



Department of Family Medicine  
and Community Health

UNIVERSITY OF WISCONSIN  
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Madison and Baraboo Family Medicine  
**Residency Programs**

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**Scholarly Projects and  
Community Health Learning  
Experiences**  
From the Class of 2019

# Lindsey Engel, MD

## Projects Completed During Residency:

### Community Health Learning Experience:

Badger Prairie Needs Network Senior Cooking Classes

### Scholarly Project:

Does Maternal Nitrofurantoin Use in Pregnancy Have Long-Term Health Effects on the Child?:

Nitrofurantoin use during pregnancy has mixed evidence for teratogenic effects. Cohort studies show no association between maternal nitrofurantoin use during the first trimester and major congenital malformations, however, periconceptual use of nitrofurantoin was associated with development of cleft palate in a large case-control study. ACOG Committee Opinion 717 agrees that the evidence is mixed, and that when reasonable, penicillins, erythromycin, and cephalosporins should be used first line, as these drugs have not been shown to cause birth defects. If these drugs are not suitable, nitrofurantoin may be used. When used in later trimesters, nitrofurantoin has not been found to cause adverse effects in the child.



Lindsey Engel was born and raised in Lexington, Kentucky. She earned her undergraduate degree at Vanderbilt University, and then completed medical school at the University of Louisville. Prior to medical school, Lindsey worked in the United States Senate leadership during the

national healthcare policy debate. These months of exposure to health policy and government process led her to discover her love of medicine. Before medical school Lindsey also worked as a medical assistant in a busy OB/GYN clinic in downtown Washington, DC. There she learned the importance of delivering high quality patient care as well as the essential skills of triage, giving injections, and phlebotomy. She also attended the AMSA's Heart-IM rotation, a month-long gathering of medical students across the country who share the common goal of enhancing skills in healing through integrative medicine. Lindsey loves spending time outside and traveling whenever possible. She also enjoys baking, yoga, and hanging out with her husband, their 10 month-old son, Evan, and 7 year-old Brittany spaniel, Nash.



*My greatest accomplishment is without a doubt my family. Thank you to my amazingly patient, loving, wonderful husband, Brad, for being both Dad and Mom during the many nights and weekends that I was working to make this dream a reality, for being a supportive ear during difficult times, and for loving me no matter what. You do so much for me and for our family and I am so grateful. To my baby boy, Evan - thank you for allowing me to be your Mama and for the smiles and laughs which make any day better. To my parents - thank you for showing me that hard work pays off and for supporting me throughout this journey. To my co-residents and mentors who helped me along the way - thank you. Your support means the world and I would not have made it through the past 3 years without each of you.*

## **Badger Prairie Needs Network Cooking Classes**

The geriatric population is at risk for food insecurity, hunger, and malnutrition. Some of the reasons for this are social isolation, mobility issues, and poor access to healthy food. The Badger Prairie Needs Network (BPNN) Cooking Classes are one way that Verona is working to improve the health of seniors in the community.

The BPNN Cooking Classes are monthly classes for seniors that occur at the Badger Prairie Needs Network in Verona. UW Health Verona physicians, Maggie Larson and Brian Arndt, as well as registered dietician, Kara Hoerr, lead classes. Kara plans healthy menus and brings the ingredients from Fitchburg Hy-Vee, while BPNN provides the kitchen space and cooking supplies. Participants are recruited at the Verona Senior Center. Each participant is asked to pay a \$40 fee at the beginning of the six month session to covers the supplies for the classes. Participants work together to create beautiful meals over an hour and a half, then get a chance to share their meal together at the end. They are also invited to bring containers to take home leftovers. They are provided with a printed copy of the recipe so that they can then make the dishes at home. BPNN also houses a food pantry complete with fresh and frozen produce, dairy and meats, as well as a food recovery program, which provides a free community meal every other Saturday to those in the Verona Area School District.

Feedback from these sessions has been quite positive. Participants benefit from learning to cook healthy meals and the fact that they are able to take the recipes home to recreate the dishes themselves. They enjoy having the opportunity to connect with local healthcare providers and each other in a fun, laidback atmosphere. BPNN cooking classes promote a healthy lifestyle through nutritious foods, socialization, and community engagement.

BPNN Cooking Classes are a great way for healthcare professionals to engage the geriatric population and help reduce the impact of poor nutrition on the community. Future projects could include expansion of this program to other area food banks and community kitchens so that others in Dane County may benefit.

# Paula Goldman, MD

## Projects Completed During Residency:

### Community Health Learning Experience:

Health Education for Pregnant and Parenting  
Teens

### Scholarly Project:

Office Based Interventions to Prevent Child Abuse:

I wrote an FPIN reviewing the literature available to answer: “Are there effective office based interventions to prevent child abuse?” I found that interventions in primary care offices or initiated by referral from a primary care provider have not consistently been beneficial for primary prevention of child maltreatment. However, isolated interventions such as the SEEK Model have achieved prevention of child maltreatment with statistically significant reduction in severe or very severe physical assault and a 6% reduction in CPS reports (NNT = 17). The intervention consisted of 1) training for residents, 2) administration of the Parent Screening Questionnaire, and 3) resident or social worker addressing risk factors for child maltreatment during the visits of those who screened as high risk on the Parent Screening Questionnaire.



Paula Goldman grew up in Deerfield, Illinois, just north of Chicago. After completing a bachelor’s degree in Psychology, with a minor in Poverty Studies, at Notre Dame, she went on to pursue her medical degree at the University of Michigan.

As a medical student, she was part of the Health Equity Scholars program, a student-driven co-curriculum focused on health disparities education and community engagement. She also served as a curriculum coordinator on a student committee that worked directly with the deans to create a school-wide health disparities curriculum required for all students. In addition to this curricular work, Paula has a strong interest in global health. She conducted mental health screening research in Ecuador and completed an OB/GYN rotation at a low-resource public hospital in Panama. Her clinical interests include adolescent medicine, mental health, women’s health and obstetrics, bilingual care, and community-based research. Outside of medicine, Paula has competed nationally in synchronized figure skating from the age of 12 through her undergraduate career. She also enjoys trying out new types of dance, traveling, road trips, and hiking.



*Thank you to Jonas Lee for his mentorship for my Scholarly Project. Thank you to Lee Dresang for connecting me with my community partner, SAPAR, and to the students and staff of SAPAR for their warm welcome and collaborative partnership. Thank you to my husband and co-resident, Kartik, for his love, support, and belief in me. Thank you also to our parents and siblings for all of their encouragement and guidance along the way.*

## Health Education for Pregnant and Parenting Teens

### Background:

I have conducted monthly interactive education sessions at the School Age Parent Program (SAPAR) for pregnant and parenting teens in downtown Madison for the past 2 school years. Education is provided to all teens enrolled in SAPAR; this is a group of 4-8 young women ages 15-18 who are pregnant or parenting infants <1 year. SAPAR's Childbirth and Parenting Specialist and school nurse were concerned regarding students' lack of pregnancy and parenting-related medical knowledge as well as the many barriers students faced to obtaining accurate medical information, including feeling distrustful of the medical community and not feeling empowered to ask questions of their providers. These educational sessions were developed in collaboration with students, teachers, and the school nurse and were incorporated as part of the required core curriculum to address these concerns.

### Objectives:

1. Provide accurate medical education on pregnancy, infant health, and reproductive health topics relevant to teens.
2. Create an interactive curriculum that engages students in sharing their experiences and voicing their questions.
3. Empower students to be active participants and advocates in their medical care and in the care of their children.

### Methods:

To develop educational content, I utilized in-person meetings with teachers and the school nurse prior to each school year, extensive email communication with staff in preparation for each visit, a running list of questions/topics of interest kept in the classroom that was then relayed to me before each session, and an opportunity for students to anonymously submit questions/topics on notecards at the end of each session. Each session was interactive and consistently involved a "Mythbusters" activity. Topics covered included common complaints of pregnancy, expectations and decision-making related to delivery, contraception, STIs/HIV/HPV, child abuse, postpartum depression, PTSD, care of newborn, vaccinations, early childhood growth and development, and preparing for a well child appointment among others.

### Results:

Students became increasingly engaged in sessions, sharing their experiences and asking many questions. Feedback from teachers included: "a few of my girls told me that they feel more comfortable talking to their OB and pediatricians now because you seemed nice and never judged them" and called the program "the first doorway many of them have had to have trust and a voice in the medical world." Student feedback included "Dr. Paula definitely helped me feel more ready and prepared to make the right choices for my soon to be born daughter" and that the "tips, info, and facts helped reassure us what is in our babies and even our own best interest." I grew as an educator during my partnership with SAPAR and gained deeper insight into what information and care is most valuable to my younger pregnant patients.

**Conclusions:**

The scope of this course broadened over time and I often found that what weighed most heavily on students' minds was not what their teachers or I would have predicted. I found it crucial to incorporate the broader themes affecting students' ability to engage in self-care and parenting, including pervasive history of abuse, struggles with anxiety and depression, and lack of empowerment in their relationships with care providers and intimate partners. I also learned to plan less content per session so that there was time and space for students to share experiences and ask questions. I hope that future residents will carry forward the partnership between the UW Family Medicine residency and SAPAR and that the curriculum will continue to evolve over time to meet the students' needs.

**Acknowledgments:** Thank you to the students of SAPAR for the warm welcome and for sharing their experiences, doubts, and questions. Many thanks to the SAPAR staff for their partnership and their inspiring commitment to their students, especially Jessie Loeb, Tamara Peyton, and Pa Vang. Thank you to Lee Dresang who initially connected me with SAPAR and to both Lee Dresang and Jess Dalby for providing mentorship along the way. Thank you to my husband Kartik for his infinite encouragement and support for this work.

# KJ Hansmann, MD

## Projects Completed During Residency:

### Community Health Learning Experience:

Partnering with Advocates and the Community –  
Establishing Safe Routes to School at Lake View  
Elementary School

### Scholarly Project:

Family Physicians Inquiry Network HelpDesk  
Answer: Does Participation in Targeted Programs  
such as Safe Routes to School or Walking School Bus  
Increase Physical Activity in School-Aged Children?:

In addition to engaging with local community partners to establish a Safe Routes to School program at Lake View Elementary School, I also submitted a Family Physicians Inquiry Network (FPIN) HelpDesk Answer article for publication about the evidence supporting Safe Routes to School interventions as a means of increasing physical activity in school-aged children. Based on systematic reviews of the available research, increasing active transportation to school does increase physical activity in school-aged children. There was more evidence to support a significant increase with multi-faceted interventions like Safe Routes to School rather than individual interventions like Walking School Bus.



*There are so many people who have supported me through my education and training - patients, peers, teachers, friends and, above all, family - and I am so incredibly grateful to all of you. Thank you to Badger and Kevin for making home a place where I feel loved and supported no matter what kind of day I've had. Thank you to my sister, Della, for blazing a trail for me, for inspiring me and for being my best friend. Thank you to my parents for instilling me with a drive to make positive change in my community and for always being my biggest cheerleaders. I couldn't accomplish any of this without your love and support. And without you this journey wouldn't be as weird, it wouldn't be as wonderful and it wouldn't be worth it.*



Kellia (KJ) Hansmann grew up in Madison and earned her bachelor's degree in Journalism from the University of Wisconsin-Madison. She then went to Northwestern University for medical school, where she pursued her interest in community health and advocacy through a dual

MD/MPH degree program. KJ served as the President and Public Health/Health Justice Chair for her school's AMSA chapter where she organized a seminar series called "Advocacy in Action" to empower medical students to lobby elected officials. During medical school, KJ also traveled with medical and public health service trips to India and Mexico, where she learned about issues of healthcare access and strategies to provide care to underserved populations. KJ has continued her passion for advocacy during her residency training, participating in the AAFP Family Medicine Advocacy Summit in Washington, DC in her second year and sitting on the opening plenary panel, Advocacy in Action, for Family Medicine Midwest in her third year. This spring, KJ was awarded the UW DFMCH McGovern-Tracy Scholars Award for exemplifying values of community service and leadership in training. In her free time, KJ enjoys watching live comedy and theater, drinking coffee, hiking, biking, and watching Badger basketball with friends and her cat, Badger.

## **Partnering with Advocates and the Community – Establishing Safe Routes to School at Lake View Elementary School**

### **Background:**

Lake View Elementary School is located less than a mile from Northeast Family Medical Center. In June 2012 our clinic “adopted” Lake View in order to better serve the community around our clinic. During my residency training I have participated in ongoing partner projects between Lake View and our clinic including collecting survey data and sharing information about Earned Income Tax Credits to address financial insecurity and participating in our annual Lake View Wellness Day. During the 2018-2019 academic year, I partnered with Rachel Deterding, Lake View Elementary School’s new Community School Resource Coordinator, and Healthy Kids Collaborative, a Dane County advocacy group that organizes programs to promote children’s fitness and nutrition opportunities. In 2018 Healthy Kids Collaborative identified Lake View as one of its four schools to implement a Safe Routes to School Program.

Rachel Deterding and Community School staff have been collecting attendance and demographic data at the school this year. Lake View has a 93.2% attendance rate (the school district’s goal is 94%). But there are noticeable differences when attendance rates are broken down by month, with a significant decline in winter months. And while more than 67% of students live within walking distance of the school, when attendance rates are broken down by neighborhood, students within walking distance appear to have a lower attendance rate than those who live further away.

### **Objectives:**

By partnering with both Lake View Elementary and Healthy Kids Collaborative, my goal has been to work with these stakeholders and advocacy partners to promote pedestrian and bike safety for increased physical activity among the K-5 students at Lake View. Through Northeast’s relationship with Lake View, I have sought to advocate for interventions at the school that are informed by the needs of the surrounding community. Lake View went through a transition year with its new role as a Community School and Healthy Kids Collaborative saw staff changes, but despite this I have continued to seek regular input from both the school and Healthy Kids to help facilitate ongoing partnership.

### **Methods:**

Starting in July 2018, I began to meet with staff at Healthy Kids Collaborative to learn more about their Safe Routes to School interventions at other pilot elementary schools in Madison. While implementation has been delayed by staff changes at Healthy Kids, I have continued to stay connected with them and maintain enthusiasm for Safe Routes to School at Lake View.

I have also coordinated with Rachel Deterding and Community School staff at Lake View in an effort to assess the community needs prior to implementation of new Safe Routes to School programming. As a new Community School, staff at Lake View are committed to serving the needs of their unique community. Based on their initial attendance data collection, Rachel and other staff suspect a barrier to



attendance and active commuting that students face is that some may not have adequate winter clothing to keep them safe in colder months.

### **Results:**

With the help of Rachel and partners at Lake View, I have designed a student-oriented activity assessing students' attitudes towards their commute to school to be implemented at this year's Lake View Wellness Day on May 20<sup>th</sup>. The activity will engage students in photographs from several intersections around the school that have varying levels of pedestrian infrastructure. We are seeking to solicit qualitative data about what students feel makes a street safe and pedestrian-friendly and what does not. We are also planning ongoing activities after Wellness Day such as a neighborhood walk-and-talk where students will be able to take their own photographs and discuss street safety.

As we continue to move forward with Healthy Kids Collaborative we plan to collect more quantitative data about how students are currently commuting to school in an effort to inform future interventions to promote walking and biking to school and to assess their efficacy.

