odds of incurring an eye or orbital injury was 4.23 higher (95% CI 2.84–6.30) in players not wearing a visor compared to players who did. Visors only cover half the face, so there is still potential for catastrophic injury to the eye.⁵³ In most youth leagues and in the NCAA, ice hockey players are required to wear a full shield or cage, which provides more complete protection from errant pucks or sticks. Similarly, there is evidence that protective eyewear in field hockey players is associated with lower risk of injury. A study comparing ocular injury rates between states that mandated protective eyewear in high school field hockey players and those that did not found that players in nonmandated protective eyewear states had 3.2-fold higher risk of eye injury than athletes who were mandated to wear protective eyewear (95% CI 1.7–6.99).⁵⁴ Protective eyewear has also been shown to effectively reduce ocular injuries in girls' lacrosse.⁵⁵ A cohort study compared eye injury rates before and after protective eyewear was mandated in public high schools. The rate of ocular injuries decreased by 84% after the mandate was enacted (IRR 0.16, 95% CI 0.06–0.42). Interestingly, the rate of other head and face injuries, excluding concussion, also decreased (IRR 0.44, 95% CI 0.26–0.76).

Eye protection is strongly recommended for those considered a functionally one-eyed athlete. The AAP and AAO advise that these athletes wear eye protection no matter the sport.¹³ Functionally one-eyed athletes have a corrected visual acuity of less than 20/40 in one eye. They are thus at risk of becoming legally or permanently blind if they were to sustain a traumatic eye injury to the functionally normal eye in competition. Ophthalmologic consultation could be considered to ensure the most appropriate guidance to prevent potentially devastating life-long outcomes.

Considerations for sideline medical bag contents

- Visual acuity chart
- Saline drops
- Fluorescein stain strips
- Cobalt blue light (this can be created ad-hoc by applying tape colored with blue and purple permanent marker over the light of a standard cell phone)
- Contact case and contact solution
- Eye shield
- Pen light

Summary

Eye injuries due to blunt trauma are commonly associated with ball sports and contact sports. Ocular injuries and illnesses must be promptly evaluated and referred if appropriate given the potentially devastating outcomes if improperly treated. There are effective preventative measures that can mitigate some risks associated with sport participation such as wearing appropriate eyewear or other protective devices.

Key points

- Blunt trauma to the face can injure the visible portion of the eye, the posterior compartment indirectly, or the orbital bones.
- If a globe rupture or other severe ocular injury is suspected, no pressure should be applied to the eye. Instead, an eye shield should be applied while awaiting ophthalmologic evaluation.
- Eye injuries of varying severity can occur concomitantly so, a thorough exam including visual acuity, extraocular motion, and evaluation for more severe injuries should occur with every blunt trauma to the eye.
- Appropriate eyewear and other protective devices can prevent the majority of sport-related ocular injuries.

References

1. Forrester JV, Dick AD, McMenamin PG, Roberts F, Pearlman E. In: Forrester JV, ed. *The Eye: Basic Sciences in Practice*. 5th ed. Elsevier; 2021:576.
2. Levin LA, Nilsson SFE, Ver Hoeve J, Wu S, Kaugman PL, Alm A. In: Levin L, ed. *Adler's Physiology of the Eye*. 11th ed. Saunders; 2011:808.
3. Lambert SR, Lyons CJ. *Taylor and Hoyt's Pediatric Ophthalmology and Strabismus*. 5th ed. Elsevier; 2016:1060.
4. Birch EE, Salomão S. Infant random dot stereoacuity cards. *J Pediatr Ophthalmol Strabismus*. March 1998;35(2):86–90. Available from: <https://journals.healio.com/doi/10.3928/0191-3913-19980301-06>.
5. Simons K. Stereoacuity norms in young children. *Arch Ophthalmol*. March 1, 1981;99(3):439–445. Available from: <http://archophth.jamanetwork.com/article.aspx?articleid=633726>.
6. Ciner EB, Schanel-klitsch E, Scheiman M. Stereoacuity development in young children. *Optom Vis Sci*. July 1991;68(7):533–536. Available from: <http://journals.lww.com/00006324-199107000-00004>.
7. Carkeet A, Levi DM, Manny RE. Development of vernier acuity in childhood. *Optom Vis Sci*. September 1997;74(9):741–750. Available from: <http://journals.lww.com/00006324-199709000-00022>.
8. Matsa E, Shi J, Wheeler KK, McCarthy T, McGregor ML, Leonard JC. Trends in us emergency department visits for pediatric acute ocular injury. *JAMA Ophthalmol*. 2018;136(8):895–903.

9. Goldstein MH, Wee D. Sports injuries: an ounce of prevention and a pound of cure. *Eye Contact Lens*. 2011;37(3):160–163.
10. Miller KN, Collins CL, Chounthirath T, Smith GA. Pediatric sports- and recreation-related eye injuries treated in US emergency departments. *Pediatrics*. 2018;141(2).
11. Haring RS, Sheffield ID, Canner JK, Schneider EB. Epidemiology of sports-related eye injuries in the United States. *JAMA Ophthalmol*. 2016;134(12):1382–1390.
12. Lee DE, Ryoo HW, Moon S, Ahn JY, Kim JH, Kim JY. Epidemiology and risk factors for sports- and recreation-related eye injury: a multicenter prospective observational study. *Int J Ophthalmol*. 2021;14(1):133–140.
13. Protective eyewear for young athletes. *Ophthalmology*. March 17, 2004;111(3):600–603. Available from: <http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=15019343&retmode=ref&cmd=prlinks>.
14. Aemi GA. Blunt visual trauma. *Clin Sports Med*. April 26, 2013;32(2):289–301. Available from: <http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=23522510&retmode=ref&cmd=prlinks>.
15. Parikh AO, Christian CW, Forbes BJ, Binenbaum G. Prevalence and causes of subconjunctival hemorrhage in children. *Pediatr Emerg Care*. 2022. Publish Ah(00):1–5.
16. Pitts JF, Jardine AG, Murray SB, Barker NH. Spontaneous subconjunctival haemorrhage—a sign of hypertension? *Br J Ophthalmol*. May 1, 1992;76(5):297–299. Available from: <https://bjo.bmj.com/lookup/doi/10.1136/bjo.76.5.297>.
17. Zigelbaum BM. The national basketball association eye injury study. *Arch Ophthalmol*. June 1, 1995;113(6):749. Available from: <http://archophth.jamanetwork.com/article.aspx?doi=10.1001/archophth.1995.01100060075035>.
18. Chow J, Parthasarathi K, Mehanna P, Whist E. Primary assessment of the patient with orbital fractures should include pupillary response and visual acuity changes to detect occult major ocular injuries. *J Oral Maxillofac Surg*. 2018;76(11):2370–2375. Available from: <http://doi.org/10.1016/j.joms.2018.04.024>.
19. Riordan-Eva P, Augsburger J. *Vaughan & Asbury's General Ophthalmology*. 19th ed. McGraw Hill; 2017:528.
20. Kreher JB, Schwartz JB. Overtraining syndrome. *Sport Health*. March 2012;4(2):128–138. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/2097018>.
21. Wipperman JL, Dorsch JN. Evaluation and management of corneal abrasions. *Am Fam Physician*. January 15, 2013;87(2):114–120. Available from: <http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=23317075&retmode=ref&cmd=prlinks>.
22. Weaver CS, Terrell KM. Update: do ophthalmic nonsteroidal anti-inflammatory drugs reduce the pain associated with simple corneal abrasion without delaying healing? *Ann Emerg Med*. 2003;41(1):134–140.
23. D'Ath PJ, Thomson WD, Wilson CM. Seeing you through London 2012: eye care at the Olympics. *Br J Sports Med*. May 13, 2013;47(7):463–466. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23833043>.
24. Mayeaux Jr EJ. *The Essential Guide to Primary Care Procedures*. 2nd ed. LWW; 2015:1052.
25. Puodziuviene E, Jokubauskiene G, Vieversyte M, Asselineau K. A five-year retrospective study of the epidemiological characteristics and visual outcomes of pediatric ocular trauma. *BMC Ophthalmol*. 2018;18(1):1–9.
26. Corrales G, Curreri A. Eye trauma in boxing. *Clin Sports Med*. October 13, 2009;28(4):591–607. Available from: <http://doi.org/10.1016/j.csm.2009.07.004>.
27. Bianco M, Vaiano AS, Colella F, et al. Ocular complications of boxing. *Br J Sports Med*. 2005;39(2):70–73.
28. Ng CC, Carrera W, Peng MY, et al. Ocular injuries associated with elastic exercise bands. *Retin Cases Brief Rep*. 2020 (Publish Ah).
29. Lee TH, Chen YH, Kuo HK, et al. Retinal detachment associated with basketball-related eye trauma. *Am J Ophthalmol*. 2017;180:97–101. Available from: <https://doi.org/10.1016/j.ajo.2017.05.025>.
30. Leshno A, Alhalel A, Fogel-Levin M, Zloto O, Moisseiev J, Vidne-Hay O. Pediatric retinal damage due to soccer-ball-related injury: results from the last decade. *Eur J Ophthalmol*. 2021;31(1):240–244.
31. Coffee RE, Westfall AC, Davis GH, Mieler WF, Holz ER. Symptomatic posterior vitreous detachment and the incidence of delayed retinal breaks: case series and meta-analysis. *Am J Ophthalmol*. 2007;144(3):409–414.
32. Ashaye AO. Traumatic Hyphaema: a report of 472 consecutive cases. *BMC Ophthalmol*. 2008;8:1–7.
33. Rodriguez JO, Lavina AM, Agarwal A. Prevention and treatment of common eye injuries in sports. *Am Fam Physician*. April 1, 2003;67(7):1481–1488. Available from: <http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=12722848&retmode=ref&cmd=prlinks>.
34. Simanjuntak GWS, Farinthska G, M Simanjuntak GAM, Artini W, Natali R. Risk factors for poor visual outcome in traumatic hyphema: Jakarta eye trauma study. *Niger J Clin Pract*. 2018;21(7):921–924.
35. Crane ES, Kolomeyer AM, Kim E, Chu DS. Comprehensive review of golf-related ocular injuries. *Retina*. 2016;36(7):1237–1243.
36. Jenkins E, Hawkes R, Murray A. A scoping review of the associations of golf with eye injuries in adults and children. *J Sports Med*. 2016;2016(i):1–6.
37. Cohen N, Cohen E, Anafy A, et al. Predictors of traumatic eye injuries at high-risk for ophthalmic complications in children. *Eur J Pediatr*. 2021;180(1):177–185.
38. Cepeda A, Konty LA, Moffitt JK, et al. Study of pediatric operative recreational trauma: a retrospective analysis of pediatric sports-related facial fractures. *J Craniofac Surg*. 2021;32(4):1611–1614.
39. Romeo SJ, Hawley CJ, Romeo MW, Romeo JP, Honsik KA. Sidelene management of facial injuries. *Curr Sports Med Rep*. June 23, 2007;6(3):155–161. Available from: <http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=19202661&retmode=ref&cmd=prlinks>.
40. Howden J, Danks J, McCluskey P, Gillett M, Ghabrial R. Surfboard-related eye injuries in New South Wales: a 1-year prospective study. *Med J Aust*. 2014;201(9):532–534.
41. Balaraman K, Patnaik JSS, Ramani V, et al. Management of white-eyed blowout fracture in the pediatric population. *J Maxillofac Oral Surg*. 2021;20(1):37–41. Available from: <http://doi.org/10.1007/s12663-020-01393-0>.

42. Bonini M, Gramiccioni C, Fioretti D, et al. Asthma, allergy and the Olympics: a 12-year survey in elite athletes. *Curr Opin Allergy Clin Immunol*. 2015;15(2):184–192.
43. Johnson D, Liu D, Simel D. Does this patient with acute infectious conjunctivitis have a bacterial infection? The rational clinical examination systematic review. *JAMA, J Am Med Assoc*. 2022;327(22):2231–2237.
44. Van Weert HCPM, Tellegen E, Ter Riet G. A new diagnostic index for bacterial conjunctivitis in primary care. A re-derivation study. *Eur J Gen Pract*. 2014;20(3):202–208.
45. Peterson AR, Nash E, Anderson BJ. Infectious disease in contact sports. *Sport Health*. 2019;11(1):47–58.
46. Kwok AKH, Tong JMK, Tang BSF, Poon RWS, Li WWT, Yuen KY. Outbreak of microsporidial keratoconjunctivitis with rugby sport due to soil exposure. *Eye*. 2013;27(6):747–754.
47. Stromberg JD. Care of water polo players. *Curr Sports Med Rep*. 2017;16(5):363–369.
48. Holland EJ, Mahanti RL, Belongia EA, et al. Ocular involvement in an outbreak of herpes gladiatorum. *Am J Ophthalmol*. December 1992;114(6):680–684. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S0002939414740449>.
49. Usatine RP, Tinitigan R. Nongenital herpes simplex virus. *Am Fam Physician*. November 1, 2010;82(9):1075–1082.
50. Belongia EA, Goodman JL, Holland EJ, et al. An outbreak of herpes gladiatorum at a high-school wrestling camp. *N Engl J Med*. September 26, 1991;325(13):906–910. Available from: <http://www.nejm.org/doi/abs/10.1056/NEJM199109263251302>.
51. Anderson BJ. The epidemiology and clinical analysis of several outbreaks of herpes gladiatorum. *Med Sci Sports Exerc*. 2003;35(11):1809–1814.
52. Micieli JA, Zurakowski D, Ahmed IIK. Impact of visors on eye and orbital injuries in the National Hockey League. *Can J Ophthalmol*. June 28, 2014;49(3):243–248. Available from: <http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=24862769&retmode=ref&cmd=prlinks>.
53. Morris DS. Ocular blunt trauma: loss of sight from an ice hockey injury. *BMJ Case Rep*. 2009;1–2.
54. Kriz PK, David Zurakowski R, Almquist JL, et al. Eye protection and risk of eye injuries in high school field hockey. *Pediatrics*. 2015;136(3):521–527.
55. Lincoln AE, Caswell SV, Almquist JL, et al. Effectiveness of the women's lacrosse protective eyewear mandate in the reduction of eye injuries. *Am J Sports Med*. 2012;40(3):611–614.

Rachel Her, MD

Projects Completed During Residency:

Community Health Learning Experience and Scholarly Project:

Year 1 Data and Reflections after
Implementation of a URiM Pathway: Enhancing
Representation to Improve Our Community's Health
(EnRICH):

Enhancing Representation to Improve our
Community's Health (EnRICH) at the University
of Wisconsin offers mentorship combined with
clinical and community experiences for medical
students interested in Family Medicine who identify as
underrepresented in medicine (URiM). Specific aims
include to increase (1) participant sense of belonging
in medicine and congruency of self- identity with
medicine, family medicine, (2) graduation rates and
Family Medicine match rates of URiM students, and
(3) work satisfaction for mentor participants. After
1 year EnRICH has started to see positive impacts.
Students reported increased congruence between
“self” and “medical student” and improved peer
group interactions.