### **Conclusions:**

Progress this year has been slow with Lake View Elementary School and Healthy Kids Collaborate in an effort to support their Safe Routes to School partnership. Both groups have undergone changes in terms of staff and/or structure this year. However, I think this collaboration has been successful in the continued motivation of all partners. As the end of this academic year approaches, we are making active plans to gather both qualitative and quantitative data about student commuting at Lake View. Moving forward, I am optimistic that we will continue to engage the students and families at Lake View to design programming that is meaningful to them.

I am very excited to have the opportunity to continue to work directly with Lake View Elementary School next year as I continue as a Research Fellow at Northeast Clinic. I am also eager to engage other residents, faculty and staff at the clinic in this new aspect of our partnership with the elementary school. In "adopting" Lake View, our goal at Northeast Clinic has been to create a lasting partnership that improves the health of the community of patients, students and parents that are served by our clinic and the elementary school. The partnership that we are continuing to build between our clinic, the school and now Healthy Kids Collaborative continues to place a premium on community members – parents, students and staff at Lake View – informing and participating in our projects at every step of the planning process.

### **Acknowledgments:**

Rachel Deterding - Lake View Elementary School Community School Resource Coordinator

Jennifer Edgoose, MD, MPH

Sarina Schragger, MD

Shelly Shaw, MPH - Associate Director, Office of Community Health, DFMCH

Julia Stanley - Program Manager, Healthy Kids Collaborative

# Petra Kelsey, MD

## Projects Completed During Residency:

### Community Health Learning Experience:

Advance Care Planning in the Community

### Scholarly Project:

Advance Care Planning Scholarly Project:

After completing my certification as an advance care planning facilitator, I held two seminars for Verona clinic faculty and residents on discussing end-of-life planning with patients and documenting their wishes. Before and after data was collected and compared with data from other residency clinics. The Mann-Whitney U test was used to assess significance of clinician comfort with documentation of end of life issues before vs. after the intervention. The test found increased clinician comfort with documentation following seminar attendance. This data was presented to faculty and residents at Verona clinic and shared with UW's Advance Care Planning team.



Petra spent her high school years in rural Mozambique, which fueled an inclination for travel, as well as a deep love for working with underserved populations. After moving to Austin, she attended the University of Texas, majoring in Business and Germanic Studies.

After graduation, she worked at a bank on the West Coast, until the financial meltdown in 2008 inspired her to reevaluate her plans for the future. It was during that period that Petra discovered a deep-seated passion for medicine. She spent the summer before she entered medical school in Soroti, Uganda, collecting photographs and patient stories for International Midwife Assistance. As a medical student at The University of Texas Medical Branch, she served as president of the Students for Integrative Medicine. She also served as senior director at the C.D. Doyle student-run free clinic, where she enjoyed spending time with the patients, listening to their stories, and learning from the faculty. In residency, she found a passion for advance care planning and other end-of-life issues. Her goal is to learn how to provide patient-centered care to those who need it most, while simultaneously integrating humanistic principles. In her free time, Petra enjoys teaching yoga, practicing meditation, and playing the ukulele.



*Thanks to the faculty who so lovingly raised us from young, little interns to confident doctors. It has been such a life changing experience. I also want to thank my loving partner, Drew Edge. If not for you, I would have eaten oatmeal every night. I love you. Thanks to my loving parents and sister for being so dang supportive. Thank you Christina Gomez-Mira for being with me every step of the way of this incredible journey to doctorhood. You've been a role model for the use of art, humanity and compassion in medicine since the beginning.*

## Advanced Care Planning in the Community

### Background:

I was initially inspired to get involved in advanced care planning (ACP) after working in our intensive care unit and seeing patients and families struggle with difficult end-of-life decisions. Multiple times, I saw this dynamic cause sadness, confusion, guilt, and even family feuds. I knew that these conversations were worth promoting in the community. I brainstormed ways to inspire these conversations among patients, improve a clinic workflow to increase the percentage of completed advanced directives, and guide physicians on broaching these conversations. I wanted to explore how we as a society could improve this conversation on all levels.

Through a literature review, I learned about Gunderson's healthcare system and the research they have done on implementing advanced care planning. In this system, at the time of death, ALL adults have a specific plan and treatment that is consistent with it. I also met with ACP community leader, Mia Morrisette, and did a needs assessment with her. I then met with former resident Jasmine Hudnall who had completed a similar project as a resident. I learned about her successes and challenges hosting group ACP sessions for patients at Verona clinic. Then, I became a certified ACP facilitator through the Honoring Choices curriculum. I created a seminar for Verona clinicians and staff. This seminar not only taught how to facilitate ACP conversations with loved ones and patients, but also taught how to document it. Members had the option to complete their own advanced directive during the seminar. I gathered pre and post seminar data along with data from the broader DFMCH residency community. This data was analyzed and compiled for UW's ACP committee.

### Objectives:

My goal was to understand the system and create sustainable changes. I worked with Mia Morrisette—the head Advance Care Planning Coordinator. It was a fantastic opportunity to connect with her since, serendipitously, she is leading major systemic changes to the way ACP is administered at UW. I was able to assist distributing new resources to our clinic and also provide her with insight from a resident's perspective.

### Methods:

I did extensive background research. A lot of time went into figuring out what *did not* work. Other steps I took were to teach an ACP class at a nursing home. I wrote an article for the local newspaper to spread ACP awareness and share my personal experience—discussing end of life care with my grandfather shortly before he passed away.

### Results:

Per the data I collected, the greatest impact was residents and faculty feeling more confident about how to document end of life wishes. Through the survey, I was also able to educate them about referral best practices and offer a smart phrase to use in clinic. I also think I could educate residency staff about referring to specific ACP sites.

### Conclusions:

I learned that collaboration is huge. There were so many moments where I was about to waste time re-creating the wheel when, in fact, someone else had already created those tools. For example, I started drafting a letter explaining ACP to my patients, but then connected with Odana's Dr. Bigham who had already crafted a very well written letter. He graciously offered to share. When I

needed a presentation for the Verona clinicians, Mia shared her fantastic powerpoint presentations, which worked perfectly.

**Acknowledgments:**

I'd like to thank, first and foremost, Mia Morrisette for all the passion and expertise you bring to this field. You provided incredibly valuable resources for this project.

Wen-Jan Tuan, thank you for helping me sort through and make sense of a large pile of data.

Jasmine Hudnall, thank you for blazing the trail before me.

Karina Atwell, thank you for your guidance, support and mentorship during this project.

# We should all plan to talk about death with dignity

As part of an Advanced Care Planning training last year, I interviewed my grandparents about their end-of-life wishes.

I had an hourlong conversation with each of them, documented it and sent it to their children for future reference. Each expressed a request for minimal intervention, saying, "If it's time to go, let me go."

This past week, my grandfather passed away. I learned that he had gone to the emergency room and then suddenly had difficulty breathing. He

was put on a breathing mask, but his breathing worsened and the doctors and nurses prepared to place a breathing tube down his throat.

However, his caregiver had his advanced directive, which specifically declined that intervention, and he passed away in peace.

His caregiver, called me later and relayed the situation. We discussed that even though we were sad to have him pass, we were at least comforted by the knowledge that he had gone the way he wished.

When sickness falls upon families, guilt and sorrow blend together, and there are often so many questions and family members wonder whether they did the right thing at the end. Having specific plans about end-of-life preferences can often help save your loved ones significant distress at a later point.

We should all have clear end-of-life plans written out that are shared with all family members. But delving deeply into an uncomfortable topic can be awkward. Thinking about your loved one passing away can be distressing, and no one wants to risk offending an older family member by ruminating on their eventual passing.



Kelsey

## Planning groups

UW holds regularly scheduled groups to work through end-of-life planning. Register for one at [uwhealth.org](http://uwhealth.org). Search "advanced care planning classes."

As a result, many people may opt to not make their my loved ones think of that.

With advances in technology, we now have machines that provide the basic functions of your lungs, kidneys and heart. This allows us to remain alive longer, even in the midst of irreversible breakdown of the body's functions and at a much-limited quality of life. For many, this means difficult decisions about declining treatments will arise at some point.

Many medical providers, those the most knowledgeable about the possibilities of life-extending treatments, go the furthest in their advance planning ensure life-extending treatment will not outpace meaningful quality of life. I don't think this is a coincidence.

For example, one ICU physician I worked with told me he wrote in his living will that after age 80, he didn't even want to be treated for a urinary infection (so that he could die swiftly from the infection). And a 35-year-old ED doctor I know made himself DNR/DNI because he didn't like the outcomes he saw during intubations and cardiac resuscitations.

If I were to show a roomful of people what they would look like hooked up to three machines, I'm confident most would say, "This is not a life worth living." Yet, once people are already stuck on the

machines, asking family members to remove these can feel like they are "killing" their family member. Guilt is a common emotion to feel around the time of a loved one's death.

To avoid this sticky issue, start with a conversation with your family about your wishes.

First, think about what you need to do before you have the conversation. Figure out what particular concerns you have that you want to make sure you talk about, such as finances or a particular family member who needs taking care of.

Then, consider a supportive way to start the conversation, such as, "What matters to me at the end of life is..." You can approach the topic by saying, "Even though I'm OK right now, I'm worried that (insert worry), and I want to be prepared."

Next, create the legal document. Every state has its own.

You can start by talking to your doctor about obtaining the appropriate forms and making sure your clinic and hospital each have a copy. UW-Health holds regular advanced care planning classes.

While you're in the midst of it, do some serious thinking. There is a beautifully written book addressing this topic by Atul Gawande, called "Being Mortal," as well as a recent Netflix documentary called "Extremis," which offers an intimate look into the modern day intensive care units and the difficult decisions families face daily.

In the end, after my grandfather had passed away, I found the form we had completed together and it comforted me seeing his words: "If I am dying, let me go." I felt reassured knowing that his wishes had been carried out.

*Petra Kelsey is a Verona resident and a post-graduate trainee at UW-Health Family Medicine in Verona.*

# Sheila Kredit, MD

## Projects Completed During Residency:

### Scholarly Project:

Does Tranexamic Acid Decrease Maternal Mortality When Given for Postpartum Hemorrhage?

### Community Health Learning Experience:

Dane County's Racial Disparities in Maternity Care:

African American women in Dane County experience different outcomes in maternity care compared to their white counterparts. Dane County Health Council identified disparities between African American and white low infant birth weights as a high priority goal to address. My goal in focusing on this topic for my community health project was to elucidate how we as family medicine doctors can help to improve the outcomes and experiences of the African American families we care for - by being more aware of their situation, unique needs, and existing community resources. Throughout residency, I had the privilege of meeting with community allies at the African American Breastfeeding Alliance, Harambee Village, the Today Not Tomorrow Resource Center at the East Madison Community Center, and Project Babies. I concluded from the experience that we can listen to and partner more with the African American women in Dane County. By implementing a few key moments of intervention into our care and by serving as advocates in the healthcare system, I believe we can start to see changes for the better in the maternal and child outcomes in our community.



*I could not have walked this path without the village of loving relationships that inspire and support me. Mom, Dad, Ben, and Linda. Grandpa and Grandma Harvey. Grandma Kredit, Grandpa Kredit, Lou, Auntie Mae, Uncle Dale. Colleen, Ken and Peg Keller. My aunts and uncles. My sisters and brothers Anna, Lisa, Tom, and James. All my cousins. The extended Harvey clan and my Irish cousins. The friends I've met on my adventures – Cate, Jessica, Janice, Tara Lynn, Luke, Monica, Melody, Natalie, Andrea, Elliot, Nisch, Anna, Greg, Daniela, Arathi. My harp teachers and harp studio. Ann Witt. The music and anthropology professors at Northwestern. My co-residents. The amazing doctors, nurses, staff, and people I've met.*



Born and raised amongst the evergreens in Olympia, WA, Sheila Kredit was drawn to the Midwest to pursue a dual degree in harp performance and anthropology at Northwestern University. As an undergraduate, she worked with the Chicago Department of Public

Health to examine different factors influencing breastfeeding duration among mothers enrolled in the WIC Program. This research gave her a passion for maternal and child health, and inspired her to attend medical school at Case Western Reserve University and ultimately pursue a career in Family Medicine. As a medical student, she served as a leader for Case's Family Medicine Interest Group, a mentor for inner city high school students through the Horizons Mentoring Program, and a peer educator at the Student Run Free Clinic. Sheila's particular interests within Family Medicine include obstetrics, natural childbirth, breastfeeding, pediatrics, infectious disease, medical education, and epidemiology. Outside of medicine, she loves playing the harp (and trying to learn the guitar), salsa dancing, baking homemade bread, planting bulbs and vegetables, running, hiking, kayaking, and reading at coffee shops.

# Does Tranexamic Acid Decrease Maternal Mortality When Given for Postpartum Hemorrhage?

Submitted for Publication in Journal of Family Practice  
November 2019

**Authors:** Lee Dresang, MD and Sheila Kredit, MD

**Institution:**

University of Wisconsin Department of Family Medicine and Community Health  
Madison, WI

**Question:** Among women who meet criteria for postpartum hemorrhage (PPH), is early administration of 1 g IV tranexamic acid in conjunction with standard of care interventions effective in reducing maternal mortality compared with placebo?

**Evidence based answer:**

When used in conjunction with the standard of care, 1 gram of IV tranexamic acid given one to three hours after delivery is associated with a significant reduction in maternal mortality from postpartum hemorrhage. (SOR A; RCT and Cochrane Review) There are no known significant risks to the use of tranexamic acid in the treatment of postpartum hemorrhage.

**Evidence summary:**

A 2017 double blinded RCT including 20,060 women with postpartum hemorrhage (PPH) from 21 countries found that the risk of maternal mortality from PPH was significantly reduced among women who received tranexamic acid versus placebo (1.5% (N=155) vs 1.9% (N=191), P = 0.045; RR 0.81; 95% CI 0.65 – 1.00) as part of their PPH treatment.<sup>1</sup> PPH was defined as > 500 ml blood loss after vaginal delivery, > 1000 ml blood loss after Cesarean, or blood loss sufficient to produce hemodynamic compromise. In the study, 10,051 women were randomized to the tranexamic acid group and 10,009 to the placebo group. Women in the experimental group were given a 1 gram IV injection of tranexamic acid over 10-20 minutes. A second dose was given if bleeding restarted after 30 minutes and within 24 hours of the first dose. Inclusion criteria included age of 16 years or more, postpartum course complicated by hemorrhage of known or unknown etiology, and a case where the clinician considered using tranexamic acid in addition to the standard of care.

Tranexamic acid was most effective in reducing mortality due to PPH compared to placebo when given within three hours after delivery (1.2% (N=89) vs 1.7% (N=127), P = 0.008; RR 0.69; 95% CI 0.52 – 0.91).<sup>1</sup> After three hours there was no significant reduction in mortality. There was no significant difference in effect between vaginal and cesarean deliveries, or between uterine atony as the primary cause of hemorrhage vs other causes.<sup>1</sup>

The administration of tranexamic acid did not reduce the composite primary endpoint of hysterectomy or death from all causes.<sup>1</sup> Nor did it reduce the secondary endpoints of the use of intrauterine tamponade, embolization, manual placental extraction, arterial ligation, blood transfusions, or number of units packed red blood cells. There was a significant decrease in the cases of laparotomy for PPH in the tranexamic acid group (0.8% vs 1.3%, P= 0.002, RR 0.64; CI 95% 0.49 – 0.85).<sup>1</sup> Among women who received tranexamic acid vs placebo, there was no significant difference in mortality from pulmonary embolism (0.1% (N=10) vs 0.1% (n=11),

P=0.82, RR 0.90; 95% CI, 0.38 – 2.13), organ failure (0.3% (n=25) vs 0.2% (n=18), P=0.29, RR 1.38; 95% CI 0.75 – 2.53), sepsis (0.2% (n=15) vs 0.1% (n=8), P=0.15, RR 1.87; 95% CI 0.79 – 4.40), eclampsia (0.02% (n=2) vs 0.1% (n=8), P=0.057, RR 0.25; 95% CI 0.05 – 1.17), or other causes (0.2% (n=20) vs 0.2% (N=20), P=0.99, RR 0.99; 95% CI 0.54 – 1.85).<sup>1</sup>

A 2018 Cochrane review more broadly sought to determine the effectiveness and safety of antifibrinolytic drugs in general in the treatment of primary postpartum hemorrhage.<sup>2</sup> Out of 15 randomized controlled trials identified, only three met the inclusion criteria for the review, one of which was the WOMAN trial described above. This trial contributed the majority of the data in the review. The other trials were 1) a study conducted in France that recruited 152 women, and 2) a study in Iran involving 200 women that contributed only one primary outcome to the review, that of estimated blood loss. The former study did not have any maternal deaths and the later study did not look at maternal deaths. The Cochrane review, based on data from the WOMAN trial, concluded that IV tranexamic acid, if given as early as possible, reduced mortality from bleeding in women with primary postpartum hemorrhage after both vaginal and cesarean delivery, and did not increase the risk of thromboembolic events.<sup>2</sup>

### **Recommendations from others:**

The newest practice guidelines on the management of postpartum hemorrhage published by the American College of Obstetricians and Gynecologists (ACOG) recommend that tranexamic acid be considered as an additional agent in the management of postpartum hemorrhage when initial standard of care treatments fail.<sup>3</sup>

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# Kate Ledford, DO

## Projects Completed During Residency:

### Scholarly Project:

Beyond Birth Control: Non-Contraceptive Benefits of Hormonal Methods and their Key Role in the General Medical Care of Women

### Community Health Learning Experience:

Verona's 2020 Fitness and Lifestyle Challenge:

Verona's "2020" group is a clinic-based program targeted toward patients from Verona living with prediabetes, diabetes and obesity. The objective of the group is to partner with participants to improve their health outcomes and improve their quality of life and satisfaction with active health management. My specific role in the group in 2018 was as a provider-member and educator, both involved in direct patient care (taking vitals, reviewing recent lab work, assisting patients in setting individualized goals, etc.) as well as co-leading additional optional sessions open to all group members for education on requested dietary, exercise, and other lifestyle topics.



Kathryn (Kate) Ledford was born and raised in Madison, Wisconsin, and completed her bachelor's degree in Zoology and Spanish at the University of Wisconsin. She earned her MPH at the University of Minnesota School of Public Health before heading out west to attend medical

school at the Western University of Health Sciences College of Osteopathic Medicine. Kate's experience in public health led her to help found the "Do No Harm Forum" in medical school, which created a dialogue among students, healthcare leaders, and community members to discuss issues along the health delivery continuum. The forum included national level speakers from the American Osteopathic Association and the Department of Homeland Security. Kate has also pursued medical and public health work in Nicaragua and Mexico, and volunteered at the Lebanon Free Clinic in Lebanon, Oregon. The variety of patient demographics and the ability to work with whole families draws Kate to family medicine, and she has a special interest in geriatric medicine and palliative care. Outside of medicine, she likes to hike, camp, bake, do crossword puzzles, spend time with her family, travel, read, exercise, and enjoy food.



*Thank you to all of the people who shared this journey with me. In particular, an amazingly big thanks to my parents for all the early mornings of child care and late night phone calls, as well as their undying support and belief in me. More than anyone else, all of my love and gratitude to my wonderful husband and precious son, without whom none of this would be worth it anyway - thank you and I love you!*

*Beyond* birth control: non-contraceptive benefits of hormonal methods and their key role in the general medical care of women

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**Abstract:** Contraceptives that contain estrogen and/or progestins are used by millions of women around the world to prevent pregnancy. Due to their unique physiologic mechanism of action, many of these medications can also be used to prevent cancer and treat multiple general medical conditions that are common in women. This paper will describe the specific mechanisms of action and summarize the available data documenting how hormonal contraceptives can prevent ovarian and uterine cancer and be used to treat women with a variety of gynecologic and non-gynecologic conditions such as endometriosis, uterine fibroids, heavy menstrual bleeding, PCOS, acne and migraines. This data demonstrates the importance of access to hormonal contraception for all women.

## **I. Introduction**

Pharmaceutical methods of contraception provide effective protection from pregnancy and are used by millions of women each year<sup>1</sup>. In 2014, more than 40% of all women using contraception were using some type of hormonal contraception (pills, vaginal ring, injectable progestin, progestin implant, or progestin IUS)<sup>2</sup>. In addition to their important role in pregnancy prevention, the physiologic actions of the estrogens and progestogens that make up the various preparations also provide important non-contraceptive benefits including cancer prevention, treatment of common gynecologic and non-gynecological medical conditions, and as a key part of health care especially for women with chronic medical conditions<sup>3</sup>. This broad role of contraceptive hormonal products in supporting the general medical care of women provides an important perspective as decisions around access and health insurance coverage of these pharmaceuticals continue to be debated. The purpose of this paper is to review the common hormonal contraceptive methods and provide an overview of their central role in the general medical care of women.

## **II. Overview of Hormonal Contraceptive Methods**

Contraceptive methods can be broadly classified into two groups: those containing both estrogens and progestins, and those containing only progestins (Table I). Within each group there are various methods of delivery, each associated with different physiologic effects locally and systemically and therefore with different benefits and risks.

[Insert Table I here]

### *Combined hormonal contraceptives*

There are several methods of contraception that include both estrogen and progestin. The most commonly used are combined oral contraceptive (COC) pills. The contraceptive patch and vaginal ring dispense similar hormones, but use a different delivery system. Combination contraception has a variety of physiologic effects, from both estrogen and progestin. The estrogen inhibits ovulation by inhibiting follicle-stimulating hormone (FSH), but it also provides stability of the endometrium leading to regular bleeding patterns. Common doses of estrogen (mostly as ethinyl estradiol) in modern combined contraceptives range from 20 to 35 micrograms (mcg). Side effects increase as doses increase. The progestin contributes to the ovulation suppression by inhibiting the luteinizing hormone (LH) surge, but also has local effects on the endometrium. The continuous administration of low dose progestin contributes to thinning of the endometrial lining, leading to a lighter menstrual flow as well as a theoretical decrease in local prostaglandins.

Most progestins available in the US are derived from 19-nortestosterone, with the exception of drospirinone which is derived from spironolactone. Progestins are classified by generation, and a recent systematic review by the American Society for Reproductive Medicine found “fair” evidence that thromboembolic risk associated with drospirinone or third generation progestins (desogestrel and gestodene) is slightly higher when compared to norethindrone or levonorgestrol (second generation)<sup>4</sup>. The androgenic action of the various preparations also differ and can be tailored to the individual when used to manage symptoms or polycystic ovary syndrome (PCOS), acne and hirsutism.

### ***Progestin-only methods***

Progestogens (progesterone and other progestins) work through a complex interplay of hormonal up-regulation and suppression. When using progestogen-only methods, negative feedback on the hypothalamus decreases the pulse frequency of gonadotropin releasing hormone (GNRH), which results in decreased FSH secretion as well as decreased LH secretion. With no follicle developed and no LH surge to release the follicle, there is the prevention of ovulation. Because the follicle makes estradiol, this inhibition of folliculogenesis also results in decreased estradiol levels, further propagating lack of positive feedback on the hypothalamus. Progestogens also elicit a more direct effect by creating a thick, impenetrable cervical mucous that inhibits passage of sperm. Theoretically, progestogen-induced endometrial atrophy may inhibit adequate implantation of a fertilized zygote, but no studies have definitively proven this mechanism. Available formulations of progestogen-only contraception include IUDs, the progestin-only pill or “mini-pill,” the injectable medroxyprogesterone acetate (DMPA), and the subdermal implant.

### ***Intrauterine Devices***

Progestin IUDs are one of the long acting reversible methods (LARC) of contraception. They are inserted by a clinician and remain in place for 3-7 years. Progestin IUDs are an excellent form of contraception due to their high level of effectiveness. They induce endometrial atrophy due to a local effect of the progestin which is slowly released from the IUD. They are also commonly used for women who are high risk to attempt pregnancy and are an excellent treatment for many common medical and gynecologic conditions.

### **III. Beyond birth control**

Pharmaceutical products typically considered to be “contraceptives” play an important role in the general medical care of women. As depicted in Table II, their use covers a broad range of purposes including both prevention and management of both common and uncommon medical concerns.

[Insert Table II here]

**Cancer Prevention** There is an overall reduction in cancer risk associated with use of hormonal contraceptives, in particular COCs and the levonorgestrel IUD (LNG-IUD)<sup>5</sup>. The greatest and most consistent benefit has been shown for ovarian and endometrial cancers. There have been weak benefits shown in some studies for prevention of colorectal, kidney, bladder, and pancreatic cancers as well as lymphoma<sup>5, 6</sup>. Notably, most population data about contemporary hormonal contraceptives have also not demonstrated an increased risk of breast cancers with either COCs or LNG-IUD use<sup>7, 8</sup>.

### ***Ovarian Cancer***

The use of combined hormonal contraceptives decreases the occurrence of ovarian cancer. Mechanism of action studies are not completely clear but it is hypothesized that as COCs inhibit ovulation, reduced cancer rates are due to reduction in cell proliferation. Studies with current formulations of COCs have demonstrated a 21 to 40% reduction in ovarian cancer with both short and long term use<sup>7, 9</sup>. Longer-term use of COCs (>10 years) provides a larger effect<sup>9</sup>. The protective benefit of hormonal contraceptives seems to be greatest when use was prior to age 35, and can last for up to 25 years after pill use has stopped<sup>9, 10</sup>. The data for prevention of ovarian cancer with the LNG-IUD is not as robust as the data for COCs. Findings from population range

from no benefit to a 47% reduction in ovarian cancer<sup>8,9</sup>. The mechanism of action is hypothesized to be anti-inflammatory.

### ***Endometrial cancer***

The use of hormonal contraceptives has also been shown to reduce the occurrence of endometrial cancers. The largest reduction in risk has been shown with the use of the LNG-IUD, which may reduce the risk of endometrial cancer by 78%<sup>8</sup>. With regard to COCs, long term (>10 year) use has been shown to have the largest impact, with a risk reduction of up to 34%, however short term use of COCs has also shown benefit<sup>7</sup>. There is a larger impact in COC users who have additional risk factors for endometrial cancer including a history of tobacco use, obesity, and sedentary lifestyle – which must be weighed with the risk of COC treatment in these higher risk populations<sup>7</sup>. A systematic review suggests that the LNG-IUD may be an adequate treatment for women with endometrial hyperplasia without atypia<sup>11</sup>.

#### **a. Management of Gynecologic Conditions**

### ***Endometriosis***

Endometriosis is an inflammatory disorder characterized by the presence of endometrial tissue outside of the uterus. The two main complications are pain and infertility. Laparoscopic surgery and destruction of endometriosis lesions improves fertility<sup>12</sup>. There is no evidence that medical treatment affects the outcomes for women with endometriosis and infertility<sup>12</sup>. However, hormonal contraception is a mainstay of long-term therapy for women with endometriosis related dysmenorrhea and pelvic pain. Combined hormonal contraception, progestin-only contraception, as well as progestin containing IUDs (LNG IUS) have all demonstrated efficacy in primary treatment of endometriosis related pain as well as reduction of disease progression after surgical

interventions<sup>13-16</sup>. Mechanism of actions include decreased circulating prostaglandins which consequently decreases inflammation (LNG IUS) and inhibition of ovulation (COCs). COCs are used in a continuous manner, as opposed to cyclically, with withdrawal bleeds limited to every 3+ months<sup>17</sup>.

Though the evidence for use of combined hormonal contraceptives to improve pain in women with endometriosis is rated as low quality<sup>14, 18</sup>, the potential side effects are relatively minimal as compared to GnRH agonists, which is the other medical therapy used in women with endometriosis related pain.

### ***Uterine Fibroids***

Uterine leiomyomas (also called fibroids) are the most common solid pelvic tumor in women and are reported in 70% of white women and more than 80% of black women by age 50 years.

Typical symptoms of uterine fibroids include abnormal uterine bleeding and/or pelvic pain/pressure, making leiomyomas the most common indication for hysterectomy<sup>19, 20</sup>. Evidence-based reviews show a lack of randomized trial data showing effectiveness of medical therapies in management of symptomatic fibroids, with most therapies offering only short-term relief with a high rate of conversion to surgical therapies<sup>21, 22</sup>.

Combined hormonal contraceptives (CHCs) and progestin only contraceptives are commonly prescribed to improve heavy uterine bleeding commonly associated with uterine fibroids via the mechanism of endometrial atrophy and are an important option for women with fibroids who desire contraception before proceeding to more invasive therapies. CHCs and progestins do not appear to be effective in decreasing bulk symptoms related to large uterine fibroids, thus most symptomatic leiomyomas are still managed surgically<sup>21</sup>.



There is some evidence from cohort studies that progestin only agents including depot medroxyprogesterone acetate (DMPA) are associated with a decreased risk of leiomyoma formation and may decrease uterine and fibroid volumes after 6 months of therapy<sup>23-27</sup>.

Observational studies and systematic reviews have shown a reduction in uterine volume and bleeding, and an increase in hematocrit after placement of the LNG-IUS<sup>27-32</sup>. A randomized controlled trial comparing COCs with a LNG-IUS for the treatment of fibroids showed the superiority of the LNG-IUS, but the COC still demonstrated a reduction in menstrual blood loss but no significant change in the volume of the tumors<sup>32</sup>.

### ***Heavy Menstrual Bleeding***

Heavy menstrual bleeding (HMB), defined in research protocols as more than 80 ml of menstrual blood per cycle, is common, affecting up to 30% of women and directly related to 15% of all gynecology referrals<sup>33</sup>. Practically, it is difficult to measure amount of blood loss, so clinical parameters are measured instead including length of bleeding (more than 7 days), interference in daily activities, and quality of life measures. Specific etiology of HMB may not be identified in almost half of all women. Medical therapies are desirable to avoid unnecessary surgery.

Hormonal contraceptives have been used to manage HMB for many years<sup>34</sup>. The best (and only FDA approved) method to control bleeding is the levonorgestrel IUD (LNG-IUS)<sup>33,35</sup>. The LNG-IUS works by local effect of progestin to induce thinning and atrophy of the endometrium. The LNG-IUS decreased HMB more than progestin only methods or COCs, but not quite as much as endometrial ablation<sup>35,36</sup>. In studies, the LNG-IUS not only decreased bleeding but led to improved iron stores and quality of life<sup>36</sup>. Limited research has looked at progestin only methods with other delivery systems<sup>33</sup>.

Combined oral contraceptives are also effective in decreasing blood loss in HMB, but are inferior to LNG-IUS<sup>33</sup>. Different types of pills may have varying effects in managing HMB<sup>14,37</sup> possibly related to estrogen dose.