*Thank you to my incredibly supportive network of people, on
whose shoulders I stand to uplift others. My parents, grandparents,
and siblings served as my cornerstone, an ocean of unwavering
support to get me through the ups and downs. The relationships
with the residency faculty, teachers, patients, and community
were invaluable in my learning, especially my dear Northport
crew. And my incredible cohort of co-residents throughout these
past three years and beyond; I will always treasure the joy, tears,
laughter, and memories together.*



Rachel Her, MD calls both
Madison, WI and SeaTac,
WA home. Rachel chose
to be a family medicine
physician because this
specialty recognizes,
celebrates, and defends
the humanity of patients.
She brings her interests
in building community
partnerships and advocacy

to her clinical care and she is also
interested in behavioral health and
addiction medicine. She earned both
her undergraduate degree in Medical
Microbiology and Immunology and her
medical degree from the University
of Wisconsin – Madison. Rachel is
committed to increasing diversity in
the health professions and she served
as a student coordinator of the Health
Care in Diverse Communities elective,
where she coordinated guest speakers
and led discussions about the unique
healthcare needs and challenges of
diverse populations in Madison. Rachel
participated in the Training in Urban
Medicine and Public Health (TRIUMPH)
Program, which allowed her to complete
her clinical rotations in Milwaukee and
participate in a structured long-term
curriculum focusing on community
responsive medicine and health equity,
including developing longitudinal
community-directed health projects
with local organizations. Rachel enjoys
baking desserts and playing board games,
such as Dungeons and Dragons. She also
enjoys singing and musical theatre and is
a karaoke enthusiast.



Year 1 Data and Reflections after Implementation of a URiM Pathway: Enhancing Representation to Improve Our Community's Health (EnRICH)

Rachel Her, MD; Estefan Beltran, MD; Morgan White, MD; Sarah Hohl, PhD; Thomas Hahn, MD; Patricia Tellez-Giron, MD
University of Wisconsin-Madison, Department of Family Medicine and Community Health



Background

- Enhancing Representation to Improve our Community's Health (EnRICH) at the University of Wisconsin offers mentorship combined with clinical and community experiences for medical students interested in Family Medicine who identify as underrepresented in medicine (URiM).^{*} The program includes advising, full-scope FM clinical experiences, and networking (Figure 1).
- Specific aims include to increase (1) participant sense of belonging in medicine and congruency of self-identity with medicine and Family Medicine, (2) graduation rates and Family Medicine match rates of URiM students, and (3) work satisfaction for mentor participants.
- Requirements of the program include attending at least 1 mentor-mentee meeting per quarter and 1 large group event per year.
- Mentees are also given opportunities to work with their mentor in a clinical setting and to obtain funding for Family Medicine of Racial Affinity-based conferences.

^{*}URiM: underrepresented in medicine. Per the AAMC: Black, Mexican American, Native American (American Indian, Alaska Native, and Native Hawaiian), and mainland Puerto Rican.

Methods

- Mentees were recruited via email and in-person advertising with the assistance of the Office of Multicultural Affairs. Mentors were recruited via listserv email and advertising during a faculty meeting. Participants were matched based on academic and personal interests.
- Mentees completed a quantitative survey in Fall 2022 and Fall 2023 that included validated items to assess program outcomes. A visual scale assessed mentee's identity as a medical student and as a member of the field of Family Medicine (Figure 2). Mentors completed a quantitative survey to evaluate their experiences and satisfaction.
- 11 mentees and 15 mentors participated in Year 1 (2022). Most mentees were first year medical students (73%), identified as male (55%), and Latinx (64%). The majority of mentors identified as female (64%), white (64%), and had been faculty for <10 years (63%).

EnRICH Program Model

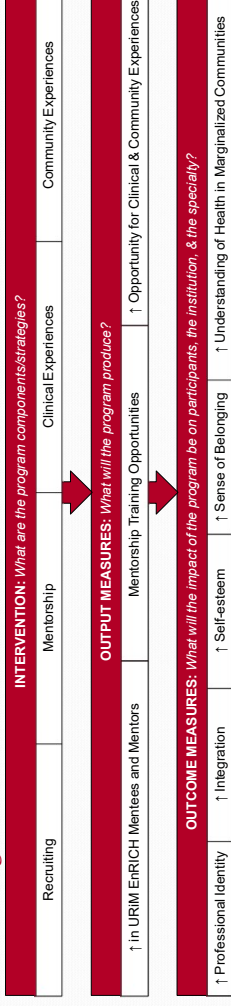


Figure 1. Program logic model showing interventions, output measures, and near-term mentee outcome measures.

Results

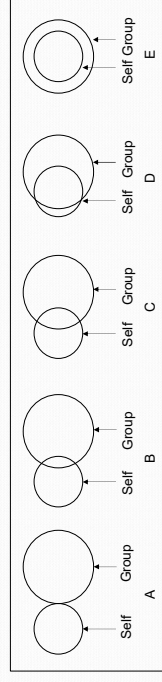


Figure 2. Professional visual identity scale to assess congruence between mentees' self-perceived identity within groups of interest ("medical students" and "field of Family Medicine").

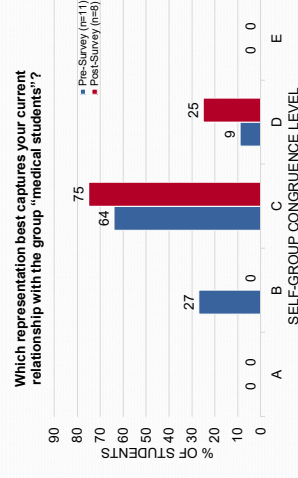
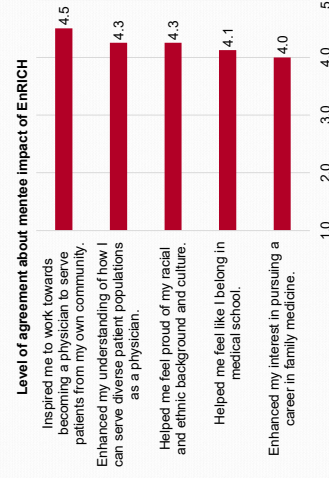


Figure 3. Mentees' self-perceived identity as a member of the group "medical students" at baseline (2022) and follow up (2023).



Figures 3 (left) and 4 (above). Mean score (out of possible 5) about the impact of EnRICH participation on mentees and mentors, respectively.

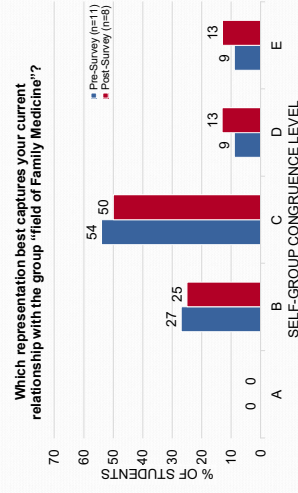
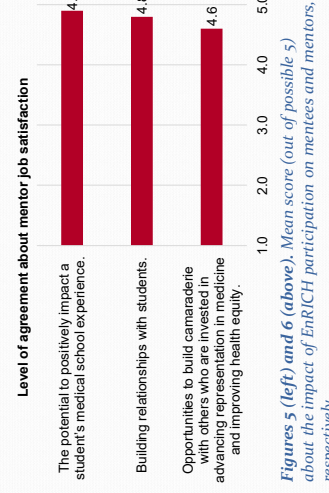


Figure 4. Mentees' self-perceived identity as a member of the group "field of Family Medicine" at baseline (2022) and follow up (2023).



Conclusions

- After 1 year, students reported increased sense of belonging in medical school, with all noting at least an average amount of congruence or higher between "self" and "medical student" (Figure 3). Belonging in the field of Family Medicine remained stable in the cohort (Figure 4).
- Students also reported improved peer group interactions. Mentees identified several benefits of the program, of which the highest perceived were "mentor relationship," "large group activities," "community building among EnRICH students."
- The greatest impacts on mentees were inspiration to serve diverse communities, understanding of how to do so within the role of a physician, and pride in their cultural background (Figure 5).
- Mentors reported high level of job satisfaction and fulfillment in building relationships (Figure 6).

Lessons

- Collaboration with the residency and school of medicine administration was essential to successes.
- Identified barriers include mentor and mentee background incongruence, limited rates of survey completion, and need for strong administrative support.

Future Directions

- Further programming and evaluation are currently underway for year 3
- Intermediate-term goals including increasing the competitiveness in residency applications of participants and increasing the proportion of URiM students pursuing Family Medicine residency at our local program.

References

- Buck et al (2019). Challenges to assessing professional identity in medical students: a tale of two measures, Medical Education Online, 24:1, 1649571, DOI: 10.1080/10877981.2019.1649571

Jenny Ho, DO

Projects Completed During Residency:

Scholarly Project:

Utilization of Monthly Osteopathic Study Groups in Family Medicine Residency

Community Health Learning Experience:

Broadening Healthcare Access in Dane County Through MEDiC:

MEDiC, a student-run free health clinics, aims to provide essential healthcare services to uninsured and underserved individuals in the community while supporting the education of University of Wisconsin-Madison healthcare professional students.



Jenny Ho, DO is from San Diego, CA and earned her undergraduate degree in Economics from the University of California, San Diego. She earned her medical degree from the AT Still University School of Osteopathic Medicine in Arizona. In medical school, Jenny volunteered with

underserved communities by working at free clinics, participating in after school programs for children with disabilities, and assisting at rehabilitation centers for older patients. She was the president of the Osteopathic Practice and Principles Club and had the opportunity to collaborate with attendings from various specialties to provide weekly osteopathic manipulative technique presentations for her peers. Jenny completed her clinical rotations in Hawaii. While there, she learned what it means to have an aloha spirit and was able to bond with patients' "talking stories" so she could provide culturally competent care that was informed by their lifestyles and diets. Her work with low-income elementary students reinforced her passion to bring health education outside the healthcare system and tailor preventative therapies to different lifestyles. Jenny's medical interests include osteopathic manipulative medicine, sleep medicine, integrative medicine, and preventative medicine. She enjoys playing tennis, bouldering, hiking, and playing piano. She also likes trying new restaurants and making charcuterie boards.



My sincerest thank you to my fiancé, friends, co-residents, family, and mentors for all the support you have given me during my medical training. Your love, encouragement, and understanding have meant the world to me. Could not have made it through without you all by my side.

Utilization of Monthly Osteopathic Study Groups in Family Medicine Residency Program

Jenny Ho, DO

Background: Osteopathic study groups are collaborative learning environments where individuals, often students or practitioners in the field of osteopathic medicine, come together to study and discuss various aspects of osteopathy. Osteopathic education emphasizes practical, hands-on learning, therefore study groups provide a platform for participants to engage in active discussions, share experiences, and practice osteopathic techniques. To create and maintain monthly alternating in-person and virtual study groups, motivated faculty leaders and residents are needed, with additional involvement from other specialties, such as, pediatrics, integrative medicine, physiatrists and etc. Groups that include participants from different stages of professional learning provide a supportive environment for individuals to enhance their understanding of osteopathy and contribute to their personal development. Through this pilot study, the opportunity to not only collaborate with peers, but also with community osteopathic physicians will be evaluated as a desirable opportunity for osteopathic residents to foster innovative ideas, knowledge, and practical insights through osteopathic study groups.

Objective: Creation of virtual/in-person osteopathic study groups with residents and community physicians strives to foster collaborative environment where participants can deepen their understanding of osteopathy and manual skills, and to establish mentorship by connecting experienced practitioners with residents.

Method: With a survey, data was collected from 4.5 years of residents that were in the Madison/Baraboo programs that would have had option of exposure to study group. Jan 2022 to now. Every study group either virtual or in person has had at least one community physician. More often, there are 2-3 that all use OMT in their practice. Also, at least 1 MD that uses a lot of OMT as well attends. Also, some of the study groups were led by community physicians.

Results: The data is positive for residents' advancement in osteopathic knowledge and confidence integrating osteopathy into clinical practice. Every resident who participated in the study agreed that attending monthly study groups has increased (or further solidify) desire to continue use of OMT in their future practice.

Conclusions: Osteopathic study groups, in which residents and community physicians can collaborate and expand their knowledge of osteopathy, are an excellent way to encourage further adoption of OMT. The added exposure to OMT provided by these groups will increase confidence in the clinical practice of osteopathy and broaden residents' education. Soliciting feedback from participating residents can and should be used to guide future curriculum and identify ways to further involve community partners.

References:

Darby, A., Parascando, J., Lipinski, M., Lipinski, C. L., Mendez-Miller, M., Berg, A., Rabago, D., & Oser, T. K. (2023). Awareness and interest in osteopathic manipulative treatment in allopathic

medical students. *Journal of Osteopathic Medicine*, 123(8), 379–384. <https://doi.org/10.1515/jom-2022-0232>

Dubey, J., James, S., & Zakletskaia, L. I. (2021). Osteopathic manipulative treatment for allopathic physicians: piloting a longitudinal curriculum. *Journal of Osteopathic Medicine*, 121(4), 371–376. <https://doi.org/10.1515/jom-2020-0038>

Habboush, Y., Stoner, A. M., Torres, C., & Beidas, S. (2019). Implementing a clinical-educator curriculum to enrich internal medicine residents' teaching capacity. *BMC Medical Education*, 19(1). <https://doi.org/10.1186/s12909-019-1888-0>

Slattengren, A. H., Wootten, M. E., Carlin, C., & Nissly, T. (2023). Osteopathic manipulative treatment for the allopathic resident elective: does it change practice after graduation? *Journal of Osteopathic Medicine*, 123(7), 337–341. <https://doi.org/10.1515/jom-2022-0219>

Turnbull, J., Merck, D., & MacMillan, K. (2019). Introducing osteopathic curriculum for family medicine physicians in a community-based allopathic residency program. *Spartan Medical Research Journal*, 4(1). <https://doi.org/10.51894/001c.9059>

Isheng Hou, MD

Projects Completed During Residency:

Scholarly Project:

Introduction of Curriculum Changes to Further Resident Education

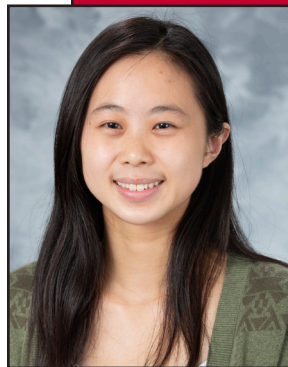
Scholarly Project:

Optimization of the Official Baraboo Resident Handbook:

In the setting of new ACGME requirements, changes during the COVID pandemic, and multiple curriculum modifications, it became apparent that our official program handbook needed to be updated. This was a project that we began in our PGY-2 year and continued as chiefs. The handbook serves as a reference for details regarding our program structure, requirements, and expectations. Ideally, it is a go-to resource for incoming residents. As current residents, we felt like we were most familiar with the intricacies of the residency program structure and had up-to-date information to make appropriate changes to the handbook that would be most helpful for future residents and staff.



Tremendous thanks to my parents, my sister, and my partner. I am so fortunate to have had your support throughout the years, and I could not imagine having done any of this without you. Thank you also to my wonderful friends and co-residents for always being there for me; you continue to inspire and motivate me.



Isheng Hou, MD is captivated by family medicine because it emphasizes taking the time to listen to patients and addressing all their concerns, medically, socially, and emotionally. Hailing from Carbondale, Illinois, Isheng earned her undergraduate degree

in Biological Sciences at the University of Illinois at Chicago and received her medical degree from the University of Illinois College of Medicine. Isheng comes with a breadth of research, volunteer and work experience including investigating labor-induced trauma to the urinary tract; abstracting data from existing EMR to Epic; at the Chicago Children's Advocacy Center she taught children who have experienced abuse how to play a variety of musical instruments. Notably in 2018 she was the recipient of the National Asian Pacific American Medical Student Association (APAMSA) award for her outstanding work in and commitment towards health issues that affect Asians and Pacific Islanders. Isheng is fluent in Chinese, and dabbles in German. When she is not serving her community, Isheng enjoys swimming, from competitive to casual water sports, weight training, and travel. Some of her favorite time is spent with family on road trips to state and national parks and preserves. Isheng is always up for an adventurous and difficult hike!

Introduction of Curriculum Changes to Further Resident Education

Isheng Hou, MD & Alison Howen, MD

We proposed two major curriculum changes during residency that we felt would benefit resident education in Baraboo.

Prior to changes with staff schedules, we had monthly case studies with our hospitalists. This provided a chance to have organized discussion of complex and interesting inpatient cases; however, the faculty that had been involved were unable to continue hosting these sessions. Since then, residents did not have dedicated time to formally review patient cases with multiple residents and Baraboo attendings together. When this type of discussion did happen between multiple staffers and residents, it was informal, brief, unstructured, and more on-the-go.

We felt that residents were missing out on this collaborative approach to learning, which also exposes residents to other providers' unique approaches, methods, and thought processes. Our experience with this in the past was always positive and beneficial for learning. Because of this, we created monthly resident-led case studies. We chose to optimize resident wellness by trying to avoid significant time commitment outside of routine work hours. It was important to us to also provide a setting for discussion of medical cases with multiple resident colleagues and have the input from several of our faculty at the same time as well.

Our curriculum outline including goals and structure is below.

Case Study Curriculum

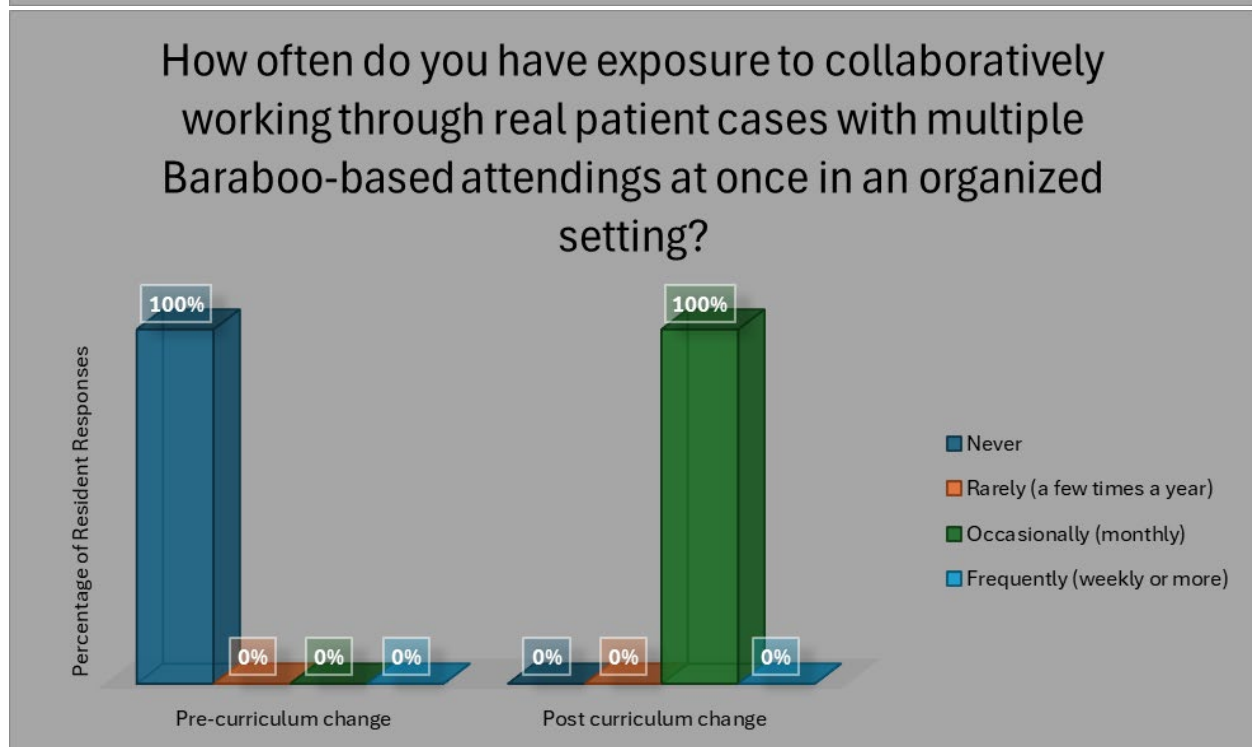
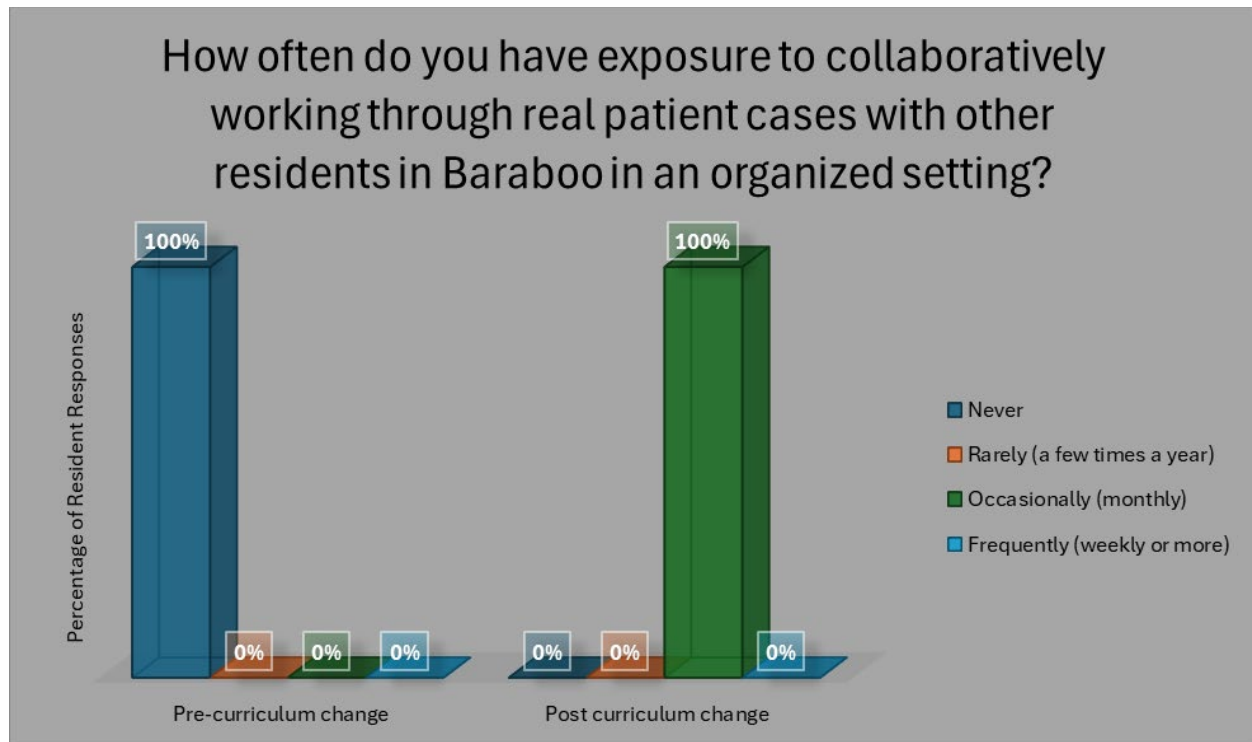
Goals:

- To facilitate more learning opportunities from real patient cases
- To encourage collaborative analysis of medical presentations, workup, diagnoses, and treatment
- To promote learning guided by residents

Structure:

- Residents will take turns choosing and preparing a case to present to the other Baraboo residents.
- Cases can be from either outpatient or inpatient settings.
- Cases should facilitate conversation and/or involve resources that may be helpful when working through the specific case.
- When: Wednesday at 12:30-1:30, before weekly seminar/didactics
- Frequency: once a month
- Open to available medical students, attending physicians, and advanced practitioners

Prior to implementing this curriculum, PGY-2 and PGY-3 Baraboo residents filled out a survey that gauged their experiences with collaborative case review with both residents and Baraboo-based attendings as well as exposure to resident-led teaching. We administered the same survey after several months to evaluate our progress towards the curriculum goals.



When asked prior to the curriculum change if there is currently organized resident-led teaching in Baraboo, 100% of the residents answered "no." After implementation of the curriculum change, 100% of residents answered "yes."

In a survey after this curriculum change, residents were asked for feedback as to how the monthly case studies were helpful for learning. Resident responses included that the cases were interesting and allowed for discussions in a way that was not previously set up. Additionally, two residents noted the benefit of having dedicated time to get multiple opinions and perspectives on cases and seeing others' approaches for workup and treatment.

In further discussion with residents and attendings, we have continued to identify areas of possible improvement. For example, the timing of these sessions may need to be adjusted to facilitate attendance of more attending physicians. For the time being, it appears that the curriculum implementation has had a positive impact on resident education.

The other curriculum change we have proposed is a procedure clinic. We noticed that procedure occurrences during residency could be sporadic. Additionally, experiences with procedures differed significantly between co-residents. Sometimes, we would have several months without a single procedure. Residents also noticed that the variation in types of procedures provided to each resident was very unpredictable.

While we have not been able to implement this procedure clinic yet, we are in the process of planning and optimizing this curriculum change. The Procedure Competency Curriculum that we proposed is described below but is subject to change as we coordinate this further.

Procedure Competency Curriculum

Goals:

- To facilitate more procedural opportunities
- To promote more education around procedural aspects
- To foster comfort and confidence in procedures

Structure:

- Four procedure-focused half days per month to facilitate PGY-2 and PGY-3 residents to have dedicated procedure time monthly
- If slots are not filled up by one clinic day before the procedure day, those slots can be opened for normal appointments.
- If a patient no-shows, staffers will provide informal didactics such as reviewing sutures, tools, wound care, potential complications etc. They do not need to prepare for this in advance. Residents can also practice with models during this time.
- Procedure timing:

- 25 min: nexplanon placement, IUD removal ONLY, cryotherapy, knee/shoulder and hip bursa injections
- 50 min: nexplanon removal, IUD placement, skin biopsies, toenail removal, colposcopy, endometrial biopsy, cyst removal, laceration repairs

Alison Howen, MD

Projects Completed During Residency:

Scholarly Project:

Introduction of Curriculum Changes to Further Resident Education

Scholarly Project:

Optimization of the Official Baraboo Resident Handbook:

In the setting of new ACGME requirements, changes during the COVID pandemic, and multiple curriculum modifications, it became apparent that our official program handbook needed to be updated. This was a project that we began in our PGY-2 year and continued as chiefs. The handbook serves as a reference for details regarding our program structure, requirements, and expectations. Ideally, it is a go-to resource for incoming residents. As current residents, we felt like we were most familiar with the intricacies of the residency program structure and had up-to-date information to make appropriate changes to the handbook that would be most helpful for future residents and staff. I was impressed to see how much the program has changed since the last update, and this not only reminded me of the benefits of change but also how much work goes into it as well.



Thank you to my parents and siblings for your never-ending support and encouragement throughout my medical training. I appreciate you so very much. Thank you to my partner Jose for not only giving me an extra reason to be in Baraboo but also for your immense patience and love. Thank you to my dog Jax for finding your way into my life during residency and consistently greeting me with a wagging tail and unconditional love. Thank you to my co-residents and Boo faculty/staff for all the ways you have helped and educated me along the way.



Ali Howen, MD is from McFarland, Wisconsin. Having completed her undergraduate degree in Spanish at the University of Wisconsin – Madison, Ali earned her medical degree at the University of Wisconsin School of Medicine and Public Health.

Prior to medical school,

Ali developed a passion for working with individuals with disabilities as a support specialist (respite provider), working primarily with children at risk of out-of-home placement. She sought those experiences via AmeriCorps and United Cerebral Palsy. With a servant's heart, Ali volunteered with Global Brigades, a non-profit organization using a holistic model to help prepare rural communities in Honduras, Panama, and Nicaragua for self-sustainability through student-led medical, dental, public health, business, water, and engineering brigades, participating in three medical/dental brigades in Honduras, particularly. Ali further developed her Spanish-speaking abilities by majoring in Spanish, and incorporating Spanish into everyday life, which led to advanced ability to communicate with Spanish-speaking patients. When she's not serving her community, Ali loves to play soccer, road biking, reading, and has deemed herself a cheese curd (both fresh and fried) enthusiast.

Introduction of Curriculum Changes to Further Resident Education

Isheng Hou, MD & Alison Howen, MD

We proposed two major curriculum changes during residency that we felt would benefit resident education in Baraboo.

Prior to changes with staff schedules, we had monthly case studies with our hospitalists. This provided a chance to have organized discussion of complex and interesting inpatient cases; however, the faculty that had been involved were unable to continue hosting these sessions. Since then, residents did not have dedicated time to formally review patient cases with multiple residents and Baraboo attendings together. When this type of discussion did happen between multiple staffers and residents, it was informal, brief, unstructured, and more on-the-go.

We felt that residents were missing out on this collaborative approach to learning, which also exposes residents to other providers' unique approaches, methods, and thought processes. Our experience with this in the past was always positive and beneficial for learning. Because of this, we created monthly resident-led case studies. We chose to optimize resident wellness by trying to avoid significant time commitment outside of routine work hours. It was important to us to also provide a setting for discussion of medical cases with multiple resident colleagues and have the input from several of our faculty at the same time as well.

Our curriculum outline including goals and structure is below.