## **b. Management of General Medical Conditions**

### ***Bleeding Disorders***

Bleeding disorders are a relatively uncommon cause of HMB. A systematic review found that among women presenting with HMB, the average prevalence of von Willebrand disease was 13% (prevalence in individual studies ranged from 5-24%)<sup>38</sup>. Good data suggests that LNG-IUS and COCs may be an effective methods of treating HMB in this population<sup>39</sup>. Progestin only contraceptives can also be used, but there are few studies looking at their effectiveness<sup>39</sup>.

Acquired bleeding disorders, for example cancer therapy that causes thrombocytopenia, can lead to significant menorrhagia. Both combined hormonal methods as well as the use of the IUD are used to manage heavy bleeding and prevent the development of anemia<sup>39</sup>.

### ***Polycystic Ovary Syndrome***

Polycystic ovary syndrome (PCOS) is a heterogeneous disorder of hormonal imbalance characterized by hyperandrogenism and multisystem metabolic dysfunction. It is the most common endocrinopathy among women of reproductive age and affects between 5-16% percent of the world's population. Although the exact interplay of hormonal dysregulation is poorly understood, insulin resistance appears to be a key feature contributing to many of the known comorbidities of PCOS. Hyperandrogenism (and possibly hyperestrogenism) causes the dermatologic manifestations and contributes to anovulation.

Combined hormonal contraceptives are considered first line medications in the management of menstrual abnormalities and dermatologic manifestations (hirsutism, acne) of PCOS. They accomplish this through decreasing androgen levels via various mechanisms. Estrogen promotes synthesis of sex hormone binding globulin in the liver, which itself binds circulating androgens thereby decreasing bioavailable androgens in the bloodstream. Progestogens suppress luteinizing hormone and subsequently decrease ovarian androgen production. Additionally, some progestogens have antagonistic effects on androgen receptors and may also inhibit 5 $\alpha$ -reductase, preventing conversion of testosterone to dihydrotestosterone (DHT, a more potent androgen).

While recent studies show that all combined oral contraceptives appear to have equal efficacy for PCOS<sup>40</sup>, characteristics of particular estrogens and progestogens lend themselves to PCOS treatment. Amongst available forms, ethinyl estradiol (EE), particularly doses of 20-35 mcg daily, increases SHBG levels significantly more than alternative formulations or EE at lower doses<sup>41</sup>. Some progestogens (cyproterone, drospirinone, chlormadinone) have antiandrogenic effects. The choice of monophasic, biphasic, or triphasic pill does not have an effect on androgen production and patient preference should be taken into account when choosing a formulation.

Addition of antiandrogens has been found to have little treatment benefit when added to combined hormonal contraceptives in treatment of PCOS. However, antiandrogens such as spironolactone, flutamide, finasteride, or cyproterone may have a role as adjuvant treatments when used with progestogen-only contraceptives (including non-oral options) or non-hormonal contraceptives in women who cannot use CHCs<sup>41</sup>.

### *Acne*

Acne is one of the most common skin conditions requiring medical treatment affecting 40-50 million people in the US annually<sup>42</sup>. Acne is largely thought to be related to an increased rate of sebum production, which is predominantly controlled by androgenic sex hormones<sup>43, 44</sup>.

Hormonal therapies such as combined oral contraceptives (COCs) are useful in the treatment of acne. Estrogens increase the binding of free testosterone by increasing the production of sex hormone binding globulin, and decrease androgen levels via inhibition of ovulation to reduce sebum production. At the same time, progestins have anti-androgenic properties through competitive inhibition and minimize the risk of endometrial cancer associated with the use of unopposed estrogens<sup>45, 46</sup>.

A Cochrane review including 31 trials with 12,579 participants showed that COCs reduced acne lesion counts, severity grades and self-assessed acne compared to placebo over a period of 3-4 months<sup>47</sup>. In the US, three COCs have been approved by the Food and Drug Administration for treating moderate acne that contain the progestins norethindrone, norgestimate, and drospirenone combined with ethinyl estradiol<sup>48</sup>.

Acne is a commonly reported adverse effect of progesterone-only contraceptives that is related to progestin dose. Most women using the subdermal implant report either no change or an improvement in acne with just 10–14% of users experience a worsening of symptoms<sup>49</sup>. Depot medroxyprogesterone acetate (DMPA) can make acne worse, though it is uncertain if progestin IUDs have the same effect.

COCs are rarely used as monotherapy for acne. In most instances, patients are already taking a combination therapy of topical retinoids, topical benzoyl peroxide, and antibiotics. In particular, COCs used in conjunction with spironolactone can be beneficial for acne in addition to

decreasing the side effects of spironolactone, such as dysmenorrhea, irregular menses, and breast tenderness. In addition, adequate contraception is recommended during spironolactone therapy, as studies in rats have demonstrated feminization of male fetuses. Oral contraceptives can also reduce the acne flare ups that may occur related to menstrual cycles<sup>50</sup>.

Proper contraceptive counseling is also imperative for pregnancy prevention when using isotretinoin in females of childbearing potential as the FDA-mandated iPLEDGE program stipulates that any female of childbearing potential must use two forms of highly effective contraception<sup>50</sup>.

### ***Migraines***

Migraine is a disabling headache, characterized by moderate to severe head pain often with associated symptoms including nausea, photophobia, phonophobia and osmophobia). In about 30% of migraine attacks are preceded by transient focal neurologic symptoms called aura. Most commonly, auras consist of visual symptoms such as flashing lights, zigzag lines, or blind spots in visual fields<sup>51</sup>.

Migraine affects about 18% of women and 6% of men in USA and Western Europe and its cumulative lifetime prevalence is 43% in women and 18% in men<sup>52</sup>. Migraine tends to be most active during the fertile period of a female's life with a peak of prevalence in their 20s and 30s<sup>52</sup>. During these reproductive years, hormonal contraception of any kind (hormone-containing pills, patches, ring, shots, implants, or intrauterine devices) is used by about 43% of US women who are using any type<sup>53</sup> of birth control.

COCs may be used in the majority of women with headache and migraine but do carry a small, but significant vascular risk in patients that experience migraine with aura<sup>54</sup>.

In women who experience migraine without aura, there may also be an increase in vascular risk in those women who have additional stroke risks including smoking, hypertension, diabetes, hyperlipidemia and thrombophilia, or age over 35 years. For women with these risk guidelines recommend progestogen-only contraception as an alternative safer option because it does not seem to be associated with an increased risk of venous thromboembolism (VTE) and ischemic stroke. There is general consensus that progesterone-only contraceptives (including progesterone-only pills, implants, intrauterine devices, and injectables) are safe for use in women who have migraine with aura, even in the presence of other risk factors for stroke<sup>49, 54, 55</sup>.

**c. Preconception health and pregnancy planning for the prevention of maternal morbidity and birth defects**

Preconception care is an important health care strategy designed to help optimize a woman's health prior to conception in order to improve birth outcomes. In general, preconception care includes discussions about a woman's reproductive life plan, screening for health risks, optimizing health behaviors, updating immunizations, and recommendations for Folic Acid supplementation<sup>56</sup>. For women with chronic medical conditions, receipt of preconception health care is critical and should be integrated into their general health care especially for those treated with potentially teratogenic medications. Safe and effective contraceptive methods enable women to better time or avoid pregnancies, reduce exposure to teratogenic medications or viruses when conceiving, and receive treatment with teratogenic medications while avoiding potential exposure during pregnancy<sup>57</sup>. While a detailed review of these complex medical settings is beyond the scope of this article, a few examples are mentioned below to highlight this important area.

### ***Pregnancy Timing or Avoidance***

Women diagnosed with serious medical conditions such as diabetes, cancer, collagen vascular diseases (such as systemic lupus erythematosus (SLE) or rheumatoid arthritis) and others can time their pregnancies to begin during a period when their underlying condition is optimally controlled and thereby reduce maternal and fetal risk<sup>58-60</sup>. For women with very high-risk health conditions, highly effective pregnancy prevention can be lifesaving. Some women with complex cardiac disease may have a potential mortality rate greater than 50% and may choose to avoid pregnancy. Women undergoing cancer treatment also require effective contraception to prevent both potential risk of anomalies as well as avoid potential need for treatment delay and the associated increased risk to the mother<sup>58</sup>.

Use of highly effective methods, such as the IUD or implant, provides safe contraception that enables women to avoid surgical sterilization. There is robust data to show that conception at a time of good glycemic control decreases the risk of fetal anomalies in women with diabetes. Similarly, the tailoring of medications prior to conception can also reduce risk the risk of anomalies. For instance, women using antidepressants or anti-epileptic drugs should review and tailor their medications prior to conception to minimize potential teratogenicity.

### ***Teratogenic Medications or Viruses***

Highly effective contraception enables women and their providers to balance of risk and benefit of some treatments for serious medical conditions that typically present during the reproductive

years<sup>3</sup>. For example, women with rheumatologic disorders benefit greatly by the use of disease modifying agents that require highly effective contraception during treatment<sup>60</sup>. Similarly, the use of isotretinoin to treat acne requires highly effective pregnancy avoidance through abstinence or the use of two contraceptive methods<sup>61</sup>. Another important use is to protect women during periods of exposure to potentially teratogenic viruses as in the recent public health response to the 2016/2017 Zika epidemic<sup>62</sup>.

#### **IV. Conclusions**

The availability of contraceptive methods containing estrogens and progestins are key to providing high quality evidence-based general health care of women. In their role in cancer prevention, to managing both medical and gynecologic conditions, to avoiding potentially devastating teratogenicity in women with chronic medical disorders and on high risk medications, these hormonal medications play a key role in women's health. Access to hormonal contraceptive methods is crucial in taking care of women, and barriers to their use, put the health outcomes of both women and infants at risk.



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<b>Table I: Classes of hormonal contraceptive preparations</b>	
Type	Formulations and Delivery
Combined hormonal contraceptives	Oral (monophasic, multiphasic, continuous) Transdermal patch (monophasic) Vaginal ring (monophasic)
Progestin only methods	Oral “mini pill” Depot injection Intrauterine system Subdermal implant

<b>Table II: Combined hormones and women’s health care</b>	
Cancer prevention	Ovarian Endometrial
Gynecologic conditions	Endometriosis Uterine fibroids Heavy menstrual bleeding Amenorrhea
General medical conditions	Bleeding disorders Polycystic Ovary Syndrome Acne Hirsutism Migraine headache Female Athlete Triad
Preconception health and pregnancy planning for optimal outcomes	Pregnancy prevention for women with acute and chronic medical conditions. Optimal pregnancy timing Prevention of birth defects during treatment with teratogenic medications or infection exposure.

# Angela Marchant, DO

## Projects Completed During Residency:

### Scholarly Project

OMM for the Infant

### Community Health Learning Experience:

Dryden Terrace: An Opportunity for Health Literacy Enrichment:

The Dryden Terrace community was identified by Madison Police and Fire as making the most emergency calls in the city. To reduce the number of unnecessary emergency calls, Northeast partnered with the Dryden community to build a partnership with hopes that members of the Dryden community could reach out the clinic as a resource in times of need, instead of calling 911. With that intention Dining with Docs was born. We meet monthly, share a meal and learn about a topic together. During residency I decided to focus on improving health literacy for the Dryden residents, and facilitated Dining with Docs meetings on various topics including musculoskeletal complaints and chair yoga, jeopardy games about heart disease, FAQs on common medication questions in partnership with our pharmacy staff, and on the day of the solar eclipse we all enjoyed the eclipse together! The projects' stakeholders (Police, Fire, UW DFMCH and Public Health) are just now starting a pilot to share data, which will offer us a more nuanced evaluation of the impact of the project.



Angela hails from Franklin, WI, a suburb of Milwaukee, and spent much of her childhood in the city. She earned her bachelor's degree in Women's and Gender Studies from Brandeis University and completed her medical degree at A.T. Still University of

Health Sciences-School of Osteopathic Medicine in Arizona. During her time in Madison prior to medical school, Angela volunteered with Groundwork, a local racial justice collective working against racism; and Operation Welcome Home, a group of homeless and formerly homeless people working for social justice related to housing, joblessness, health, addiction recovery, and the prison system. In medical school, she co-founded the Health Disparities Interest Group to facilitate education and action to address social determinants of health within the curriculum and the community. Angela's areas of interest in medicine include integrative medicine, osteopathic manipulative medicine (including completing a one year teaching fellowship in OMM at her medical school), and community-oriented primary care. Outside of medicine, Angela enjoys gardening, yoga, hiking, biking, snowshoeing, and spending time with her wife Erica, son Silas and dog Oberon.



*Shout outs to all my amazing residency colleagues who were amazing support throughout this wild ride, faculty who patiently schooled me, residency staff who diligently told me where to be and when, and Northeast nursing staff who ran that ship. Thank you to my family for always having my back. And last but not least The Boss - aka my beautiful wife Erica - for being the department's L&D RN consultant, my #1 supporter and best friend, who usually didn't get bothered by me not doing the dishes and backs me 100% always and forever. And let's not forget Silas Truth for being the best.*



## OSTEOPATHY FOR THE INFANT

Angela Marchant, DO PGY3

## OBJECTIVES

- Integrate osteopathic assessment to the exam of the normal newborn
- Review basic cranial osteopathy as it applies to infants
- Assess common musculoskeletal complaints and their associated somatic dysfunctions in the infant
- Apply simple and safe osteopathic techniques to address common somatic dysfunctions in the infant

## CASE 1

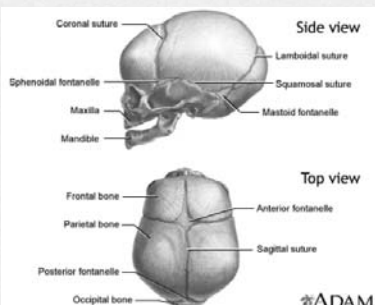


- A 3 day old male presents to the clinic for a weight check. He was born by NSVD at 38w2d to G1P1 mother after induction for IUGR. The pregnancy was otherwise uncomplicated. His birth weight is 30%ile and he is down 4% since birth. His mothers milk seems to be coming in just this morning. He is breastfed and his latch has been somewhat painful to his mother, though her nipples are not sore.

## INCORPORATING OMT INTO NEWBORN EXAM



## INFANT CRANIUM



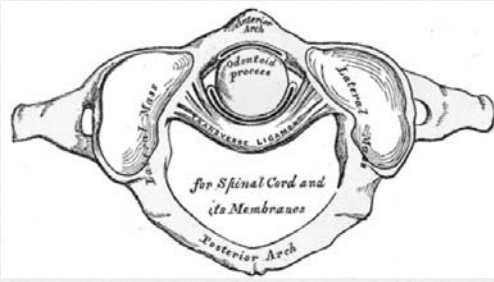
## DOCUMENT PRESENTATION IN YOUR DELIVERY SUMMARIES



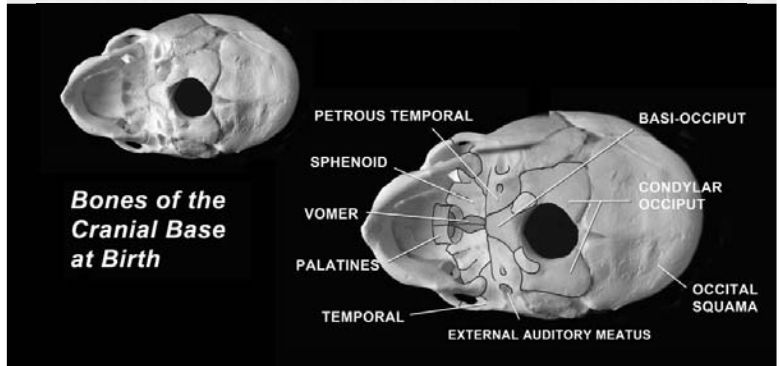
The fetal head is subjected to pressures exceeding its innate resistance as it passes down the birth canal... The pressure... forces the facets of the atlas, which converge anteroinferiorly in segmental portions of a cup-shaped vessel, against the condyles of the occiput, which have a similar conformation, although in a slightly smaller diameter. The transverse ligament of the atlas is very strong and anchors the articular masses securely together. Hence it is the condyles of the occiput which give way in a manner determined by the direction of the force and maintained by the stress of the soft tissues within and without.