Case Study Curriculum

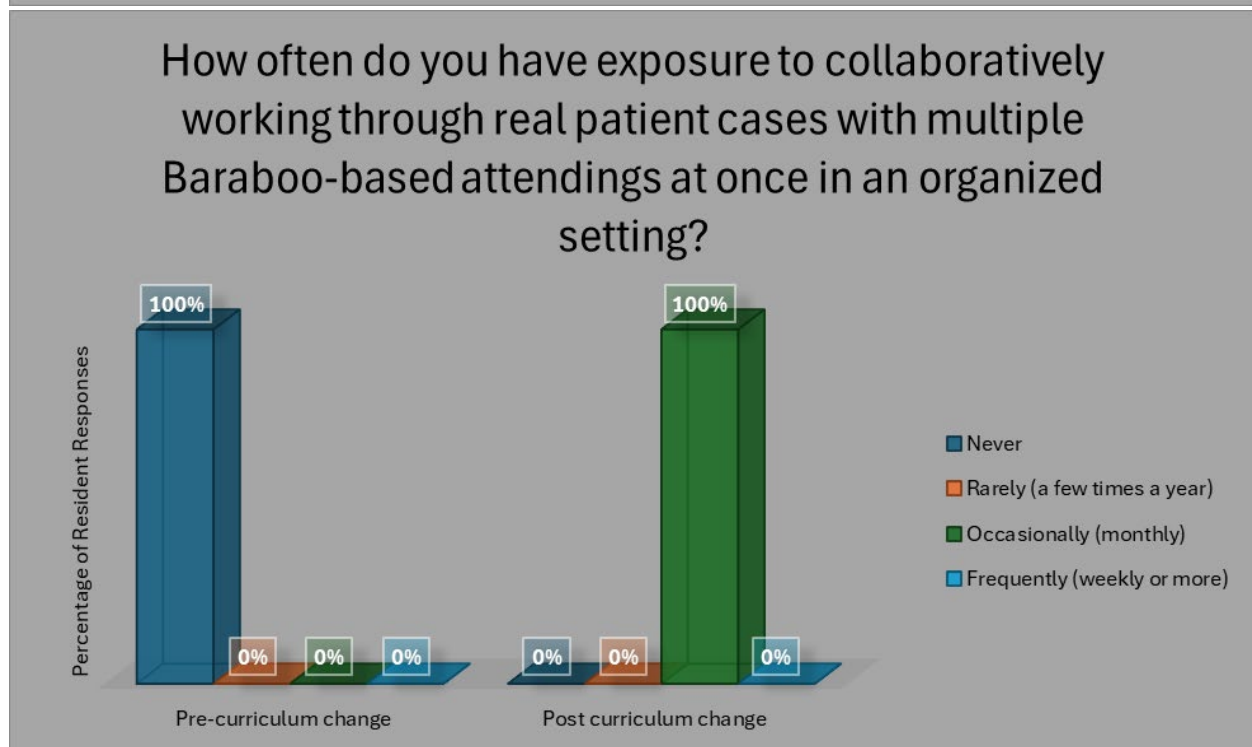
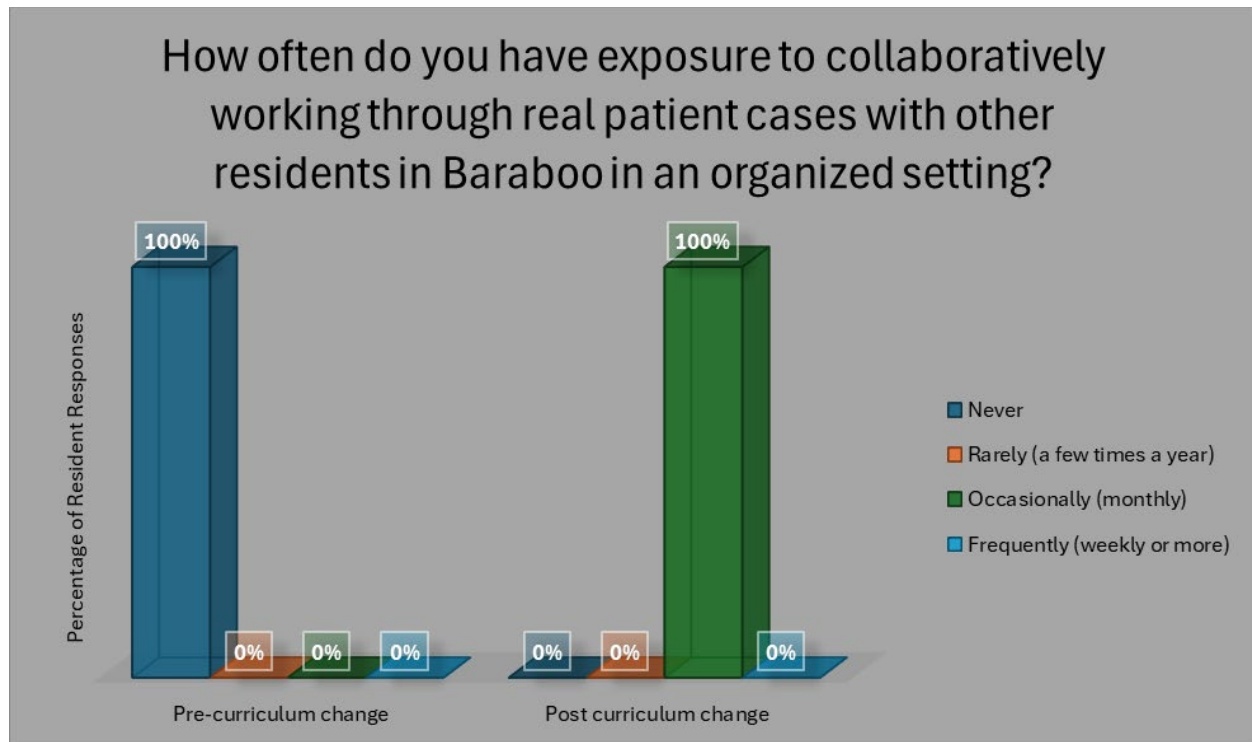
Goals:

- To facilitate more learning opportunities from real patient cases
- To encourage collaborative analysis of medical presentations, workup, diagnoses, and treatment
- To promote learning guided by residents

Structure:

- Residents will take turns choosing and preparing a case to present to the other Baraboo residents.
- Cases can be from either outpatient or inpatient settings.
- Cases should facilitate conversation and/or involve resources that may be helpful when working through the specific case.
- When: Wednesday at 12:30-1:30, before weekly seminar/didactics
- Frequency: once a month
- Open to available medical students, attending physicians, and advanced practitioners

Prior to implementing this curriculum, PGY-2 and PGY-3 Baraboo residents filled out a survey that gauged their experiences with collaborative case review with both residents and Baraboo-based attendings as well as exposure to resident-led teaching. We administered the same survey after several months to evaluate our progress towards the curriculum goals.



When asked prior to the curriculum change if there is currently organized resident-led teaching in Baraboo, 100% of the residents answered "no." After implementation of the curriculum change, 100% of residents answered "yes."

In a survey after this curriculum change, residents were asked for feedback as to how the monthly case studies were helpful for learning. Resident responses included that the cases were interesting and allowed for discussions in a way that was not previously set up. Additionally, two residents noted the benefit of having dedicated time to get multiple opinions and perspectives on cases and seeing others' approaches for workup and treatment.

In further discussion with residents and attendings, we have continued to identify areas of possible improvement. For example, the timing of these sessions may need to be adjusted to facilitate attendance of more attending physicians. For the time being, it appears that the curriculum implementation has had a positive impact on resident education.

The other curriculum change we have proposed is a procedure clinic. We noticed that procedure occurrences during residency could be sporadic. Additionally, experiences with procedures differed significantly between co-residents. Sometimes, we would have several months without a single procedure. Residents also noticed that the variation in types of procedures provided to each resident was very unpredictable.

While we have not been able to implement this procedure clinic yet, we are in the process of planning and optimizing this curriculum change. The Procedure Competency Curriculum that we proposed is described below but is subject to change as we coordinate this further.

Procedure Competency Curriculum

Goals:

- To facilitate more procedural opportunities
- To promote more education around procedural aspects
- To foster comfort and confidence in procedures

Structure:

- Four procedure-focused half days per month to facilitate PGY-2 and PGY-3 residents to have dedicated procedure time monthly
- If slots are not filled up by one clinic day before the procedure day, those slots can be opened for normal appointments.
- If a patient no-shows, staffers will provide informal didactics such as reviewing sutures, tools, wound care, potential complications etc. They do not need to prepare for this in advance. Residents can also practice with models during this time.
- Procedure timing:

- 25 min: nexplanon placement, IUD removal ONLY, cryotherapy, knee/shoulder and hip bursa injections
- 50 min: nexplanon removal, IUD placement, skin biopsies, toenail removal, colposcopy, endometrial biopsy, cyst removal, laceration repairs

John Kalmanek, MD

Projects Completed During Residency:

Scholarly Project:

Does Titrating an ACEi or ARB to a Goal Urine Albumin Level Result in Reduction of Progression of CKD for Individuals with Type 2 Diabetes?

Community Health Learning Experience:

Group Health Education Sessions at Local Senior Centers:

For my community health learning experience, I had the opportunity to lead some health education sessions at local senior centers. I appreciated the opportunity to hear the community members' perspectives and understanding regarding topics such as blood pressure, as well as the space and shared enthusiasm in sharing current evidence-based perspectives on common health topics. It was an especially cool experience for me as I will have the opportunity to lead group medical visits in my position after residency, and it was a nice reminder of how fun it can be to have these conversations in group settings.



I stand on the shoulders of giants, and am so grateful to my incredibly supportive friends and family who have inspired me throughout this journey.



John Kalmanek, MD is passionate about primary care; he enjoys patient education, preventive medicine, community health, and providing care for marginalized populations. John is from Homer Glen, IL and he earned his bachelor's degree in Science-Business

from the University of Notre Dame. He went on to earn his medical degree from the University of Virginia. While there, he developed his interests in learner-centered teaching by serving as a peer mentor for other students and leading health education classes at a local jail. During a "Caring for Refugees" elective, he discovered a passion for the challenge and value of providing care for refugee patients. He also participated in the Generalist Scholars Program, which allowed him to focus on developing as a primary care physician who is devoted to holistically improving the lives of others. John worked with an interdisciplinary team of students to create a mobile application designed to make it easier for caregivers to receive help; this experience fueled his passion for innovation and the team-based, multidisciplinary approach to healthcare. He loves playing and watching sports (go Bears!) and he enjoys playing board games with friends and trying new foods.

Is There a Goal Level of Albuminuria in Diabetic Nephropathy?

HDA Question: Does titrating an ACEi or ARB to a goal urine albumin level result in reduction of progression of CKD for individuals with type 2 diabetes?

Evidence-Based Answer

A reduced risk of progression of kidney disease is consistently found when albuminuria levels are reduced by at least 30% from baseline, which may serve as a starting target for goal albuminuria levels (SOR: A, meta-analysis of RCTs and cohort studies). There appears to be an additional linear association between reduction in albuminuria and reduction in risk of progression of kidney disease beyond the initial 30% reduction. (SOR: A, meta-analysis of RCTs and cohort studies).

Evidence Summary

A 2019 meta-analysis (n=21,102) of randomized clinical trials explored change in albuminuria as a surrogate endpoint for risk of progression of chronic kidney disease (CKD). The study found that for the subgroup of individuals with diabetes and albumin-to-creatinine ratio (ACR) of at least 30 mg/g (n=15,532), there was a linear association between reduction in albuminuria from baseline and reduction in risk of progression of chronic kidney disease (Slope 1.10, CI (-0.76 to 2.72), RMSE 0.08 (0.02 to 0.32)).¹ This meta-analysis did not include a specific hazard ratio or risk reduction for the subset of individuals with diabetes and ACR of at least 30 mg/g, although for the studied population as a whole (70% of whom had diabetes), found that each 30% decrease in geometric mean albuminuria was associated with an average 27% lower risk of progression of CKD (95% BCI: 0.02-0.96).¹

A 2013 post-hoc analysis of a 2003 multicenter, randomized, double-blinded trial compared the effects of olmesartan versus placebo in 577 patients with type 2 diabetes and overt nephropathy (urine protein: creatinine (UPCR) ≥ 300 and serum creatinine 1.0-2.5mg/dL) and the risk association of composite renal outcome (end-stage renal disease, doubling of serum creatinine, and death) with baseline and change in UPCR. After 24 weeks of treatment and mean follow-up period of 3.2 years, the analysis found that treatment with olmesartan significantly reduced UPCR compared to placebo (-19.3% vs. +0.5%, P=0.005) and during follow-up (-21.4% vs +7.7%, P=0.005). The study further divided the groups into those with high reduction of UPCR (n=170, Δ UPCR $\geq 30\%$), moderate reduction (n=134, Δ UPCR $\geq 0\%$, $<30\%$) and worsening proteinuria (n=262, $<0\%$). Compared to the worsening group, the HR with 95% CI for the composite renal outcome was 0.43 (0.31-0.61, P<0.001) in patients with high reduction and 0.54 (0.39-0.74, P<0.001) in patients with moderate reduction.² The study results further showed a linear decrease in risk of progression of kidney disease for further percentage reduction in proteinuria beyond 30% from baseline, although did not quantify confidence intervals for this association.

A 2007 Post Hoc Analysis of a double-blind, randomized, placebo-controlled study that was designed to evaluate the reno-protective effects of a losartan-based antihypertensive regimen compared with a traditional BP-lowering regimen in 1,513 patients with hypertension, type 2 diabetes, and nephropathy, found that after 6 months of follow-up, a reduction in albuminuria of at least 30% from baseline compared to a 0 to 30% reduction resulted in 40 less patients progressing to ESRD per 1000 years of patient follow up, with an adjusted hazard ratio of 1.64 for the group with 0 to 30% reduction in albuminuria compared to the group with at least 30% reduction in albuminuria (1.20 to 2.24, P 0.002).³

References:

1. Heerspink HJL, Greene T, Tighiouart H, et al. Change in albuminuria as a surrogate endpoint for progression of kidney disease: a meta-analysis of treatment effects in randomised clinical trials. *Lancet Diabetes Endocrinol.* 2019;7:128–139. [STEP 1]
2. Imai E, Haneda M, Chan JC, Yamasaki T, Kobayashi F, Ito S, Makino H. Reduction and residual proteinuria are therapeutic targets in type 2 diabetes with overt nephropathy: a post hoc analysis (ORIENT-proteinuria). *Nephrol Dial Transplant.* 2013 Oct;28(10):2526-34. doi: 10.1093/ndt/gft249. Epub 2013 Sep 7. PMID: 24013685. [STEP 2]
3. Eijkelkamp WB, Zhang Z, Remuzzi G, Parving HH, Cooper ME, Keane WF, Shahinfar S, Gleim GW, Weir MR, Brenner BM, de Zeeuw D. Albuminuria is a target for renoprotective therapy independent from blood pressure in patients with type 2 diabetic nephropathy: post hoc analysis from the Reduction of Endpoints in NIDDM with the Angiotensin II Antagonist Losartan (RENAAL) trial. *J Am Soc Nephrol.* 2007 May;18(5):1540-6. doi: 10.1681/ASN.2006050445. Epub 2007 Apr 4. PMID: 17409317. [STEP 2]

Colin Kavanaugh, MD

Projects Completed During Residency:

Scholarly Project:

Does the Use of Intranasal Corticosteroids
Offer Benefit in the Treatment of Acute
Sinusitis Over Antibiotic Therapy Alone?

Community Health Learning Experience:

ChopChop Cooking Classes:

Family meal time is associated with numerous physical and psychological benefits for children, however, many families do not routinely participate in family meal time. In addition, knowledge of nutrition and simple cooking practices are often lacking in children, which can lead to development of poor eating habits and poor relationship with food at a young age.

ChopChop is a program that focuses on providing resources, skills, and confidence to children and their caregivers so they can employ healthy home cooked meals. Myself and several other resident physicians participated as class leaders over the course of our residency training.



I would like to thank my amazing wife for the sacrifices she has made to allow me to pursue this great profession. I would also like to thank my parents for their never ending support and for showing me what it means to be a good human. Lastly, I would like to thank my daughter for effortlessly making the not so easy days seem pretty darn insignificant.



Colin Kavanaugh, MD, is drawn to rural family medicine because of the opportunity to do something different every day. He is interested in working with his hands to do procedures and he wants to practice full scope medicine in a small town.

Colin is from Sandwich, IL

and he earned his bachelor's degree in Health Science from Bradley University in Peoria, IL. Colin went on to participate in the Rural Medical Education Program at the University of Illinois College of Medicine – Rockford. In this program, Colin saw firsthand what it meant to be a rural full-scope family medicine physician. He also conducted research on the stigma towards mental illness in rural communities. Drawing on his passion for exploring the outdoors, he created a wilderness medicine interest group. Colin is interested in teaching learners and served as a clinical mentor. Colin enjoys developing relationships with his patients and his favorite interactions are when patients feel comfortable to speak casually and trust that he has their best interest in mind. Colin and his wife love spending time in the great outdoors – hiking, fishing, boating, and spending time at the lake. He also enjoys hunting and cooking different fresh fish and wild-game recipes.

Treatment of Acute Sinusitis

HDA Question: Does the use of intranasal corticosteroids offer benefit in the treatment of acute sinusitis over antibiotic therapy alone?

Evidence-Based Answer:

Patients with acute sinusitis treated with INCS in addition to antibiotics were modestly more likely to report resolution or improvement in symptoms compare to placebo (SOR: A, Cochrane meta-analysis). However, when evaluated specifically in a primary care setting, there was no significant difference in symptom duration or severity between patient's treated with INCS, oral antibiotics, or in combination (SOR: B, Multicenter RCT)

Evidence Summary:

A 2013 meta-analysis of four RCTs (N=1943) that included adults and children compared intranasal corticosteroid (INCS) treatment to placebo or no intervention in acute sinusitis.

Diagnosis was established clinically and further defined based on nasal endoscopy or radiological evidence of inflammation. Primary care clinics, otolaryngology clinics, and pediatric clinics in over 14 different countries, including the USA, were included in the trials.

The primary outcome was defined as the proportion of participants with resolution or improvement of symptoms compared to placebo. Individuals treated with INCS were more likely to have complete relief or improvement than the placebo group (RR: 1.11; 95% CI 1.04 to 1.18). No statistically significant difference in adverse events, dropout rates, or rates of relapse between treatment and placebo arms were noted.

A 2007 multicenter RCT (n=240) of adults aged ≥ 16 years (median age=44 years) with a 4:1 female predominance enrolled patients over a 4 year period and assessed the effectiveness of various interventions on the treatment of acute, uncomplicated and nonrecurrent sinusitis that was diagnosed clinically in a primary care setting. Study inclusion required ≥ 2 of the Berg and Carenfelt criteria: purulent nasal discharge with unilateral predominance, local pain with unilateral predominance, purulent nasal discharge bilaterally, and pus on inspection inside the nose. Patients with history of recurrent sinusitis, poorly controlled diabetes or heart failure, pregnant or breastfeeding patients, those with allergies to studied medications, and those receiving antibiotics or steroids in the previous month were excluded. Patients were randomized to 1 of 4 treatment groups: antibiotic (amoxicillin 500 mg TID for 7 days) and nasal steroid (200 μ g of intranasal budesonide daily for 10 days), placebo antibiotic and nasal steroid, antibiotic and placebo nasal steroid, and placebo antibiotic and placebo nasal steroid. The primary outcome was the proportion of patients clinically cured at day 10. Clinical cure was determined utilizing a patient symptom diary, assessing 11 variables on a 7-point, unipolar Likert scale. Cure was defined as a score of 0 (no problem) or 1 (very little problem) on each of the 11 symptoms in the diary. Secondary outcomes included duration of symptoms, if clinical cure by 2 weeks, or score at 2 weeks, whichever came first. The study showed no statistical difference between the duration of symptoms lasting > 10 days in the amoxicillin (29 of 100) vs no amoxicillin (36 of 107) groups (29 of 107) (AOR 0.90; 95% CI 0.57-1.73) or the intranasal budesonide groups (32 of 102 vs 33 of 105) (AOR 0.93; 95% CI 0.54-1.62). No noticeable differences were observed in the time to cure for any of the groups with 42.5% (102) of patients "cured" by the seventh day.

Limitations of the study include the use of the Berg and Carenfelt criteria which is not well known and not validated in primary care population, the choice of antibiotic and treatment duration, and the studies long enrollment period of 4 years, which the authors attribute to many patients refusing randomization and “reported demand” for antibiotic treatment.

References:

1. Trestioreanu AZ, Yaphe J. Intranasal steroids for acute sinusitis. Cochrane Database of Systematic Reviews. 2013;(12). [Step 1]
2. Williamson IG, Rumsby K, Bengt S, et al. Antibiotics and topical nasal steroid for treatment of acute maxillary sinusitis: a randomized controlled trial. JAMA. 2007;298(21):2487-2496. [Step 2]

Camila Khan, MD, MA

Projects Completed During Residency:

Scholarly Project:

Feasibility Study of SBIRT Implementation for Alcohol Screening in a Rural Clinic

Community Health Learning Experience:

MEDiC Shifts & CHOICES Program:

I had planned to work with Dr. Jillian Landeck on CHOICES, a CDC program aiming to reduce alcohol-exposed pregnancies. We were to recruit Belleville Clinic patients to attend four monthly presentations on topics such as pregnancy contraception and health effects of alcohol use. However, we struggled with the recruitment phase of the program; specifically, with feasibly identifying eligible patients, and with obtaining response to posted fliers at Belleville Clinic and within the community. I suspect we could have recruited participants by contacting them personally, rather than relying on community members/patients to read and respond to our posted fliers.



I am grateful to my husband, my parents and sisters, my non-medicine friends, and my co-residents for their support! I also appreciate my clinic advisor, Bethany Howlett, for her welcoming presence and support. Thank you also to all of the attendings, PDs / APDs, and Julia Yates for believing in me.



Camila Khan, MD is drawn to helping patients manage their health so that they can live the life they want. Camila hails from St. Louis, MO and she earned her bachelor's degree in Economics from Truman State University in Kirksville, MO. She then went on to earn

her master's degree in Economics from Miami University in Oxford, OH. Prior to starting medical school at the University of Wisconsin School of Medicine and Public Health, Camila worked at Epic. She began to consider a career as a doctor as she witnessed the direct and important impact physicians have on patients. Camila is also interested in advocacy, and she participated in initiatives with Doctors for America regarding gun violence prevention, women's reproductive rights, treatment of asylum-seekers and migrants, and the opioid epidemic. She worked with Centro Hispano of Madison to help train community health workers on maternal and infant health and recruit expecting or new mothers to their group support sessions. Camila's medical interests include maternal health and newborn deliveries, addiction medicine, and integrative medicine. In her free time, Camila enjoys reading, watching movies and television, and taking walks with her friends.



BACKGROUND

Family Medicine clinic in rural Wisconsin aimed to implement universal screening, brief intervention, and referral to treatment (SBIRT) at adult physicals.

This is to align with USPSTF recommendations (Grade B): screen for unhealthy alcohol use in primary care settings in adults, and provide persons engaged in risky or hazardous drinking with brief behavioral counseling interventions to reduce unhealthy alcohol use.

METHODS

- Collected physical exam and alcohol screening data.
- Collected survey data from clinical staff to assess familiarity and comfort with using SBIRT and perceptions of barriers to use in practice.

RESULTS

On average, 27 adult physicals and 16 AUDIT-C screenings completed each week; 59.4% of encounters had AUDIT-C screens.

A positive but weak correlation ($r=0.376$) was observed between time and AUDIT-C screening. The trend was not significant ($p=0.413$, $\alpha=0.05$).

Providers expressed greatest discomfort in knowledge of where to refer patients in need of additional treatment.

Medical assistants (MAs) expressed greatest ambivalence towards importance of screening patients for alcohol use.

RESULTS, cont'd

Figure 1: Total Physical Exams and AUDIT-C screenings by week

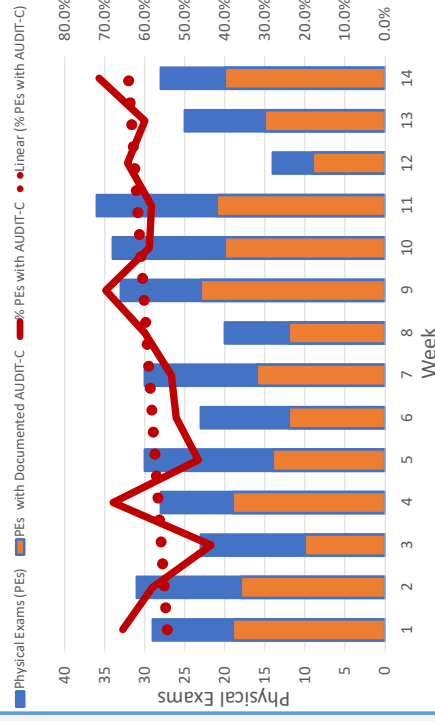
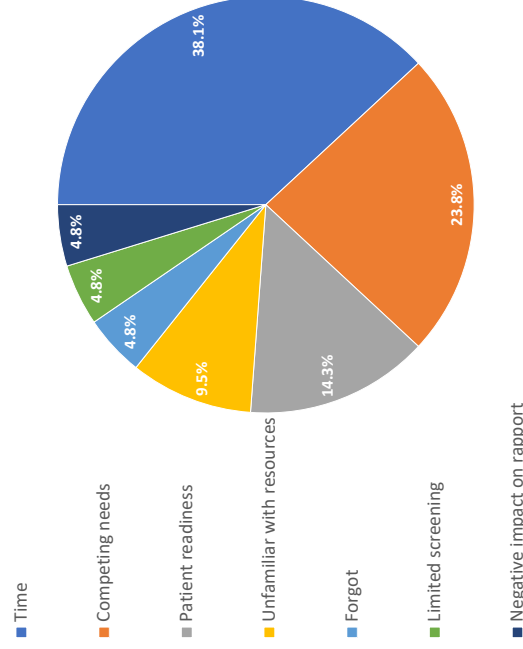
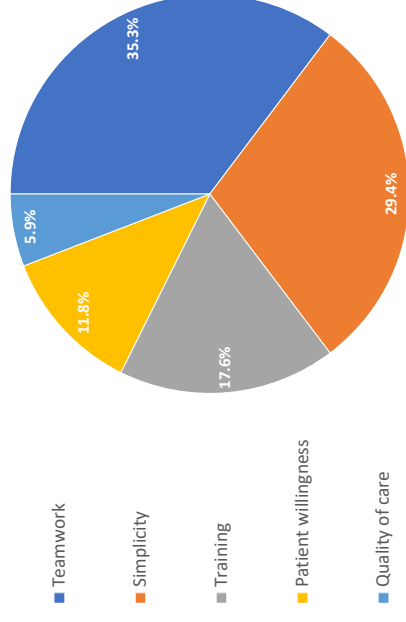


Figure 2: Staff-identified Barriers to SBIRT



RESULTS, cont'd

Figure 3: Staff-identified Facilitators of SBIRT



DISCUSSION

Include AUDIT-C scoring on questionnaire, to facilitate identifying positive screen.

Offer training to providers about where to refer patients in need of additional treatment.

Designate SBIRT champion(s) to provide useful resource to staff.

Disseminate process to other clinic sites.

Determine how to broaden reach to patients outside of adult physicals. Consider using online patient tool.

ACKNOWLEDGEMENTS

Special thanks to Jeff Baltus (Senior Data Scientist II of DFMCH) and Cathy Kalina (Community Specialist of Dane County).

Rebeca Liebl, MD

Projects Completed During Residency:

Community Health Learning Experience:

Encouraging Healthy Lifestyles Through
Community Outreach and Education

Scholarly Project:

Health Communication Strategies for the Family
Physician:

Latinx communities were disproportionately affected by COVID-19 and face barriers accessing culturally appropriate health information amidst rampant misinformation. Family medicine residents require training in disseminating accurate healthcare information during crises. This study investigated social media's influence on vaccine acceptance among Latinx individuals in Madison, WI. Three focus groups explored participants' experiences during the pandemic. Messages fostering confidence came from trusted healthcare professionals of similar backgrounds, in Spanish. Awareness was raised through widely disseminated, easily understood messages. Understanding stemmed from scientific information and relatable narratives. Satisfaction came from dispelling myths. Enactment was promoted through clear instructions for vaccine access.



I'm deeply grateful to everyone who has believed in me, especially during moments when I struggled to believe in myself. First and foremost, my father's words, "The day we stop learning is the day that we die," have profoundly impacted me. His wisdom fostered my curiosity and equipped me with essential life skills. I feel his presence everywhere, and I know he would be immensely proud of me. To my mother, thank you for your nurturing presence, both physically and emotionally. My sister Maria has been my partner in crime and greatest supporter since childhood. To Brendita, Shiva, Diego, Gabriel, and all my friends who have stood by me through thick and thin, your unwavering support means everything to me. To my husband Mario, you have been my rock every step of the way, from premed to medical school and now residency. Your support during our long-distance relationship, grueling 72-hour weeks, and night shifts has been remarkable. Thank you for your boundless love, nurturing, and dedication as a partner and as a father, especially during the challenging times when I was not very available.