- Magoun

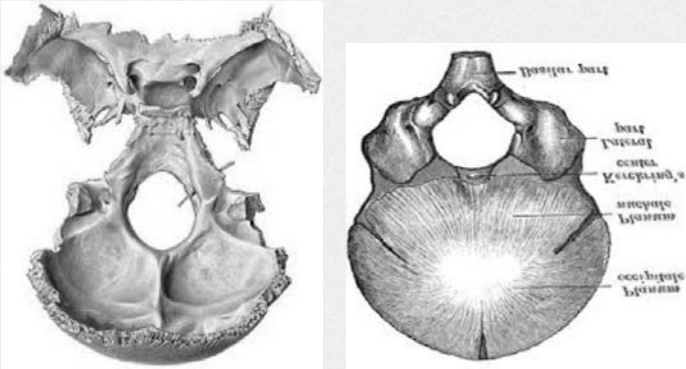
# ATLAS



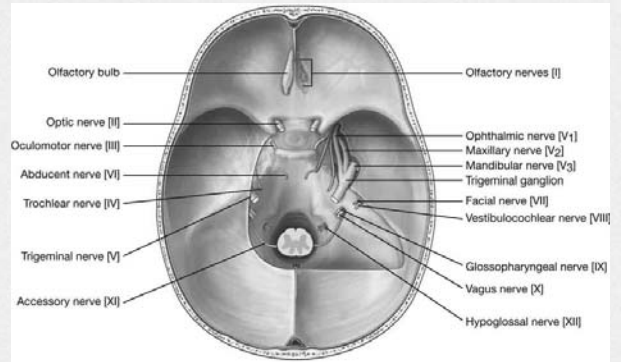
# OCCIPITOATLANTAL JOINT: 4 PARTS AT BIRTH



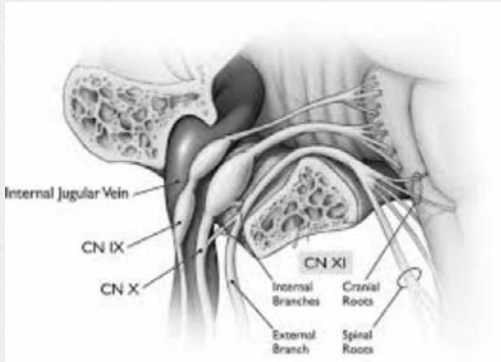
# SBS



# CRANIAL FORAMEN



# JUGULAR FORAMEN: BETWEEN OCCIPUT AND TEMPORAL BONES



# OA DECOMPRESSION

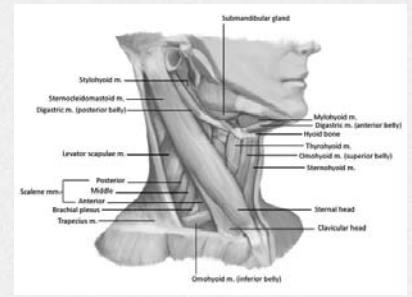


## CASE 2

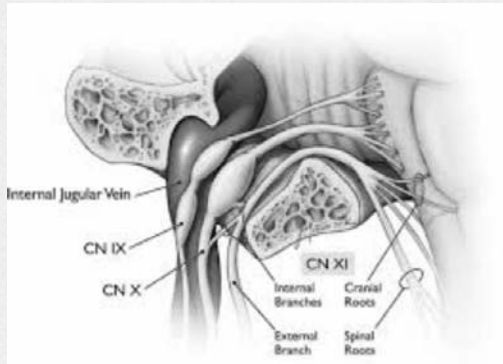


- A 9month old healthy female presents to the clinic with her mother because she wont turn her head to the right. She has been very fussy the last couple days.
- On exam she has very hypertonic R SCM and is irritable when moving her head.

## TORTICOLLIS



## JUGULAR FORAMEN: STERNOCLEIDOMASTOID



## OMT FOR TORTICOLLIS

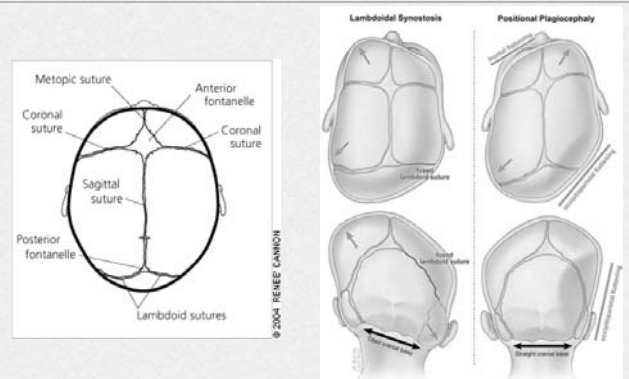


- OA decompression - CN XI
- Treat fascial restrictions - ie thoracic inlet
- Strain-counterstrain to SCM

## PLAGIOCEPHALY



## PLAGIOCEPHALY VS SYNOSTOSIS



# CRANIAL STRAIN PATTERNS

## PHYSIOLOGIC

- Flexion
- Extension
- Right/Left Torsion
- Right/Left Sidebending Rotation



## NON-PHYSIOLOGIC

- Right/Left Lateral strains
- Superior/Inferior Vertical strains
- SBS Compression



# PLAGIOCEPHALY



## BMJ: HELMET THERAPY = NATURAL COURSE IN INFANTS WITH POSITIONAL SKULL DEFORMATION

Abstract

thebmj Research - Education - News & Views - Campaigns - Archive

**Design** Pragmatic, single blinded, randomised controlled trial (HEADS, HELmet therapy Assessment in Deformed Skulls) nested in a prospective cohort study.

**Setting** 29 paediatric physiotherapy practices; helmet therapy was administered at four specialised centres.

**Participants** 64 infants aged 5 to 6 months with moderate to severe skull deformation, who were born after 36 weeks of gestation and had no muscular torticollis, craniosynostosis, or dysmorphic features. Participants were randomly assigned to helmet therapy (n=42) or to natural course of the condition (n=42) according to a randomisation plan with blocks of eight.

**Interventions** Six months of helmet therapy compared with the natural course of skull deformation. In both trial arms parents were asked to avoid any (additional) treatment for the skull deformation.

**Main outcome measures** The primary outcome was change in skull shape from baseline to 24 months of age assessed using plagiocephalometry (anthropometric measurement instrument). Change scores for plagiocephaly (oblique diameter difference index) and brachycephaly (cranioproportional index) were each included in an analysis of covariance, using baseline values as the covariate. Secondary outcomes were ear deviation, facial asymmetry, occipital lift, and motor development in the infant, quality of life (infant and parent measures), and parental satisfaction and anxiety. Baseline measurements were performed in infants aged between 5 and 6 months, with follow-up measurements at 8, 12, and 24 months. Primary outcome assessment at 24 months was blinded.

**Results** The change score for both plagiocephaly and brachycephaly was equal between the helmet therapy and natural course groups, with a mean difference of -0.2 (95% confidence interval -1.6 to 1.2, P=0.80) and 0.2 (-1.7 to 2.2, P=0.81), respectively. Full recovery was achieved in 10 of 39 (26%) participants in the helmet therapy group and 9 of 40 (23%) participants in the natural course group (odds ratio 1.2, 95% confidence interval 0.4 to 3.3, P=0.74). All parents reported one or more side effects.

**Conclusions** Based on the equal effectiveness of helmet therapy and skull deformation following its natural course, high prevalence of side effects, and high costs associated with helmet therapy, we discourage the use of a helmet as a standard treatment for healthy infants with moderate to severe skull deformation.

**Trial registration** Current Controlled Trials ISRCTN16473161.

## CASE 3



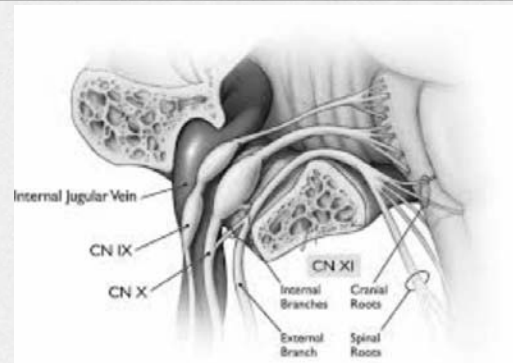
- An 8week old male presents with his parents for a well child check. He is formula fed. His parents both smoke cigarettes outside and he was exposed to marijuana en utero. His parents express concern that he is constipated. They have taken him to the ED several times for constipation and have been using glycerin suppositories with some relief.

# BICYCLE KICKS

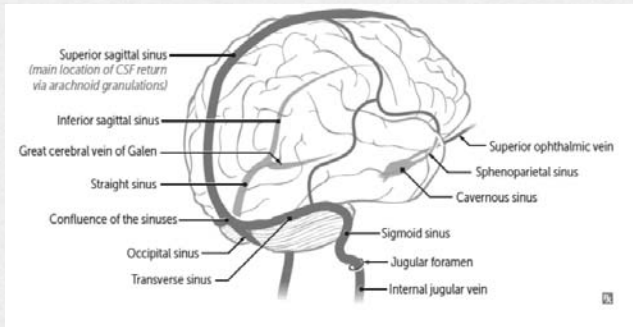


In NICU patients, N 155:  
 “The highest rate of somatic dysfunction was found in the pelvic area of 63 newborns (40.7%). The sacroiliac joints were compressed unilaterally or bilaterally in 82 newborns (52.9%); the lumbosacral junction was restricted in 61 newborns (39.4%), and intraosseous lesions of the sacral bone were diagnosed in 57 newborns (36.8%).”  
 - Pizzolorusso et al

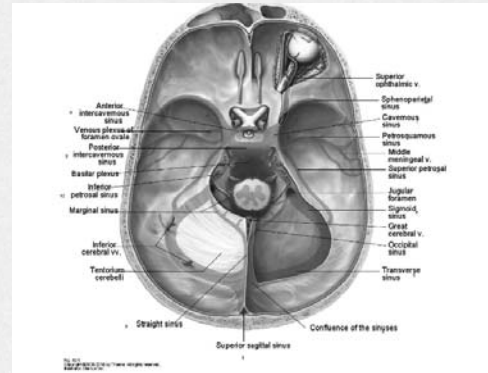
# JUGULAR FORAMEN: VENOUS OUTFLOW



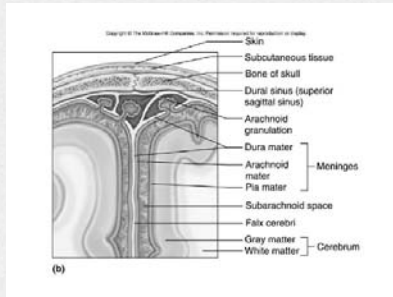
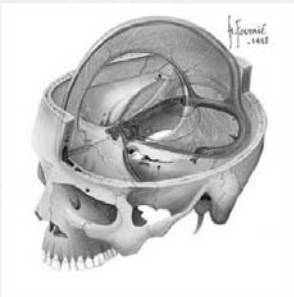
# DURAL VENOUS SINUSES



# DURAL VENOUS SINUSES



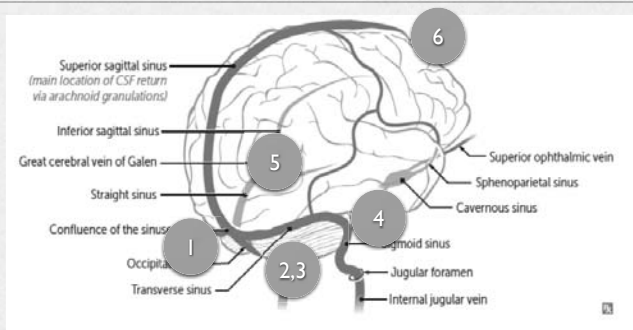
# DURAL VENOUS SINUSES



# VENOUS SINUS DRAINAGE

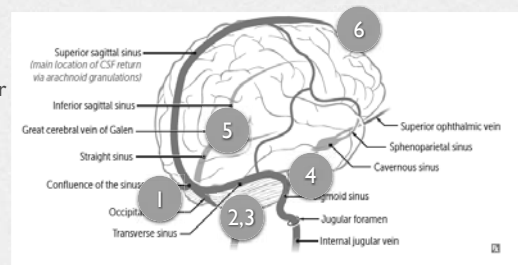


# VENOUS SINUS DRAINAGE



# VENOUS SINUS DRAINAGE

- 1. Confluence of sinuses
- 2. Move to condyles
- 3. Decompress condylar parts: jugular foramen and foramen magnum
- 4. Transverse sinuses
- 5. Straight sinus
- 6. Metopic suture



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# Emily Metzger, MD

## Projects Completed During Residency:

### Scholarly Project:

OB-Newborn TEACH Cards: An Innovative Curricular Tool for Inpatient Maternal-Child Rotations

### Community Health Learning Experience:

First Breath Continuation and My Baby and Me Initiation: Collaborating for Better Pregnancy Outcomes:

During residency, I helped to facilitate a partnership between the Belleville Clinic and the Wisconsin Women's Health Foundation (WWHF). The partnership included two prenatal programs: First Breath, a prenatal smoking cessation program, in which Belleville had been participating for 2 years, and My Baby and Me, a prenatal alcohol cessation program which was new to our clinic this year. To facilitate this partnership, I attended regional meetings for the WWHF, and organized clinic-centered initiatives. These initiatives included ensuring the training of all clinic providers and developing clinic-specific referral protocols for both programs.



*Thank you to my residency class- you all made my residency journey better than I could have hoped for. Thanks also to some of my many mentors and role models during these last three years - Jen Lochner, Jensi Carlson, Julia Lubsen, Jillian Landeck. I strive every day to emulate your hard work, patience, and empathy. I would like to thank my parents (Mick and Mary Beth Metzger) who have blessed me with their unending encouragement, guidance, and love. Your innumerable sacrifices are part of why I am here today, and I am forever grateful. Thanks to my brother, sister-in-law, and niece (Brett, Jennifer, & Bailey Metzger) for all your love, humor, and perspective. My in-laws (Nick and Leigh Weber) have been amazing cheerleaders these past three years, and I am so glad they were part of the deal when I married Josh. Finally, thank you to my husband, Josh, for being my best friend and partner in all of life's adventures. Love you all.*



Emily Metzger was raised in Rochelle, IL, and has been an Illinois resident her entire life. As a child, she was inspired by the dedication of her mother, a nurse, and her father, a farmer, and she decided to devote her life to service. After earning her undergraduate degree in Molecular and Cellular Biology and Spanish at the University of Illinois at Urbana-Champaign, Emily matriculated to the University of Illinois College of Medicine-Rockford. As a medical student, she participated in the Rural Medicine Education Program (RMED), which shaped her desire to become a rural family physician. In residency, she saw patients at the Belleville Clinic, which furthered her interest in rural health issues. Emily is excited to continue her career back in a familiar place, Urbana-Champaign, Illinois. In her free time, she likes to spend time with her family, travel, read, and do puzzles.