Rebeca Maria Liebl, MD chose family medicine because of its flexibility, breadth and the opportunity to create long-term relationships with patients and their families. Rebeca grew up in Managua, Nicaragua and immigrated to Madison as a young

adult. She earned her undergraduate degree in International Relations and Environmental Studies from Edgewood College in Madison. Rebeca's journey into healthcare began with her work as a Spanish medical interpreter after college, where she developed a deep understanding of the linguistic and cultural nuances crucial for effective patient care. Her diverse life and work experiences, combined with her continuous involvement in the Latino community since long before medical school has influenced her approach to healthcare. She values the importance of multidisciplinary collaboration and teamwork to address the complex needs of patients. She is committed to leveraging on her background to foster inclusive and patient-centered environments, guided by her passion for promoting women's health and empowering patients to lead healthier lifestyles through community engagement. She finds joy in dancing, getting together with family and friends, exploring parks, hiking trails, and traveling.

Encouraging Healthy Lifestyles Through Community Outreach and Education

Rebeca Liebl, MD

Primary Community Member Contact: Shiva Bidar-Sielaff, Latino Health Council of Dane County

Faculty Partner: Patricia Tellez-Giron, MD

Situation: Limited access to high quality, culturally and linguistically sensitive health information in the Latinx community of Madison WI

Background:

- 2020 Report: Wisconsin Collaborative for Healthcare Quality and the University of Wisconsin Health Innovation Program. Wisconsin Health Disparities Report: Rural and Urban Populations, 2020.
- 2019 Report: Wisconsin Collaborative for Healthcare Quality and the University of Wisconsin Health Innovation Program. Wisconsin Health Disparities Report, 2019, Appendix.
- Who are the stakeholders engaged? The Latino Health Council is an organization whose mission is to promote and support the health and wellbeing of the Latino community through education, advocacy, consulting, and networking.
- What are the aims of the project? Community education and outreach

Assessment:

- The project was evaluated by community member attendance and participation.
 1. Radio program “Nuestra Salud” the topic covered was “Healthy living.” Presented with Dr. Patricia Tellez-Giron, Shiva Bidar, and Dr. Christina Delgadillo. Live questions answered on the air from callers and via their Facebook live stream
 2. Cardiovascular Health: Virtual presentation about heart health for Spanish speaking participants
 3. Latino Health Fair: one on one meeting with individual participants to review BP (Blood Pressure), cholesterol, and blood sugar results. Provide brief education on how to optimize their health and provide resources regarding diet and exercise.
 4. Chronic Disease Conference 2 presentations and open discussion on “cardiovascular diseases”
- What did you and/or your team learn when you applied an equity lens?

It became evident that understanding and addressing the social determinants of health is especially important in tackling health disparities within the Latinx population, a group often underserved. Systemic barriers such as limited access to healthcare resources due to being uninsured or underinsured, economic instability, and language barriers significantly impact health outcomes. I also learned that it is critical to

recognize and respect the diverse cultural backgrounds and beliefs within the community to foster trust and promote meaningful community engagement.

Moreover, I learned the significance of collaborative and participatory approaches to community health. Engaging with community stakeholders through umbrella groups such as through the Latino Health Council, allows for the design of interventions that directly address the community's specific needs and priorities. It centers the voices and experiences of community members in the planning, and implementation of health initiatives, which is essential for ensuring their relevance, effectiveness, and sustainability

Recommendation/Reflections:

My work with the Latino Health Council has been crucial in shaping who I am as resident and as a community member. It has helped me to recognize the importance of education outside of the clinic and meeting patients where they feel comfortable. By actively engaging in community-based initiatives such as radio programs, health fairs, and virtual presentations, we, as family physicians, can extend our reach and address the diverse needs of our patient population.

Incorporating community-based education into our practice allows family physicians to build trust and rapport with patients. By meeting patients where they are, both physically and culturally, we can better understand the unique challenges and barriers to healthcare that individuals may face. This approach fosters open communication and empowers patients to play an active role in managing their health.

Furthermore, community-based education initiatives provide opportunities to collaborate with other healthcare professionals and community organizations. By working together to address the social determinants of health and promote health equity, we can leverage resources and expertise from across the community to provide comprehensive care.

An appropriate next step would be to further develop and expand community-based educational programs that prioritize interactive and participatory learning. This could involve organizing regular workshops, support groups, or peer-led initiatives where community members can come together to discuss health topics relevant to them. By incorporating elements of peer support and mentorship, these initiatives can help foster a sense of camaraderie and mutual support among participants.

Nivedita Nair, MD, MPH

Projects Completed During Residency:

Community Health Learning Experience:

It Takes A Village – Engaging Doulas in
Providing Comprehensive Obstetric Care

Scholarly Project:

Superiority of Aspirin 162 mg for Preeclampsia
Prophylaxis:

As rates of hypertensive disorders of pregnancy, particularly preeclampsia, become more common, these conditions are increasingly managed by FMOBs. We wrote an FPIN HelpDesk Answer to evaluate the benefit of using 162 mg aspirin (ASA) in preeclampsia prevention over 81 mg. We found 162 mg ASA reduces risk of preterm and severe preeclampsia, but not term preeclampsia, compared to 81 mg, with no difference in risks of adverse outcomes. In fact, 81 mg ASA has been consistently shown to be equivalent to no ASA in the prevention of preterm or any gestational age preeclampsia. Thanks to Allison Couture for her partnership in this project!



I am eternally grateful to my spouse, Jake, for his unconditional support. I would also like to thank my family, co-residents, and numerous mentors who have also become dear friends. Most of all, I am grateful for my Wingra Family, including my wonderful patients.



Nivi Nair, MD, MPH is drawn to family medicine because of her desire to create deep and trusting relationships with her patients. Nivi is from the Madison area and she attended the University of Wisconsin – Madison for her bachelor's degree in Psychology, her Masters of

Public Health, and her medical degree. She participated in the Training in Urban Medicine and Public Health (TRIUMPH) Program, completing her clinical rotations in Milwaukee. While in Milwaukee, Nivi learned firsthand the struggles faced by urban underserved communities and how community engagement is truly part of the practice of medicine. She is committed to collaborating with community partners to improve population health. Nivi is also interested in maternal-child health, mental health, and the care of patients with alcohol and other drug abuse disorders. She frames her medical knowledge through the lenses of service, community, and social justice. She hopes to use her physician voice to partner with underserved patients and populations to advocate for and providing healthcare across the lifespan, particularly around reproductive justice and family health. Nivi has also achieved additional training in breastfeeding medicine, and will provide lactation support in her future practice. Nivi unwinds by reading, playing with her kids, and exploring the city by eating at local restaurants.

It Takes A Village – Engaging Doulas in Providing Comprehensive Obstetric Care

Nivi Nair, MD, MPH

Primary Community Member Contact: Tia Murray, Chandra Lewis; Harambee Village

Faculty Partner: Jennifer Edgoose, Adrienne Hampton; UW DFMCH

Situation: Despite improvements in maternal and infant mortality – metrics long used to assess the health of a population – over time in Dane County, black/white disparities in our community remain high. The Dane County Health Council works to address this disparity through the Saving Our Babies Initiative, which includes the creation of the ConnectRx referral program to address reproductive justice in our black communities.

Background: According to the 2022-2024 Dane County Community Health Needs Assessment, despite modest improvements in maternal-child outcomes overall, disparities between black and white persons remain high. In this period, the overall infant mortality rate was 5.6 deaths per 1,000 live births; however, the rate for black babies, 10.6/1,000, was more than twice that for white babies, 4.6/1,000. Similar disparities emerge regarding risk of low birth weight (12.6% vs 5.7%) and very low birth weight (3.1% vs 0.9%). Maternal mortality is also alarmingly higher in black birthing persons at 47.5 per 100,000 vs 14.2 per 100,000 for white birthing persons. Black birthing persons were also 15% less likely to access early prenatal care compared to the overall population (67.7% vs 82.7%, respectively).¹

In response to these persistent disparities, reproductive justice was identified as one of the health priorities for Dane County, and the Dane County Health Council developed the Saving Our Babies Initiative, with the goal of eliminating black-white racial disparities in low birth weight and infant/maternal mortality. Part of this initiative includes ConnectRx, a multi-organization collaborative program designed to address disparities and integrate across systems to enhance the care of black birthing persons. ConnectRx is a collaboration of UW Health, Access Community Health Centers, Group Health Cooperative, Unity Point Health-Meriter, SSM Health, United Way, Foundation For Black Women's Wellness, Public Health Madison-Dane County, Black Maternal Child Health Alliance, EQT by Design, and the Madison Metropolitan School District. ConnectRx helps black identifying patients connect with a community health worker (CHW) who can help them find community resources to address social determinants of health and a doula to support them through the pregnancy process.²

Doulas are increasingly being utilized to improve birth disparities. Doulas decrease the risk of having a low birth weight baby, birth complications for the birthing parent and the newborn, cesarean delivery, and postpartum anxiety/depression.^{3,4} Doulas also increase the likelihood of initiating breastfeeding and may improve the birthing parent's sense of self-efficacy regarding their ability to impact their pregnancy outcomes.^{3,4} Given that doulas decrease the risk of cesarean delivery in birthing parents with high-risk obstetric conditions and that black birthing persons have a higher rate of high risk obstetric conditions such as preeclampsia and mood disorders, the involvement of doulas in the birthing process of black parents may bridge health disparities.⁴

In Madison, there are currently two major organizations aimed at providing doulas for black birthing persons – the Foundation for Black Women's Wellness and Harambee Village. The Foundation for

Black Women's Wellness is part of the ConnectRx program, and provides the doulas utilized by this resource. Due to high demand for services, they have also been actively engaged in supporting CHW work to increase access for patients to birth supportive services. Harambee Village currently is not part of ConnectRx, though are also committed to supporting black families in the area in similar ways.

Given the volume of obstetric care provided at the Wingra Family Medical Center, our aim is to establish relationships with doula services in the area and develop a consistent workflow to connect patients with doula services, particularly those at highest risk for adverse peripartum outcomes.

Assessment: Our first step was to assess our initial practice for involvement of doula care. At the initiation of this project, we had minimal doula involvement that when present, was frequently initiated by the patient. Providers also had limited understanding of how to connect patients to doulas, including how to utilize a ConnectRx referral.

As part of a broader restructuring of OB care at Wingra, our clinic social worker became involved in OB team assignments. Part of this process then became assessing patients for social determinants of health risk factors and ConnectRx eligibility. With this added process, referrals to ConnectRx could then be recommended to providers and ordered early in the pregnancy course (or at least on initiation of prenatal care). The majority of follow up and coordination then occurred through social work, in terms of ensuring patients connected with services and trying to coordinate having doulas come to visits/meet the provider team.

One of the major barriers uncovered during this process was the disconnect between systems processes and patient realities. The multi-step referral process for ConnectRx makes sense on paper; it allows for triaging patient needs and connecting them with all the appropriate resources. In practice, however, we found that patients at highest risk for adverse outcomes – complicated pregnancies and multiple and/or significant social determinants of health risk factors – were those least likely to be able to engage in ConnectRx. Our social worker noted that many of our patients referred to ConnectRx did not ever connect with a CHW or a doula. The structure of ConnectRx requires some patient self-determination for engagement, and these patients, when facing numerous and significant competing demands, were often unable to engage meaningfully.

The initial intake process posed a major barrier for many of our patients; ConnectRx requires an initial phone intake prior to being assigned a CHW. Many of our patients struggle with phone access and never completed this initial step. Even attempting to do this intake at clinic with our social worker posed challenges, as ConnectRx staff were not always available to complete intake at the time patients were in clinic. Even if patients did complete the intake, they often didn't receive a doula prior to labor or were lost to follow up due to waitlist times for the ConnectRx CHWs and additionally needing to go through the Foundation for Black Women's Wellness intake process after being connected with a CHW. Our social worker noted that about half of our referred patients never completed the phone intake, and that of those who did, about another half had not met with a doula prior to labor.

Attempting to communicate with ConnectRx staff on patients' behalf posed myriad challenges. Though the ConnectRx staff were consistently helpful and supportive, they were inundated by a massive demand for their services. Additionally, if patients were waitlisted, they didn't have an

assigned CHW to coordinate with and had no point of contact at Foundation for Black Women's Wellness. With ConnectRx, some of the "warm handoff" process was lost.

Working more informally with Harambee Village, we were often able to meet patients where they were at – arranging for doulas to meet them in clinic during OB visits, coordinating home visits, etc. We had established informal relationships with Harambee Village doulas initially as a means to provide resources to patients ineligible for ConnectRx. However, given their interest in expanding their services, our challenges with ConnectRx, and relative ease of communication with their doulas, we began referring ConnectRx eligible patients to Harambee Village as well.

In recognition of the importance of ConnectRx and our desire to build strong community ties with both Foundation for Black Women's Wellness and Harambee Village, we re-evaluated our doula triage and referral process. We wanted the system to see the demand for ConnectRx in the community and increase services, but we also needed a way to support patients for whom changes would not happen fast enough. We created a process map (included below) to support both appropriate utilization of resources and timely service administration to patients. As we move forward, our goal is to maximize patient engagement with doula services while supporting existing referral structures. We plan to use chart audits to track the use of doula services and from where these services are obtained.

Recommendations: Our next steps will involve implementing the new process map to evaluate when and to whom patients interested in doula services should be referred. A major challenge of this experience will need to be continually addressed; how to balance the demands of the system with the demands of the patients in front of you. Ideally, ConnectRx will eventually obtain capacity to support all our patients with social determinants of health risk, and we want to continue to support their journey in doing so. However, when faced with the high-risk patient in clinic who needs help now, we have felt the necessity of finding an alternate plan in the interim.

I often found it difficult to balance what was best to do for the patient now versus what would lead to the best outcome for all patients in the future. However, one of the major strengths of this experience helped me learn to navigate this balance; developing direct relationships with community partners, particularly as a provider and in contexts where there is significant and justified systemic mistrust, is incredibly powerful in garnering support and engagement for both little and big picture goals. It was also important to learn that though ultimate goals may be the same – i.e., improving maternal-child mortality or striving for reproductive justice – different players may have very different and competing ideas about how this will get accomplished.

I felt, and hope my community partners felt too, that in coming together in this work, we not only accomplished a project, but built relationships and trust that can continue to be leveraged as I enter practice as an attending. Knowing that clinical care only modestly contributes to patients' health in the greater landscape of their lives, advocacy and community engagement becomes quintessential to a family medicine provider's aim in partnering with patients in health. I look forward to continuing to grow and nurture the relationships I've formed through my future practice.

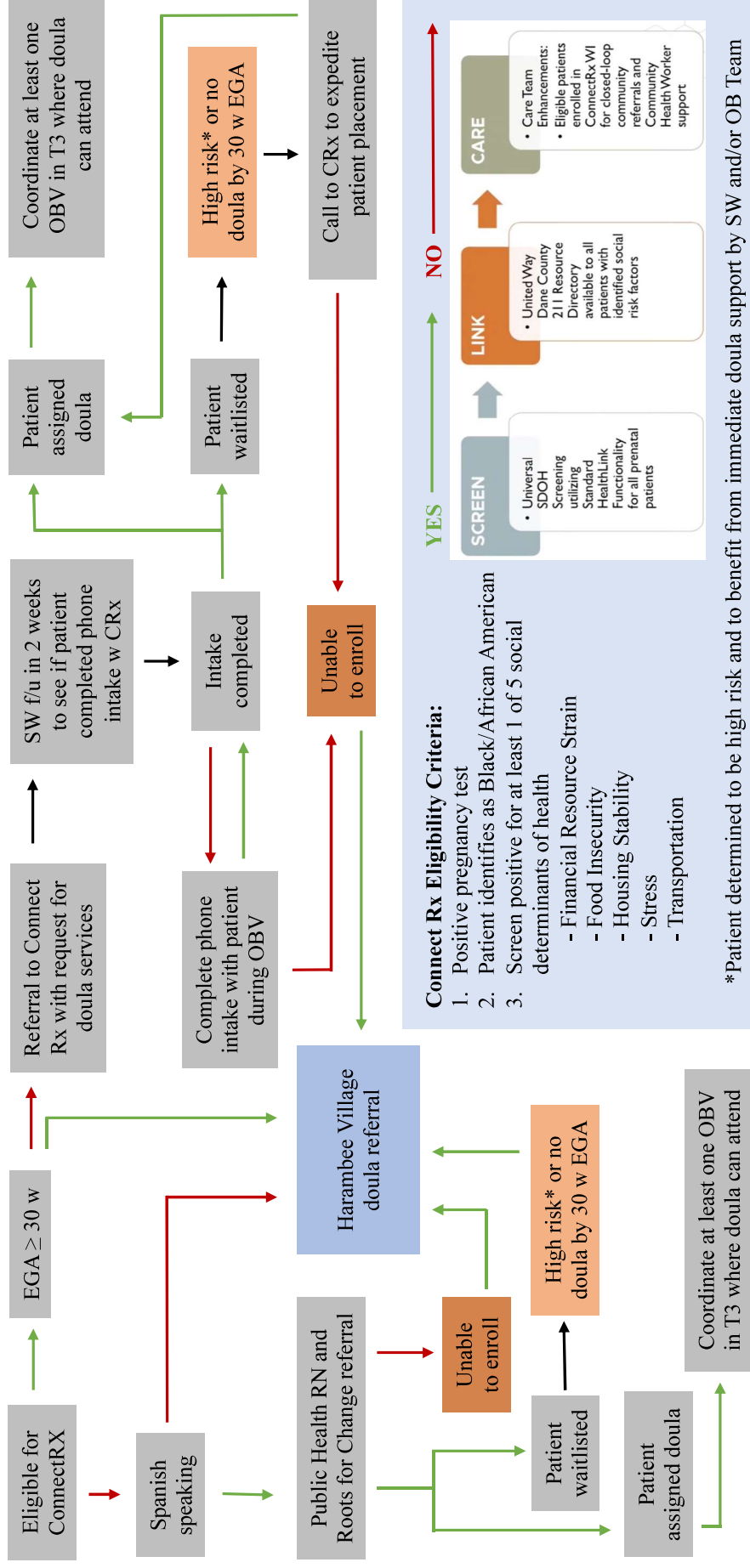
Acknowledgements: I would like to thank the awe-inspiring women of Harambee Village, including Tia Murray and Chandra Lewis, for their partnership and dedication to this work. I am grateful for the momentous work of the ConnectRx team in the face of overwhelming demand for their services. I am additionally thankful for my mentors and partners – Jennifer Edgoose, Adrienne

Hampton, Shelly Shaw, Morgan White, and Mary Vasquez. Finally, I humbly recognize Stacey Baik, who deserves the most credit for her tireless work in advocating for our patients.

References

1. Healthy Dane Collaborative. Dane County, Wisconsin Community Health Needs Assessment 2022-2024. *UW Health*. December 16, 2021.
<https://bynder.uwhealth.org/m/1aec373ea926afe3/original/Community-Health-Needs-Assessment-2022-2024.pdf>
2. Robbins, A. & Jones, A. Improving Birth Outcomes for Black Families by Connecting Care. *UW Department of Obstetrics and Gynecology Grand Rounds*. January 5, 2023.
<https://www.obgyn.wisc.edu/ob-gyn-department-news/grand-rounds-jones-and-robbins-present-improving-birth-outcomes-for-black-families-by-connecting-care-and-community-to-advance-health-equity->
3. Gruber KJ, Cupito SH, Dobson CF. Impact of doulas on healthy birth outcomes. *J Perinat Educ*. 2013;22(1):49-58. DOI:10.1891/1058-1243.22.1.49
4. Falconi, A. M., Bromfield, S. G., Tang, T., Malloy, D., Blanco, D., Disciglio, R. S., & Chi, R. W. Doula care across the maternity care continuum and impact on maternal health: evaluation of doula programs across three states using propensity score matching. *E Clinical Medicine*. 2022;50(101531). DOI: <https://doi.org/10.1016/j.eclinm.2022.101531>

Wingra Doula Services Process Map



Bradley Pfeifer, MD, MBA, MSOL

Projects Completed During Residency:

Scholarly Project:

Family Medicine Residency In-Training Exam
Trends

Community Health Learning Experience:

Editorial Health Columnist for the Verona Press:

The Verona Press is a local print and digital newspaper for which Brad provided multiple editorial health-based articles for publication during his R1 and early R2 year. The topics included 1) “Giving our Kids Enough Brainpower for the Classroom” about healthy nutritional school lunches and snacks, 2) “Winter Preparedness Tips from a Doctor’s View” reviewing important winter health topics, 3) “Staying Active is Important During Winter” with a review of some less commonly used exercise options during the colder months one cannot exercise outside, 4) “Be Prepared for Spring Allergies” with a brief highlight of some common allergy treatment options and when to see your clinician for more support, 5) “Struggling with Weight? Here’s Some Lesser Known Options” sharing newer and less popular medications and therapies for weight loss and weight management, and lastly 6) “Caffeine Myths and Facts” diving into population knowledge about caffeine, its uses, its risks, and safe consumption options regarding popular caffeinated beverages.



A giant thank you to my family, old friends, and new friends here from UW who have been very important role models for my development. A special thank you to Julia Yates and Karina Atwell for their unrelenting support and guidance during this educational process, providing me invaluable tools for the rest of my career and life. Lastly, to Pumpkin, who always provides smiles and laughs at the end of any stressful day.



Bradley (Brad) Pfeifer, MD comes to family medicine with an enthusiasm for local and national advocacy, ethical and equitable clinical practice management, optimal mental health and physical wellness, and physician leadership in both healthcare and local communities. Brad is from Sheboygan, WI and he earned his undergraduate degree in Biomedical Sciences from Marquette University. He earned his medical degree from Creighton University School of Medicine. During residency he completed his Master’s in Business Administration and Master’s in Organizational Leadership from Creighton. Brad was very involved with student government at Creighton, the American Medical Association, and the American College of Physicians. During residency, he continued his involvement with the American Medical Association serving as a national representative for the Resident & Fellow Section. While at Creighton, he was committed to mentoring and he started a 400-person pre-health professions mentoring group for college students. He also created a peer-led fitness program for graduate students. Brad is interested in sports medicine, nutrition, LGBTQ+ care, global health, and healthcare systems / IT. His career goals include practicing Family Medicine in an ambulatory setting with health systems leadership involvements. To unwind, Brad enjoys long-distance running, piano, guitar, and traveling. He likes being in nature, hiking, and exploring national parks. Most importantly, he is also dad to the world’s most adorable and most athletic 14-lb puppy, Pumpkin.

Family Medicine Residency In Training Exam Trends and Specialty Specific Knowledge Correlation

Dr. Bradley Pfeifer, MD; Jen Zaborek, MS; Dr. Ildi Martonffy, MD; Justin Sena, MA

University of Wisconsin – Madison; Department of Family Medicine and Community Health; UW Health

Introduction

The American Board of Family Medicine (ABFM) and all Family Medicine residency programs require all first, second, and third-year allopathic (MD degree) family medicine residents to take an annual examination called the In-Training Exam (ITE). This examination is a 200-question multiple choice examination. This is a distinct exam from osteopathic residents. The purpose of the ITE is to help residency programs and residents assess training progress and medical knowledge that is required to be a family medicine physician. Residency programs are also able to assess their educational curriculums and educational goals by comparing exam statistics for their residents compared to national trends. Residents can derive their ITE performance as a reasonably reliable predictor of Family Medicine Board Exam pass rate estimates.

Objectives

- 1) To better understand ITE score progression for allopathic family medicine residents at UW Madison regarding individual total scores along their years of training.
- 2) To better understand ITE score progression for allopathic family medicine residents at UW Madison regarding program overall total scores each academic/chronological year of training.
- 3) To better understand if allopathic family medicine residents at UW Madison are performing statistically better or worse in specific categories of specialty knowledge.

Datasets Overview

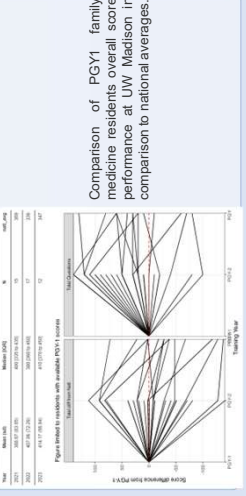
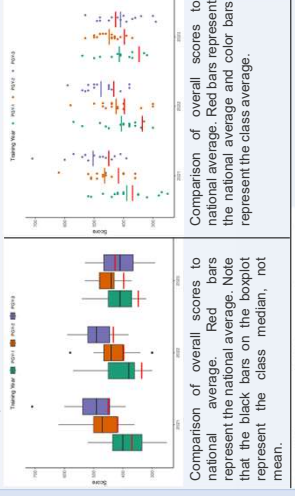
- Individual MD resident datasets: 44 from 2023, 47 from 2022, and 44 from 2021
- ITE score categories: Total Questions, Respiratory, Cardiovascular, Musculoskeletal, Gastrointestinal, Special Sensory, Endocrine, Integumentary, Neurologic, Psychogenic, Reproductive: Female, Reproductive: Male, Nephrology, Hematologic/Immune, Nonspecific, Population-Based Care, Patient-Based Systems, Adult Medicine, Maternity Care, Community Medicine, Care of Children and Adolescents, Mental Health, Care of the Elderly, Care of the Female Patient, Emergent & Urgent Care Care

Methods & Results

Using a linear mixed effects model of score based on training year, chronological year, and a random intercept by resident, the total questions scaled score increased from PGY-1 to PGY-2 (48.48, CI 27.73 to 69.22, $p < 0.001$) but not from PGY-2 to PGY-3 (13.18, CI -7.45 to 33.80, $p = 0.213$), although the effect was maintained from PGY-1 to PGY-3 (61.65, CI 35.13 to 88.17, $p < 0.001$).

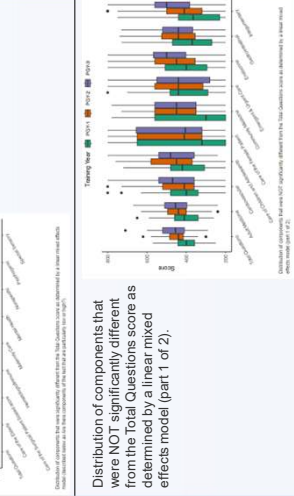
Training Year	Mean (sd)	Median (IQR)	N
2021			
PGY-1	366.87 (88.63)	360 (328 to 405)	15
PGY-2	444.59 (87.26)	437 (420 to 500)	15
PGY-3	503.57 (84.73)	492 (448 to 527.3)	14
2022			
PGY-1	407.86 (72.26)	358 (301 to 405)	17
PGY-2	425.33 (73.37)	387 (448 to 500)	15
PGY-3	476.87 (88.65)	453 (490 (448 to 500)	15
2023			
PGY-1	434.17 (88.84)	347 (410 (378 to 405)	12
PGY-2	448.52 (82.11)	397 (448 (420 to 465)	17
PGY-3	410.02 (73.51)	427 (411 (365 to 465)	15

Using a similar model setup of the difference between score and the national average, there was no difference in how well UW residents improved relative to the national average between PGY-1 to PGY-2 (-5.04, CI -25.63 to 15.55, $p = 0.632$), PGY-1 to PGY-3 (-24.11, CI -50.57 to 2.35, $p = 0.077$), or PGY-2 to PGY-3 (-19.07, CI -39.54 to 1.40, $p = 0.071$).



Methods & Results

Distribution of components that were significantly different from the total questions score as determined by a linear mixed effects model (described below as Are there components of the test that are particularly low or high?).



Distribution of components that were NOT significantly different from the total questions score as determined by a linear mixed effects model (part 2 of 2).



Discussion & Conclusions

Although residents' total scores increased by training year, they did not increase relative to the national averages. This could be due to UW residents starting their PGY-1 at greater scores than the national average. The family medicine residents also go through more inpatient rotations first year compared to second and third-year residents which could contribute to score variations. Second and third-year residents complete more outpatient rotations through various specialty and subspecialty clinics, therefore each academic year the exposure to various amounts of the different ITE score categorical knowledge topics can change dynamically between training and chronological years, as well as resident to resident which this study is unable to account for.

The total questions score did not significantly change from 2021 to 2022 or 2022 to 2023, but did from 2021 to 2023 (-28.84, CI -55.36 to -2.32, $p = 0.035$). The difference from the national average did not change from 2021 to 2022, 2022 to 2023, or 2021 to 2023. (Confidence intervals and p-values available upon request.)

Are there components of the test that are particularly low or high?

A linear mixed effects model of score was fit with fixed effects of year in training, chronological year, and component name, with total score set as the referent. A random effect per resident was included. This dataset cannot compare directly in-place to national scores due to lack of national categorical score breakdown.

Relative to their overall total score, residents had significantly better scores for care of the elderly (39.26, CI 0.98 to 77.54, $p = 0.044$), hematologic/immune (43.11, CI 4.83 to 81.39, $p = 0.027$), maternity care (112.89, CI 74.61 to 151.17, $p < 0.001$), mental health (58.07, CI 19.79 to 96.35, $p = 0.003$, nonspecific (43.85, CI 5.57 to 82.13, $p = 0.025$), psychogenic (74.52, CI 36.24 to 112.80, $p < 0.001$), and special sensory (79.93, CI 41.65 to 118.21, $p < 0.001$). Many topics,

particularly care of the elderly, maternity care, mental health, and psychogenic are topics this residency program at UW Madison has greater exposure to in relation to some other programs though the statistical assumptions are based off UW Madison internal scores only. Residents had significantly worse scores on surgical care (-43.63, CI -81.91 to -5.35, $p = 0.026$). Surgical care required elective time is limited to 3 weeks in the PGY1 year with optional further elective time.