# OB-Newborn TEACH Cards: An Innovative Curricular Tool for Inpatient Maternal-Child Rotations

Thomas Hahn, MD; Emily Metzger, MD; & Caitlin Regner, MD  
 University of Wisconsin-Madison, Department of Family Medicine and Community Health

## Background

- TEACH (Teaching EBM And Clinical topics in the Hospital) Cards is an inpatient curricular tool that serves as a guide for discussion-based teaching sessions and to aid in EBM skills like finding answers to clinical questions. Use of TEACH Cards may improve self-reported exposure to the breadth of inpatient topics, confidence in EBM skills, and efficiency in answering clinical questions.(1)
- We created OB-Newborn TEACH Cards for our program's new maternal child teaching service. There are 42 maternal and 13 newborn cards, each with background basic science questions and a specific foreground question (Figure 1). The back of each card has instructions and recommended resources (Figures 2).

## Methods

- PGY-1 and PGY-2 residents completed pre- and post-rotation surveys to measure the impact use of the cards had on EBM perceptions and skills.
- Faculty completed surveys to assess whether the tool was useful and how it impacted teaching on the service.
- Residents and faculty completed point of care surveys after using a card to assess impact of using the card on patient care.

### INDUCTION OF LABOR

**Background Questions:**

- ✓ What are common indications for labor induction?
- ✓ Discuss induction timing for gestational diabetes, hypertension, IUGR, cholestasis, obesity & post-dates.
- ✓ Describe risks/benefits and indications/contraindications for the following induction methods: cervical ripening, oxytocin, amniotomy, Cook catheter.

**Foreground Questions:**

- ✓ For women undergoing induction of labor, do mechanical methods versus pharmacologic methods reduce risk of cesarean delivery?
- ✓ Write your own PICO question for a patient you are caring for, and try to find the answer.

**Teaching Pearl:**  
Describe the Bishop score. How does this impact the decision for cervical ripening/labor induction?

Figure 1: Front of an OB-Newborn TEACH Card

What are the two groups of questions and where can I find answers?

Background Question	Foreground Question
This is a more basic question that answers who, what, where, when, why, and how.	This is a specific clinical query; <b>PICO question.</b> Patient population/Problem Intervention/exposure Comparison (if applicable) Outcome
<b>Resources:</b> ACOG Practice Bulletins American Family Physician DynaMed Plus Essential Evidence Plus Pediatrics in Review UpToDate	<b>Resources:</b> Cochrane Database DynaMed Plus Essential Evidence Plus Pub Med TRIP Database

**What are some uses for the cards?**

- To initiate discussion among team members
- To guide independent study
- To practice evidence-based medicine
- To create a mini presentation

Answers are intentionally not provided.




Figure 2: Back of OB-Newborn TEACH Cards

## Results

- 14 residents completed pre and post-surveys (58% completion rate). Significant findings (p < 0.05) include:
  - Improved perception that EBM is realistic to practice in routine patient care and is useful on a daily basis
  - Improved reported ability to apply evidence found in a point of care search to a clinical scenario
- 15 faculty completed post rotation surveys
  - 87% felt it was a valuable teaching tool.
  - 46% felt it increased teaching on the service.
- 58 point of care surveys
  - 57% of the time cards were not used for a specific patient.
  - For cards used for a specific patient, 44% impacted patient care and 56% did not impact patient care decisions.

## Conclusions

- OB-Newborn TEACH Cards is a promising teaching tool for an inpatient maternal child teaching service.
- TEACH Cards and OB-Newborn TEACH Cards are freely available electronically (2).

## Future Directions

- Expand to other institutions
- Develop outpatient TEACH Cards

## References

- Hahn, T. W. et al. TEACH Cards: Teaching evidence-based medicine and clinical topics in the hospital. *PRIMER*, 11/14/2018. 2:25.
- <http://www.fammed.wisc.edu/teachcards/>

# Alex Milsap, MD

## Projects Completed During Residency:

### Scholarly Project:

Improving Hospital Discharge Efficiency Through Resident-Pharmacy Collaboration

### Community Health Learning Experience:

Verona Press Articles:

I continued the Verona resident tradition of writing articles for the local newspaper, The Verona Press. My articles were usually based on health topics relevant to the time of year or recent news. Topics included: use of CBD oil, heartburn, exercise techniques, and New Years resolution goal setting. Through this process I was able to reach the community at large through a new medium and continue to improve my patient-centered language.



Alex was born and raised in Madison, WI. He completed his B.S. in Psychology with a minor in Business Administration at UW—La Crosse. He then went on to complete his medical degree at the UW School of Medicine and Public Health. Alex was drawn to family medicine

for its focus on long-term relationships with patients, families, and communities. His specific interests include sports medicine, urgent/emergent care, and medical education. His most valuable experience in medical school came from spending time with patients and from observing his preceptor on his family medicine rotation, who balanced his time between the clinic and hospital, in addition to taking care of patients in their homes. As a medical student, Alex did stroke research at Gundersen-Lutheran Hospital and also organized and implemented a series of health talks in conjunction with the La Crosse County board of health. Working in this community showed him the importance of education, outreach, and maintaining good relationships with the community. Outside of medicine, Alex enjoys spending time with family and friends. He is an avid sports fan and enjoys playing basketball, golf, and cheering on his favorite teams.



*Thanks to my wife, Alyssa who always kept me grounded.  
Thanks to my parents for their endless support. Thanks to Brody,  
who has helped me keep everything in perspective.*

# Improving Hospital Discharge Efficiency Through Resident-Pharmacist Collaboration

Nicole Bonk, MD, Amanda Goplen, APNP, Krista McElray, PharmD, Alexander Milsap, MD, David Rabago, MD

## Background

- Discharge delay is common, expensive, and delays new admissions.
- Pharmacists improve the quality, safety, and efficiency of care<sup>1</sup>
- Early medication reconciliation and pharmacy discharge can safely reduce time to discharge<sup>2</sup>
- Interdisciplinary teams can identify barriers to discharge, improving discharge efficiency<sup>3</sup>

## Location and Team

- University of Wisconsin Hospital and Clinics (large academic teaching hospital)
- Family medicine teaching service: 1 faculty attending, 2 senior residents, 2 interns, and 1 APP
- 1 pharmacist (shared with two other services)
- Daily census: 12-16 patients.

## Unit Specific Reasons for Discharge Delay

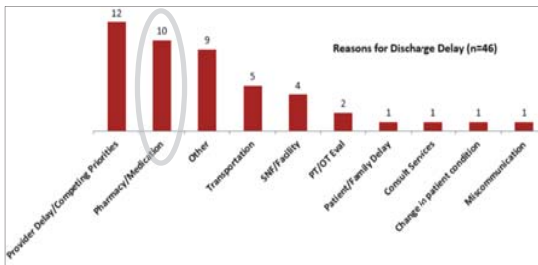


Figure 1: Reasons for discharge delay August 2017

- Pilot Data: 75% of patients being discharged from study unit were delayed more than 2 hours after being deemed medically ready for discharge
- 21% due to the medication reconciliation process

Communicating author: nicole.bonk@uwf.wisc.edu

## Methods

### AIM

- Decrease time from the provider discharge order to pharmacist completion of medication reconciliation and patient education completed by 15%.
- Decrease the number of pages from pharmacists to residents by 50%
- Improve resident education and understanding of the discharge process by creating regularly scheduled educational sessions with pharmacists.

### Interventions

- Co-location: Move pharmacist's workspace into the same room as residents.
- Afternoon meeting with pharmacist and resident to discuss 1-3 patients expected to discharge in 24 hours

### Outcome Measures

- Discharge delay (minutes), Communication efficiency (pages), Meeting adherence to meetings (% of potential meetings)
- Resident and Pharmacist satisfaction using a satisfaction survey

## Results

### Discharge Delay:

- Based on 95 adult patients discharged in October 2017 and 54 in January 2018

### Adherence

- Residents and pharmacists met for 10 of 22 possible meetings (45.5%), Average time: 18 minutes

### Satisfaction

- Anecdotal data suggests high satisfaction among residents, more robust statistical data is in progress
- "I learned a lot from the pharmacists during dedicated medication review time that allowed space for learning and other questions I likely would not have otherwise asked"

- PGY1 Family Medicine resident .

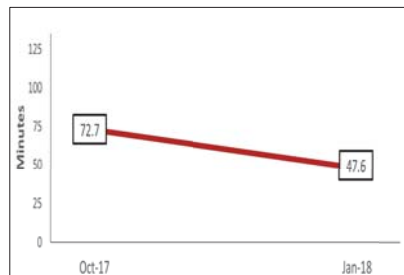


Figure 2: Discharge delay was reduced from 72.7±58.4 minutes pre-intervention to 47.6±37.4 (25.1) minutes post-intervention (p=.002).

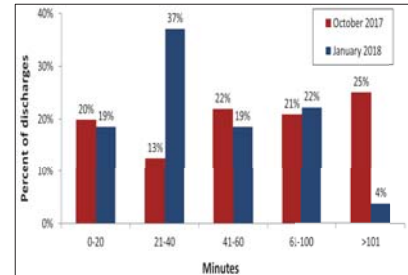


Figure 3: The percentage of discharges taking more than 101 minutes, decreased from 25% pre-intervention to 4% post-intervention.

## Results (continued)

### Communication efficiency:

- The number of pages between the pharmacist and resident dropped from 118 prior to interventions to 14 the month after implementation

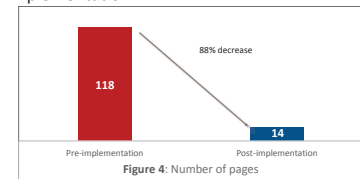


Figure 4: Number of pages

## Conclusions

- Co-location and daily discharge meetings appear to be associated with reduced discharge delay and more efficient communication.
- Satisfaction surveys suggest that pharmacists and residents appreciate these interventions.
- Further study is needed to determine whether this intervention can scale up, be used by other services, reduces cost, and patient throughput and experience.

## Future Directions

- Scale up to other hospital units
- Standardize daily discussion points: education, duration, interactions
- Gather more data re: resident and pharmacist satisfaction
- Survey discussed patients vs undiscussed patients re: discharge delay and patient satisfaction
- Qualitative data about resident education points (ie: What did you learn?)

## References

- Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical pharmacists and inpatient medical care: a systematic review. *Arch Intern Med.* 2006;166(9):955-964.
- Durvasula R, Kayihan A, Del Bene S, et al. A multidisciplinary care pathway significantly increases the number of early morning discharges in a large academic medical center. *Qual Manag Health Care.* 2015;24(1):45-51.
- Stattler AM, Schondelmeyer AC, Thomson JE, et al. Improving Discharge Efficiency in Medically Complex Pediatric Patients. *Pediatrics.* 2016;138(2).

# Caitlin Regner, MD

## Projects Completed During Residency:

### Scholarly Project:

OB-Newborn TEACH Cards: An Innovative Curricular Tool for Family Medicine Learners

### Community Health Learning Experience:

Wingra Clinic Resource Navigator Program Process Improvement:

The Resource Navigator Program is a collaborative program between UW Health, Access Community Health Centers, and Center for Patient Partnerships. The program utilizes undergraduate student volunteers embedded within the clinical environment to screen and address social factors affecting patient health, including access to food, childcare, housing, income, legal needs to name a few. Navigators use a capacity-building approach, partnering with patients to prioritize action and address barriers to health through connections to community resources. Both Wingra Clinic and Northeast Clinic have implemented universal social needs screening; however Wingra Clinic was noted to face several barriers to full adoption of universal screening. I analyzed the screening process in both clinics to identify barriers to implementation, then worked staff and volunteers at Wingra to improve our screening process and allow for better identification of patients that would benefit from the Resource Navigator Program.



Caitlin Regner grew up in Oconomowoc, Wisconsin, but now calls Madison home after living here for most of a decade. She completed undergraduate degrees in Biology and Spanish from UW—Madison before moving to Milwaukee for a year to serve as a Spanish/

English interpreter at the Sixteenth Street Community Health Center. She then returned to Madison to pursue her medical degree at the University of Wisconsin School of Medicine and Public Health. As a medical student, Caitlin served as class coordinator for the Medical Spanish course and was an active volunteer and leader with the student-run MEDiC clinics, Gold Humanism Honor Society and the Christian Medical Association. Caitlin has a strong interest in research, and has participated in several research studies including (1) evaluation of the way that “difficult” patients perceive communication with their healthcare providers; (2) study of the way that investigator gender and recommendation letter writing style impacts grant funding within the NIH; and (3) development and evaluation of a novel evidence-based medicine teaching tool in obstetric and newborn care. Outside of medicine, Caitlin enjoys running, time outdoors, conservation activism, photography, crafting, singing, and spending time with her husband, three children, and extended families and friends.



*Thank you incredibly to my husband, Matt, my love, who has been a rock of stability in our family throughout medical school and residency. I am continually blessed by the love of our children, Eli, Abram, and Catherine, and am thankful to them for keeping me grounded and reminding me of the more important things each day. Thank you to Buttes, Regners, and the Community of the Good Shepherd for the countless ways they've helped our family. Thank you especially to my mom, Trish, who is always so giving of her time and who works so hard to help her children and grandchildren accomplish so many good things. Finally, thank you to the incredible administrative support network at DFMCH and all of my colleagues at Wingra Clinic! You make residency rock! Eph 3:20.*

# OB-Newborn TEACH Cards: An Innovative Curricular Tool for Family Medicine Learners

Tom Hahn, MD – Assistant Professor of Family Medicine  
Emily Metzger, MD – Resident Physician  
Caitlin Regner, MD – Resident Physician  
University of Wisconsin Dept of Family Medicine and Community Health



## Disclosures

- We have no disclosures



## Objectives

- Review current evidence to support best practice EBM and inpatient education
- Explore a novel tool called OB-Newborn TEACH Cards to teach EBM and clinical topics on an inpatient maternity care service
- Review preliminary outcomes from implementation study of OB-Newborn TEACH Cards
- Group practice and feedback of teaching tool



## Background

EBM is the “conscientious, explicit and judicious use of the best current evidence in making decisions about the care of individual patients.”

Sackett et al., 1996



## Background

Historically, practice of EBM training is characterized by the following (Dawes et al., 2005) :

- A – Acknowledge gaps in knowledge\*
- A – Asking a clinical question related to a knowledge gap
- A – Acquiring information to fill the gap
- A – Appraising the found information
- A – Applying the found evidence in conjunction with clinical expertise and patient’s values
- A – Assessing practice



## Background

- There is currently no “gold standard” approach to teaching EBM
  - Challenging to promote EBM standards, but also allows for flexibility
  - We DO know that EBM teaching works best when integrated into the clinical environment for practical application (Coomarasamy, 2004)
- Integrating EBM with other content leads (Ilic & Maloney, 2014):
  - (1) Improved learner attitude towards EBM
  - (2) Greater satisfaction with EBM training
  - (3) Greater attainment of EBM knowledge



## Background-Inpatient teaching

- Teaching is often lacking on inpatient services due to busy nature of services
- Learners value mini teaching sessions (torre 2004)

## Background

- TEACH (Teaching Evidence-based medicine AND Clinical topics in the Hospital) Cards were developed in 2014 as an inpatient teaching tool to teach clinical knowledge and EBM skills
- A preliminary study found that use of TEACH Cards may help to improve amount of teaching on the inpatient service and user's efficiency in answering clinical questions
- In 2017 we started a new maternal-child teaching service at a new hospital. To provide a teaching tool for this service, we created OB-Newborn TEACH Cards

## Background

- In 2017 we started a new maternal-child teaching service at a new hospital.
- Residents deliver manage obstetrics patients, deliver babies, and care for post-partum women and newborns in the patients.
- To provide a teaching tool for this service, we created OB-Newborn TEACH Cards

## The tool: OB-Newborn TEACH Cards



40 OB topics cards  
15 newborn topic cards

## The tool: OB-Newborn TEACH Cards

### OBESITY IN PREGNANCY

#### Background Questions:

- ✓ What is the recommended weight gain in pregnancy based on pre-gravid BMI?
- ✓ Discuss the prenatal work-up for obese patients.
- ✓ What are antepartum, intrapartum, and postpartum complications of maternal obesity for mother and baby.
- ✓ Discuss how obesity impacts labor management.

#### Foreground Questions:

- ✓ In obese pregnant women, does weight loss compared to normal weight gain during pregnancy decrease the risk for emergent cesarean delivery?
- ✓ Write your own PICO question, and try to find the answer.

**Teaching Pearl:**  
How do you talk about weight gain with a pregnant patient? What management options would you recommend?

## The tool: OB-Newborn TEACH Cards

What are the two groups of questions and where can I find answers?	
Background Question	Foreground Question
This is a more basic question that answers who, what, where, when, why, and how.	This is a specific clinical query: PICO question. Patient population/Problem Intervention/exposure Comparison (if applicable) Outcome
Resources: ACOG Practice Bulletins American Family Physician OranMed Plus Essential Evidence Plus UpToDate	Cochrane Database Pub Med Clinical Queries Pub Med MedSt Database TRIP Database
<b>What are some uses for the cards?</b> <ul style="list-style-type: none"> <li>• To initiate discussion among learn members</li> <li>• To practice evidence-based medicine</li> <li>• To guide independent study</li> <li>• To create a mini presentation</li> </ul>	
Answers are intentionally not provided.	

## Methods

- Evaluation of the tool over 6 months
- PGY-1 and PGY-2 residents rotating on the maternal child service
- We hope to determine if OB-Newborn TEACH Cards:
  - Increase teaching on the service
  - Impact EBM attitudes and skills
  - Impact patient care

## Evaluation: 3 types of surveys

- Resident pre and post surveys
  - Ask about EBM attitudes: EBM is realistic to practice routinely, EBM is useful
  - Ask about EBM skills: Using resources to answer an EBM question, Apply evidence to a clinical scenario
- Faculty surveys
  - How many card used per week?
  - Are OB-Newborn TEACH Cards a valuable teaching resources
  - Do they help to increase teaching on service
- Point of care surveys
  - Did using this card change patient care or will in the future?
  - Did using this card increase your knowledge of the topic?

## Preliminary Results

- Resident surveys-assessing skills EBM attitudes and skills (results still pending)
- Faculty surveys: about 3 cards are used per week. Faculty agree that the cards are a useful teaching resource and that they help to increase teaching on the service.
- Point of care surveys indicate:
  - Most teams use cards to learn about topics they did not encounter through patient care
  - Most users agree that using the card increased their knowledge of the topic and will impact their future patient care

## Activity

### OBESITY IN PREGNANCY

#### Background Questions:

- ✓ What is the recommended weight gain in pregnancy based on pre-gravid BMI?
- ✓ Discuss the prenatal work-up for obese patients.
- ✓ What are antepartum, intrapartum, and postpartum complications of maternal obesity for mother and baby.
- ✓ Discuss how obesity impacts labor management.

#### Foreground Questions:

- ✓ In obese pregnant women, does weight loss compared to normal weight gain during pregnancy decrease the risk for emergent cesarean delivery?
- ✓ Write your own PICO question, and try to find the answer.

**Teaching Pearl:**  
How do you talk about weight gain with a pregnant patient? What management options would you recommend?

## Activity

Questions to consider:

- How does your program currently teach / incorporate EBM?
- How are ways that this tool could be included into your curriculum?
- What are barriers to utilizing a tool (this or otherwise) in inpatient and EBM curriculum?

## Conclusions

- OB-Newborn TEACH Cards may be useful particularly for new faculty on a busy service
- They may help to standardize teaching of core topics and can help to learn about topics not encountered through patient care
- They may help to increase teaching and potentially may impact patient care now or in the future



## References

- [www.fammed.wisc.edu/teachcards](http://www.fammed.wisc.edu/teachcards)

# Kartik Sidhar, MD

## Projects Completed During Residency:

### Community Health Learning Experience:

Dryden Terrace Hotspotting

### Scholarly Project:

Understanding and Overcoming Our Implicit Biases:

I co-wrote an article on implicit bias with Dr. Jennifer Edgoose and Dr. Michelle Quiogue. Implicit bias is an unconscious bias that stems from our ability to quickly find patterns from limited information. Unfortunately, these patterns can be incorrect and lead to implicit bias about members of different social identities. There were several studies that showed individual and institutional level bias contributed to several health disparities including African Americans having 2.2x the infant mortality rate as non-Hispanic whites. Fortunately, there is encouraging data that shows addressing implicit bias can improve biases held and by translation, can improve healthcare disparities. The article discusses several evidence-based strategies under the categories of Educate, Expose, and Approach that can be utilized to minimize the impact of implicit bias in daily lives and in medical care. The article has been accepted for publication in Family Practice Management.



Kartik Sidhar grew up in West Bloomfield, Michigan, before traveling to Ann Arbor to earn his undergraduate degree in Sociology and General Biology and his medical degree from the University of Michigan. As an undergraduate, Kartik began working

with the University of Michigan Intergroup Relations program, where he helped facilitate dialogues to explore social identity as it relates to justice, privilege, and bias. He continued this work throughout his undergrad career, eventually being hired to facilitate an orientation workshop on social identity and diversity for the School of Dentistry, and into medical school, where he co-developed a four-week dialogue series around social identity and social disparity for other medical students. This experience led him to complete an elective rotation at FQHCs around metro Detroit during his fourth year. Kartik also spent a summer in northern Michigan completing a rural preceptorship, and he traveled to New Delhi, India for a GI rotation. Other medical interests that helped draw Kartik to Family Medicine include sports medicine, palliative care, inpatient medicine, and procedures. In his free time, Kartik enjoys biking, hiking, watching TV, and eating pizza.



*I would like to thank my mentors, Dr. Schwab and Dr. Edgoose for serving as role models and for their encouragement and support throughout training. I would like to thank my wife and co-resident, Paula for all her love and support. This has been a challenging journey but has been so much fun with you by my side. I would like to thank our parents and siblings for their unwavering love and support.*

## Dryden Terrace Hotspotting

### **Background:**

Dryden Terrace is an apartment complex that is part of affordable housing in Madison. The residents that live in this complex are, by requirement, lower socioeconomic status. Many of the residents also have disabilities and are geriatric. The program started after a hotspotting exercise by the Madison Fire Department and Madison Department of Public Health noted a hotspot of 911 calls and ED visits by the residents of Dryden Terrace. This led to outreach from Madison Fire to Northeast Family Medicine to assess why this would be occurring when Northeast is within walking distance of this community. 50 residents of this community are patients at Northeast Family Medicine Clinic. Additional information collected showed that these residents were 3.4x more likely to utilize Emergency Services compared to the average Northeast patient.

### **Objectives:**

The objectives of this project included assessing whether contact with medical providers and first responders would increase awareness of utilization of ambulatory care rather than EMS and ED utilization. A personal objective included leading health education sessions for residents of the community and getting to know the community. During the course of the project, there were several roadblocks in data sharing. This led to an additional objective to improve data sharing models between UW Hospitals, Madison Fire, and Madison Public Health. My specific role within the project included leading several sessions of “Dining with the Docs” and attending stakeholders meetings to discuss the vision and next steps of the project.

### **Methods:**

The primary intervention was ‘Dining with the Docs’- monthly lunch sessions with Dryden Terrace residents. At these sessions, the presenting physician would lead an interactive activity to review health education topics. Topics have included chair exercises, cadaver organ presentation, and jeopardy games around heart health, mental health, and diabetes. After the health education exercise, firefighters of the Madison Fire Department were in attendance to check blood pressures and blood sugars. During this time, the physicians and clinic social worker had an opportunity to walk around and answer health questions and to get to know the residents better. Regarding the additional objective of expanding data sharing, a proposal was submitted by Madison Public Health to work with EMS, UW-DFMCH, and Madison Fire Department to establish a data sharing agreement.

### **Results:**

Out of the 100 apartment units, an 18 month period was reviewed which included time before and after the intervention was implemented. There were a total of 87 EMS responses out of which 75 were transported. The calls were assessed per quarter in that time range and no statistically significant decrease in calls were seen even after the “Dining with the Docs” intervention started. However, much of this data is limited by data sharing models that did not allow EMS notes or ER visits to be shared. The data sharing agreement is currently proposed and in process. One impact that I have noticed in the community is that

many of the residents appreciated having the monthly visits. I have gotten close to many of Dryden's residents over the past two years. I always enjoy visits and getting updates from the residents of Dryden Terrace. One of the residents even switched to having me as their PCP. This has been a non-measurable, but very rewarding aspect of this project.

**Conclusions:**

Based on this project, one big takeaway is the challenges of data sharing. It was surprising how difficult it was to share data between EMS, Public Health, and UW Health. This was one of the biggest challenges we faced which impacted the ability to move forward with the project and assess whether the intervention of 'Dining with the Docs' impacted EMS and ED utilization. Another learning point is how engaged and interested the residents of Dryden Terrace were for the monthly sessions to learn about different health topics. Actions for the future include following up on the recent data sharing proposal by public health and assessing if that opens doors to obtaining follow-up and outcomes measurements. Other next steps include continuing the monthly sessions with the apartment residents and considering expanding attendance from Northeast clinic staff, especially nursing staff.

**Acknowledgments:**

Thank you to Dr. Jennifer Edgoose who was key in this project and kept the project moving forward and for serving as mentor to me throughout residency. Thank you to Madison Fire and to Madison Public Health Department for their commitment to this project. Thank you to my co-residents, Angela and Xia, who were great partners on this project.

# Kayce Spear, MD

## Projects Completed During Residency:

### Scholarly Project:

POCUS Curriculum Development

### Scholarly Project:

Clostridioides Difficile:

I presented a review of the updated Clinical Practice Guidelines from the Infectious Disease Society of America regarding epidemiology, diagnosis, infection control, and clinical management of Clostridioides Difficile in adult and pediatric patients. This presentation included not only antibiotic management, but also an in-depth review and discussion of the role of probiotics in the prevention and management of C.difficile.



An Oregon native, Kayce Spear earned her Medical Doctorate from Oregon Health & Science University School of Medicine. She received her B.A. in Chemistry from Reed College in Portland, Oregon, and then went on to study Biochemistry and X-Ray Crystallography as

a Fulbright Scholar at the University of Heidelberg, in Germany. Kayce comes to us with diverse volunteer experience in the areas of thyroid cancer screening, GME curriculum planning, underserved global health initiatives, public policy development, and hospice care. She also held the position of Executive Director for the Portland Blues & Jazz Dance Society. In addition to her volunteer experiences, Kayce has held paid positions as a chemistry, physics, math and economics tutor, a dance instructor, and a Senior Reactor Operator. When she's not busy with the many responsibilities of medicine, Kayce has a flair for swing and blues dancing, and she was invited to teach blues dancing in London. She also enjoys bike riding, bouldering, traveling and playing board games with friends.



*Foremost thank you to Bjorn, my love, for your tireless patience and support these last three years. I appreciate you more than I can say! To my residency colleagues, thank you for enduring my endless Sherlocking -- and for Emily & Caitlin, my many Escape Room antics. To my beloved Baraboo faculty, thank you for your wisdom, patience, and compassion. It has been a gift to learn and grow here.*

# POCUS Curriculum Development

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*Kayce Spear, PGY-3*

## Background

Point of Care Ultrasound (POCUS) is a diverse tool that is being adopted across specialties to improve procedural and diagnostic accuracy, decrease costs, and increase access to care. Training in POCUS is particularly relevant to the rural family physician, whose scope of practice remains broad and with limited access to specialists and advanced imaging. Training in ultrasound guided diagnosis and procedures allow clinicians to treat patients close to home, using the best possible procedural processes, facilitating the best patient outcomes in rural settings.

The UW Family Medicine & Community Health Baraboo Rural Training Track is a program of 6 residents, who participate in a hybrid longitudinal curriculum in full-spectrum family medicine. This training includes hospital training in the second and third years, conducted at St. Clare hospital with both Family Medicine-trained traditionalist mentors and also Internal and Family Medicine-trained hospitalists.

In 2017, SSM-Health St. Clare Hospital in Baraboo was awarded a grant from the Wisconsin Rural Physician Residency Assistance Program for equipment to train providers on invasive line placement. With these funds, ultrasound-compatible dummies were purchased to serve as training tools for residents and faculty in lumbar puncture, thoracentesis, paracentesis, and central venous catheter placement procedures. These tools were planned to serve as the initial focus of the Baraboo Rural Residency Training Track residency opportunities in POCUS.

## Goals

1. To design and implement a rural-focused, comprehensive, sustainable point-of-care ultrasound curriculum for residents of the UW Family Medicine & Community Health Baraboo Rural Training Track (Baraboo RTT).
2. To train Baraboo RTT residents and UW teaching faculty in the uses of point-of-care ultrasound for diagnosis and procedural guidance, including ultrasound-guided:
  - a. Lumbar puncture,
  - b. Thoracentesis,
  - c. Paracentesis,
  - d. Central venous catheter placement, *and*
  - e. Other procedures to be named at a future date, including but not limited to ultrasound-guided joint injections, obstetric biophysical profiles, AFI calculations and others.

## Methods

Equipment including mannequins and training packages related to lumbar punctures, thoracentesis, paracentesis and central venous catheter placement was received. St. Clare hospitalists and residents performed preliminary groundwork and testing of the equipment. Hospitalist leadership including Dr. David Jarvis and Dr. Deborah Nyquist were identified and acted as primary touch-points for curriculum content determination, resource identification, and scheduling, as well as later teaching and guidance. This was assisted in part by the full team of hospitalist members and other UW faculty.

Unanticipated challenges included coordinating space to house materials, scheduling amongst faculty and residents. These issues were addressed through ongoing discussions amongst hospitalists, residents, and faculty as well as hospital staff.

## Preliminary Results

Quarterly, 1-2 hour training sessions were held between October 2018 and March 2019. In three of four sessions with four residents, the following curriculum was reviewed, taught by hospitalist mentors:

- Basic ultrasound techniques such as identification of images of fluid, soft-tissue, air, and bone, identifying appropriate transducers, orienting the probe, and optimizing image depth and gain;
- Pulmonary basics, such as identification of anatomy, artifacts, and pneumothorax;
- Cardiac basics, such as identification of anatomy, detection of effusion, and measurement of the inferior vena cava to approximate intravascular volume status; *and*
- Central line placement with ultrasound guidance.