References & Acknowledgements

A special thanks to Jen Zaborek, MS, a biostatistician with UW-Health, who prepared the analyses presented here, along with Justin Sena, MA, who prepared the datasets to be used in this analysis as ITE data is privy to residency staff and leadership.

Luke Ragon, MD

Projects Completed During Residency:

Community Health Learning Experience: ChopChop Family Cooking Classes

Scholarly Project:

Treatment of Acute Sinusitis:

We conducted a literature review to write an FPIN HelpDesk Article to answer the question, “Does the use of intranasal corticosteroids offer benefit in the treatment of acute sinusitis over antibiotic therapy alone?” Patients with acute sinusitis treated with INCS in addition to antibiotics were modestly more likely to report resolution or improvement in symptoms compared to placebo. However, when evaluated specifically in a primary care setting, there was no significant difference in symptom duration or severity between patients treated with INCS, oral antibiotics, or in combination.



Thank you to my partner, Rachel, for your love, support, and encouragement throughout this journey. To my parents, thank you for always being there for me over the years and being the role models that have allowed me to be in my current position.



Luke Ragon, MD is drawn to rural family medicine because of its focus on disease prevention, care for medically underserved populations, and outpatient procedures. His goal is to work in a small, rural town, developing enduring relationships with his patients and engaging with

the community. Luke is from Dansville, MI and earned his undergraduate degree in Biology from Hope College in Holland, MI. He earned his medical degree from Wayne State University School of Medicine in Detroit. While in Detroit, Luke was involved with community service and clinical outreach. He was a part of the Fabric of Society program that allowed him to volunteer with local organizations providing clinical and social care. Through his volunteer work, Luke learned how people are adversely affected by socioeconomic disparities and how this directly impacts health. He also volunteered with Street Medicine Detroit to provide care for the unreached and homeless population. From these experiences, Luke learned empathy, compassion, and a renewed respect for the resilience of the human spirit. He also learned the joy of working with patients in limited resource settings. When he is not in the clinic, Luke enjoys spending time outdoors hiking, camping, hunting, and fly fishing and fly tying. He also enjoys cheering for the Cleveland Browns and the Ohio State Buckeyes.

ChopChop Cooking Club

Luke Ragon, MD

Primary Community Member Contact: Kelley Wilson

Faculty Partner: Allison Couture, DO

Situation: Childhood obesity is a significant problem in the United States that puts children at risk of poor health outcomes, and disproportionately affects racial minorities and those from lower socioeconomic status. To address this, ChopChop Family Cooking Club was implemented.

Background: In Wisconsin, obesity prevalence among children ages 2 to 17 is nearly 15%¹. Obesity prevalence does not affect the children of Wisconsin equally, as children in some neighborhoods are 6 times more likely to be obese than in other neighborhoods¹. Obesity is more common in children who live in poverty, in under resourced areas, and who experience discrimination⁴. Childhood obesity is tightly linked to obesity in adulthood which increases the risk for serious health conditions including diabetes, high blood pressure, and heart disease, among others². Obesity is a complex disease with many factors contributing - a poor diet plays a critical role³. Much of our modern diet consists of calorie dense, ultra-processed foods (e.g., fast food). These foods are positively associated with obesity in children and adolescents⁴. Conversely, it has been shown that eating home-cooked meals is associated with lower rates of obesity⁴. Cooking programs can positively influence children's food-related preferences, attitudes, and behaviors⁵. In this project, cooking classes were hosted at two community locations in Madison, WI using the ChopChop Family Cooking platform to teach/inspire children and families to cook and eat together⁶. Recipes used diverse ingredients that align with SNAP and WIC benefits, and other class activities taught life skills such as language literacy and nutrition. Specifically, I helped organize, plan, and lead multiple cooking classes. Stakeholders engaged included BPNN, Hy-Vee Fitchburg, Festival Foods Verona, UW Health nutrition staff, UW Dietetic students, and UW Family Medicine providers.

Assessment: Though no formal evaluation was performed, families learned new recipes and kitchen skills each session. Multiple families repeated classes and self-reported a sense of improved confidence in the kitchen resulting in more meals cooked at home. Applying an equity lens revealed disparities in access to fresh produce and kitchen supplies, which influenced program design and affordable ingredient selection. Additionally, cultural considerations were applied to ensure inclusivity in the recipes taught and providing Spanish based sessions.

Recommendation/Reflections: Appropriate next steps may include implementing pre/post surveys to obtain meaningful data regarding learned skills, percentage of meals eaten at home, and health outcomes; as well as meeting with local schools to expand outreach and implement cooking classes on a larger scale. This experience underscores the importance of using preventive strategies and community partnerships to promote health equity in my future family medicine practice.

Acknowledgments: Allison Couture, DO; Adam Cordum, MD; Jo Shrerill, MD; Molly Vernon, MD; Colin Kavanaugh, MD; Kim Krawzak, MD; Maggie Larson, DO; Badger Prairie Needs Network; The East Madison Hospital Learning Kitchen; Chop Chop Magazine; UW Health nutrition staff; UW Health dietetic students

References:

1. "Obesity by Age." *Wisconsin Health Atlas*, University of Wisconsin School of Medicine and Public Health, www.wihealthatlas.org/obesity/age. Accessed 3 May 2024.
2. "Childhood Obesity Facts." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 17 May 2022, www.cdc.gov/obesity/data/childhood.html.
3. "Childhood Obesity." *Wisconsin Department of Public Instruction*, 19 Apr. 2017, dpi.wi.gov/families-students/health-safety/childhood-obesity.
4. Hampl, Sarah E., et al. "Clinical practice guideline for the evaluation and treatment of children and adolescents with obesity." *Pediatrics*, vol. 151, no. 2, 9 Jan. 2023, <https://doi.org/10.1542/peds.2022-060640>.
5. Hersch D. The impact of cooking classes on food-related preferences, attitudes, and behaviors of school-aged children: a systematic review of the evidence, 2003–2014. *Prev Chronic Dis*. 2014;11.
6. "Chopchopfamily- Helping Families Eat Healthy." *ChopChopFamily.Org*, 31 Jan. 2024, www.chopchopfamily.org/.

Taylor Ross, MD, MPH

Projects Completed During Residency:

Scholarly Project:

Which Pushing Positions Reduce Time in the Second Stage of Labor?

Community Health Learning Experience:

MEDiC Patient Satisfaction:

MEDiC is a student-run free clinic in the Madison community. The clinic's recent funding acquisition required an assessment of patients' experience. We created the survey by reviewing satisfaction surveys at various health systems in the Madison area, including Access Community Health Centers, UW Health, and Sixteenth Street Community Health Centers. The evaluation is ongoing, with less uptake of the survey than planned. The team plans to transition the survey to a paper form this summer to see if there is increased participation.



Taylor Ross, MD is drawn to family medicine because of her passion for advocacy, social justice, and community medicine. Taylor is originally from Nixa, MO and she earned her bachelor's degree in Cell and Molecular Biology from Missouri State University. She then

went on to earn her Masters of Public Health and medical degree from the University of Missouri. She served as Director of Clinic Services and started the Food Security Team at MedZou Community Clinic, the student-run free clinic. During her last year of medical school, she served as an intern at the Boone County Department of Health and Human Services, where she helped with contact tracing and the translation of COVID-19 infographics. Taylor also worked with Live Well by Faith, a Community Health Worker program that partnered with Historically Black Churches to create a system to match community members with primary care providers. Taylor believes that forming relationships outside of the clinic is essential in providing practical advice and interventions to improve the health outcomes of communities. Taylor's medical interests also include women's health, medication assisted therapy, gender affirming care, and sports medicine. In her free time, Taylor enjoys growing plants, cooking, baking, hiking, and enjoying life with her husband and their two dogs and cat.



Daniel's selflessness and support allow me to be the doctor and mother I've envisioned. He is a wonderful cook, father, and partner. I want to remind him how incredible and hardworking he is. I am so excited about this next year. We both appreciate our family's support this spring as we became parents. Roman is excited to live closer to his grandparents and has loved spending the last 3 months with his great-grandma. We love you all.

Title:

Which pushing positions reduce time in the second stage of labor?

Authors:

Taylor Ross, MD, MPH

Lee Dresang, MD

Institution:

University of Wisconsin Department of Family Medicine and Community Health (UW DFMCH)
Madison, WI

Bottom line (35-75 words) - randomized controlled trials, Cochrane Reviews, meta-analyses

A Cochrane Review of patients without an epidural showed a reduction in the second stage of labor with upright positioning. A meta-analysis that did not differentiate between patients' epidural status showed a reduction in the second stage of labor with flexible sacrum positioning. Notably, both reviews had low-quality evidence and significant heterogeneity. Another Cochrane Review examining positioning in patients with an epidural found no significant difference in upright vs. supine positioning in the second stage of labor duration.

Case

A 28yo G1P0 sees you for a prenatal visit at 35w3d. She asks whether the position in which she is pushing will affect how long she will need to push.

Evidence Based Summary

A 2017 Cochrane Review of 19 RCTs involving 5811 birthing people found that, compared with supine position, upright position resulted in a small, but statistically significant decrease in the second stage of labor in people without an epidural (MD -6.16 minutes; 95% CI - 9.74 to - 2.59). In subgroup analysis, the duration of the second stage was similar amongst primigravid and multigravid patients. Analysis of trials showed possible publication bias requiring caution in the interpretation of results.¹

A 2019 meta-analysis of 6 studies (not all RCTs) investigated the impact of flexible sacrum positions on the duration of the second stage of labor. Flexible sacrum positions -- including knee-standing, on all fours, sitting on a birth seat and lateral -- were defined as positions where weight is taken off the sacrum, thereby allowing the pelvic outlet to expand.² The meta-analysis did not differentiate between labor timing for individuals with or without an epidural. The analysis found that using flexible sacrum positions resulted in a second stage of labor which was on average 21.1 minutes shorter (95% CI 11.8–30.4).² Significant heterogeneity between studies impacted the interpretation and application of the study to practice.²

A 2018 Cochrane Review of 3 RCTs involving 456 birthing people found that, compared with supine position, upright position did not have a significant impact on the duration of the second stage in women with an epidural (MD 6.00 minutes; 95% CI -37.46 to 49.46).³ The study did not include a subgroup analysis of primigravid and multigravid patients.

Case conclusion

You advise your patient that the evidence is not strong, but it seems that if she does not have an epidural, pushing upright or with flexible sacrum positions (and you explain what that means) may shorten how long she has to push on average 6 and 20 minutes, respectively. However, if she has an epidural, pushing position will not likely affect how long she pushes.

References:

1. Gupta J, Sood A, Hofmeyr G, Vogel J. Position in the second stage of labour for women without epidural anaesthesia. *Cochrane Database Syst Rev*. 2017 (STEP 1).
2. Berta M, Lindgren H, Christensson K, Mekonnen S, Adefris M. Effect of maternal birth positions on duration of second stage of labor: systematic review and meta-analysis. *BMC Pregnancy Childbirth*. 2019;19(1):466 (STEP 1).
3. Walker K, Kibuka M, Thornton J, Jones N. Maternal position in the second stage of labour for women with epidural anaesthesia. *Cochrane Database Syst Rev*. 2018 (STEP 1).

Jagpreet Sekhon, DO

Projects Completed During Residency:

Community Health Learning Experience:

Human Trafficking and Exploitation Education

Scholarly Project:

Trauma-Informed Care: A Conversation:

An osteopathic approach to trauma-informed care. Discussed how the osteopathic model of mind, body and spirit can be applied to working with patients who have undergone trauma-related stressors. Explored the somatic manifestations of trauma and how we can use different osteopathic techniques to create a safe environment for patients. The body does, in fact, possess self-regulatory mechanisms that are self-healing in nature and we can see this reflected in patient resilience.



Jagpreet Sekhon, DO calls Madison, WI home. She became a family doctor because she wants to help patients overcome suffering and navigate their care. Jagpreet is committed to creating spaces for her patients to feel safe and supported during difficult conversations about

goals of care. She earned her bachelor's degree in Biology and a certificate in Global Health from the University of Wisconsin – Madison. While in college, she interned for STREETS (Social Transformations to End the Exploitation and Trafficking of Sex) and she learned about health disparities while working as an intern with the Area Health Education Center Community Health Internship Program in Milwaukee, WI. Jagpreet attended the Alabama College of Osteopathic Medicine. At her clinical rotation in Bayou La Batre, AL, she saw firsthand the necessity of providing culturally competent care that addresses the social determinants of health. Jagpreet's interests include providing trauma informed care, improving access to care, community medicine, and providing mental healthcare to BIPOC communities. She is also interested in adolescent medicine, preventative care, and integrative health. In her free time, Jagpreet enjoys music, poetry, and curating cheese boards.



*Thank you to my Mom and Dad for their endless support and love that lasts beyond lifetimes. Thank you to my family, especially Jinda and Cardi, for being the best roommates. Thank you to Gurbax Uncle for all of your support. Thank you to those who have passed, Papaji, Bibiji (W), for your unconditional love that I revisit when I'm down. Thank you to the Grewal clan for the cheers and celebration. Thank you to my best friend, Bonit, for her constant guidance. Thank you my mentors and co-residents for making this fun. Thank you to the people whom I love and who have ever loved me. And above all... I wanna thank me *drops mic* Jk my patients, thank you patients - you make it all worth it!*

Human Trafficking and Exploitation Education

Jagpreet Sekhon, DO

Primary Community Member Contact: Araceli Alonso, PhD

Faculty Partner: Adrienne Hampton, MD

Situation: Lack of education around Human Trafficking and Exploitation from a healthcare lens. Education to health professional students include PA and NP students at UW-Madison.

Background:

- Who are the stakeholders engaged?
Patients, health systems, learners.
- What are the aims of the project?
Improve provider comfortability in working with populations who have undergone human trafficking/exploitation and using screening tools.

Assessment:

- What did you and/or your team learn when you applied an equity lens?
Feedback from learners/evaluation of lecture. Discussed applying this topic to different patient populations, including migrants from Belize in an effort to mentally prepare students for their global health trip.

Recommendation/Reflections:

- What do you think are appropriate next steps?
Will be continuing to connect with learners, stay tuned for next lecture on 10/1!
- What were the strengths and challenges of this experience?
Strengths were that this topic was found to be relevant and interesting to learners. Challenges included finding times in busy residency schedule to deliver talks (ie on inpatient). One area for growth would be following up with students after their trip to see if lecture material helped to improve their comfort when speaking with patients who have experienced sex trafficking.
- How does this experience inform your future practice of family medicine?
I will continue to value the education of all of my colleagues at my clinic when it comes to trauma-informed care in the health systems.