In our fourth meeting, anticipated on May 15, we plan to review the following ultrasound-guided procedures:

- Thoracentesis;
- Paracentesis; *and*
- Ultrasound-guided Lumbar Puncture

After these first sessions, residents have stated that ultrasound-guided practice has helped “tremendously” with identification of anatomical landmarks and performance of ultrasound-guided procedures in real-patient settings. However, there remain concerns about opportunities to consistently practice new skills, and how best to obtain and document competency in these wide-ranging skills.

## Next Steps

After initial review of the results of curricular efforts, several next steps were identified. Among these, scheduling was identified as an area of improvement. It was felt that meeting only quarterly was insufficient time to take full advantage of learning opportunities, and evening scheduling created duty-hour concerns and conflicts. After discussion amongst

residency peers, scheduling going forward will be coordinated as monthly outpatient half-day blocks for residents in their PGY-2 and PGY-3 years.

Second, the ultrasound curriculum as outlined above is limited in scope to those subject and procedural areas identified. Sustainable ways to expand the scope of this curriculum are in discussion and include:

- Training in general OB/GYN and in special examinations under the guidance of new faculty providers;
- Training in soft tissue and musculoskeletal ultrasound skills with specialist providers; *and*
- Identification of Family Medicine-trained POCUS training courses (such as that available at the University of Minnesota or potentially others through the UW system), which residents may attend.

Third, there are insufficient resources to document and assess competency for ultrasound-guided procedures. Clinical coordinator, Angie Womble, is pursuing guidance on what next-steps are required.



## Appendix 1: Ultrasound Objectives by Milestones

### *Patient Care*

**PC-1:** Learner identifies situations across care settings that require ultrasound-guided techniques. Learner demonstrates awareness of limitations of POCUS and personal limitations regarding procedural techniques.

**PC-4:** Learner appropriately identifies role of ultrasound-guided techniques in evaluation and treatment of a patient with undifferentiated signs and symptoms.

**PC-5:** Learner counsels the patient regarding indications, contraindications, and complications of ultrasound-guided procedures and post-procedure management. Using universal protocols, learner independently and competently performs ultrasound-guided techniques. Identifies and plans to acquire procedural skills as needed for practice.

### *Medical Knowledge*

**MK-1:** Assess anatomy, physiology, and pathology. Describe indications, contraindications, technical details of the procedure, interpretation of results, and complications.

### *Systems-Based Practice*

**SBP-1:** Learner selects imaging modalities and diagnostic work-up that is sensitive to resource use, efficiency, and effectiveness.

**SBP-2:** Learner develops awareness of common errors in performance of ultrasound-guided techniques and how to avoid them.

**SBP-4:** Learner identifies appropriate team-members and their roles during performance of ultrasound-guided techniques.

### *Practice-Based Learning & Improvement*

**PBLI-2:** Learner identifies areas of deficiency in procedural knowledge and takes steps to practice and improve in these areas, via elective resources, preceptors, and use of online or other resources.

### *Professionalism*

**PROF-2:** Learner demonstrates awareness of comfort of patient throughout procedure.

**PROF-3:** Learner obtains informed consent during all ultrasound-guided procedures.

### *Communication*

**C-1:** Learner communicates effectively and empathetically with patients and their families.

# Ashley Taliaferro, DO

## Projects Completed During Residency:

### Scholarly Project:

OMT4MD

### Community Health Learning Experience:

Girls' Circle:

I worked with Paula Goldman to facilitate a girl's resiliency group at Verona High School entitled Girls' Circle. Girls' Circle is a structured support group for girls 9-18 years old. Its goal was to promote resiliency, confidence, honesty, and communication skills to help girls pursue their talents and academic interests while fostering healthy relationships. It was to help girls maintain connections with peers and women in their communities. It also aimed to decrease self-doubt and allowed for self-expression through verbal sharing and creative activities. Topics included creating safety in cyberspace, agents of change, binge drinking and being in charge, coping through hard times, marijuana, and girls and mental health. Based on survey results and feedback we concluded that the girls who participated seemed to enjoy the experience. They appreciated being able to share their personal experiences and opinions in a safe group setting. They felt that they benefited from talking with their peers about difficult subjects.



Ashley comes to the Madison program from Iowa. She completed her Bachelor's degree at the University of Northern Iowa in Cedar Falls, and then went on to pursue her medical degree at Des Moines University College of Osteopathic Medicine.

Ashley has a strong interest in Osteopathic Manual Medicine (OMM). She was selected to be an OMM Fellow at DMU, which extended her medical school by 12 months and gave her practice providing OMM to patients at the specialty clinic. During her fellowship, Ashley was also able to teach a course in OMM to first- and second-year medical students. During medical school, Ashley volunteered at a free clinic for the Amish community where she provided basic medical care and treated them utilizing OMM. She also volunteered at a free clinic for athletes at Drake University where she treated patients with OMM to help heal and prevent sports-related injuries. In addition to Osteopathic Medicine, another clinical interest for Ashley is sports medicine. She's an avid biker, fisher, swimmer, and golfer, and she also enjoys exploring new restaurants, cooking new recipes, and spending time with friends and family.



*Thank you to my friends and family for supporting me through this time consuming and intense training program. Thank you to my husband, Jeff, for being understanding of my work hours and for being such an amazing dad to our son, Jackson. I am also appreciative of my fellow residents for being awesome to work with and supportive of one another. The faculty at this program have also been outstanding and fostered an amazing learning environment. I truly appreciate the love and support from everyone during my time at this program!*

**University of Wisconsin – Department of Family Medicine and Community Health**  
Madison Family Medicine Residency Program

**Osteopathic Manipulative Treatment for the Allopathic Physician (OMT4MD)**

2018-2019

Elective Syllabus

**Texts**

Required

- Osteopathic Techniques: The Learner's Guide. Sharon Gustowski, DO
- Basic Musculoskeletal Manipulation Skills: The 15 Minute Office Encounter. Mischael Rowane, DO and Paul Evans, DO

Optional

- An anatomy reference text or app: *recommend interactive app* "Essential Anatomy 5"
- Foundations of Osteopathic Medicine 3<sup>rd</sup> Edition (FOM). Chila. LWW, 2011 (FOM)
- Atlas of Common Counterstrain Tenderpoints. Snider, Glover. AT Still University, Kirskville COM. 2014.

*\*(Foundations and Counterstrain Atlas are available for check out from Sarah's office at the DFM – please log your name and textbook number on the yellow pad)*

**Module Topics and Lab Dates:**

1. 09/26/2018      **(Require)** Introduction to Osteopathic Assessment and Treatment
2. 10/24/2018      Lower Extremity
3. 11/28/2018      Lumbar Spine
4. 01/23/2019      Thoracic Spine
5. 02/27/2019      Cervical Spine
6. 03/27/2019      Pelvis
7. 04/24/2019      Sacrum
8. 05/22/2019      Ribs
9. 06/12/2019      **(EVENING SESSION)** Review lab
10. 06/26/2019      **Competency Evaluation**

**Labs**

Wednesdays, **Alumni Hall room 1819 from 9:15am – 12:00pm**. Attendance at lab is required for module completion, with the exception that one lab can be "made up" during the make up lab at the end of the year. Readings and online presentations must be completed before each laboratory session. Please see attachment 1 for specific reading list.

**Lab Attire** should be athletic type tops (tshirts, tanktops eg) and shorts that are short enough to have the knees exposed when standing at rest. Bras should be without underwire and allow for direct inspection and palpation of the back.

**Practice Logs and Templates**

Attaining competence with OMT requires practice. Participants are expected to document practice logs, **minimum of 3** logs per module. Logs must be turned in prior to subsequent lab session. Logs should contain documentation in a SOAP note style. Patients may be friends, family, co-residents, or clinic patients (residents need to be checked off prior to using OMT in clinic). A template is available online.

### **Clinical Preceptorship**

It is highly recommended to shadow a DO in clinic performing OMT. Recommended to do 4-5 half days. Contact Vicki to schedule [vicki.daniels@fammed.wisc.edu](mailto:vicki.daniels@fammed.wisc.edu)

### **Completing a module**

A module is considered complete when the readings, online lecture, attendance at the lab, and submission of at least 3 practice logs has been documented.

### **To use OMT in own continuity clinic**

Residents will be certified to use specific OMT techniques in clinic after demonstration of competence with Sarah James, DO.

### **Eligibility**

Resident's electing to participate in the OMT for MD pathway must be in good academic standing and approval must be obtained from clinic mentor and a program director

### **Certificate of Completion**

A certificate of completion will be awarded to residents who meet the following requirements:

- Completion of all modules (as described above) including practice logs
- Completion of elective rotation time (as described above)
- Completion of additional practice logs for 10 treatments documenting structural exam, treatment, and response for at least 5 body regions
- Passing a mock-patient practical (full body diagnosis and treatment of 5 or more body regions under supervision)

### **Rotation Credit for Residents**

1 musculoskeletal medicine selective and 2 general electives can be met through enrollment in the OMT4MD program. This assures protected time during a resident's schedule to prepare for labs, complete practice logs, shadow a DO, and review material. Elective/selective time (maximum of 12 half days) can be distributed throughout a resident's schedule to accommodate optimal timing relative to lab sessions and to allow flexibility for working with DO's in clinic to meet clinical preceptorship requirement. Please contact Kacia ([kacia.stevenson@fammed.wisc.edu](mailto:kacia.stevenson@fammed.wisc.edu)) to discuss your schedule or request specific dates.

Contact [OMT4MD@fammed.wisc.edu](mailto:OMT4MD@fammed.wisc.edu) with any questions.

## Attachment 1: Reading list

### Required Books:

- Osteopathic Techniques: The Learner's Guide. Sharon Gustowski, DO (OTLG)
  - o Please do the questions at the end of each chapter
- Basic Musculoskeletal Manipulation Skills: The 15 Minute Office Encounter. Michael Rowan, DO and Paul Evans, DO (BMMS)

### Books for Supplementary Readings:

- An anatomy reference text or app: *recommend interactive app* "Essential Anatomy 5"
- Foundations of Osteopathic Medicine 3<sup>rd</sup> Edition (FOM). Chila. LWW, 2011 (FOM)
- Atlas of Common Counterstrain Tenderpoints. Snider, Glover. AT Still University, Kirskville COM. 2014.

*\*(Foundations and Counterstrain Atlas are available for check out from Sarah's office at the DFM – please log your name and textbook number on the yellow pad)*

### 1. 09/26/2018 Introduction to Osteopathic Assessment and Treatment

- a. OTLG: Chapter 1-5,
  - i. Chapter 1: Osteopathic Concepts and Learning Osteopathic Manipulative Treatment
  - ii. Chapter 2: Osteopathic Manipulative Treatment Overview
  - iii. Chapter 3: Osteopathic Screening Exams
  - iv. Chapter 4: Somatic Dysfunction Diagnosis
    - 1. Read up to the "Head" section, and Thoracic and Lumbar: Exam for Somatic Dysfunction
  - v. Chapter 5 :Soft Tissue Techniques
    - 1. Read until the section "Head/Cervical, Inhibitory Pressure"
- b. Optional Reading:
  - i. FOM: Chapter 9: Somatic Dysfunction, Spinal Facilitation, and Viscerosomatic Integration (pp 118-131)

### 2. 10/24/2018 Lower Extremity

- a. OTLG: Chapter 11: Muscle Energy
  - i. Please read the introduction, hamstring, and fibular head techniques
- b. OTLG: Chapter 15: Counterstrain Technique
  - i. Please read the introduction until the "Head" section
- c. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
  - i. Lower Extremity
- d. BMMS Chapter 3: Long Restrictors, Piriformis and Psoas Muscles (pp 30-38)

### 3. 11/28/2018 Lumbar Spine

- a. BMMS Chapter 5: Lumbar Spine (pp 50-60)
- b. OTLG: Chapter 12: High Velocity, Low Amplitude Thrust Techniques
  - i. Please read the introduction and lumbar technique
- c. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
  - i. Please read the thoracic and lumbar spine section
- d. Optional Reading:

- i. FOM Chapter 40: Lumbar Region (pp 546-559)
- 4. 01/23/2019 Thoracic Spine**
  - a. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
    - i. Please read the thoracic and lumbar spine section
  - b. OTLG: Chapter 11: Muscle Energy Techniques
    - i. Please read Thoracic T1-T5 and Thoracic and Lumbar T6-L5 sections
  - c. BMMS: Chapter 6: Thoracic Spine (pp 64-86)
  - d. BMMS: Chapter 7: Thoracic Cage
    - i. Please read soft tissue technique (pp 102-105)
  - e. Optional reading:
    - i. FOM chapter 39: Thoracic Regions and Rib cage (pp528-541)
- 5. 02/27/2019 Cervical Spine**
  - a. BMMS: Chapter 9: Cervical Spine (pp 154-180)
  - b. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
    - i. Please read cervical spine section
- 6. 03/27/2019 Pelvis**
  - a. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
    - i. Pelvis section only
- 7. 04/24/2019 Sacrum**
  - a. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
    - i. Sacrum section only
- 8. 05/22/2019 Ribs**
  - a. BMMS: Chapter 7: Thoracic Cage
  - b. OTLG: Chapter 4: Somatic Dysfunction Diagnosis
    - i. Please read costal/rib somatic dysfunction section
  - c. OTLG: Chapter 6: Myofascial Release Techniques
    - i. Skip "Thoracic Outlet" section and then read until "Abdoment, Thoracoabdominal Hemidiaphragm"
  - d. Optional reading:
    - i. FOM chapter 39: Thoracic Regions and Rib cage (pp528-541)

**University of Wisconsin – Department of Family Medicine and Community Health**  
Madison Family Medicine Residency Program

**Osteopathic Manipulative Treatment for the Allopathic Physician (OMT4MD)**  
Goals and Objectives

**Background:** The philosophies of osteopathic medicine and family medicine are inherently harmonious. Both seek to treat the whole person (body, mind, and spirit) while respecting the self-healing capacity of each individual. Osteopathic theory and practice is based on the core concept that alterations in physical structure affect physiologic functioning, and vice-versa. By addressing these physical alterations (ie somatic dysfunctions) OMT aims to correct aberrant physiology. OMT is indicated in many common primary care clinical scenarios. This elective is designed for allopathic residents who desire an in depth training in osteopathic manipulative diagnosis and treatment.

**Goals:**

- To meet the interest amongst allopathic residents and fellows to learn OMT and prepare them to incorporate these skills into their clinical practice
- To study the feasibility and potential sustainability of incorporating this elective into the DFMCH

**Objectives:** The MD resident who completes this pathway will learn to:

- Appreciate the historical context and evolution of osteopathic medicine and its role in today's health care system
- Apply osteopathic principles and clinical reasoning to formulate appropriate osteopathic treatment plans for common presenting conditions
- Become proficient at performing an osteopathic structural exam, including segmental diagnosis of the axial and appendicular skeleton
- Become proficient with a range of OMT modalities, including soft tissue, counterstrain, muscle energy, and myofascial release to treat somatic dysfunctions of the axial and appendicular skeleton and related soft tissues
- Appreciate the role lymphatics and autonomics play in the application of osteopathic clinical theory and use OMT to address somatic dysfunctions that impact the normal physiologic functioning of these systems
- Effectively document and bill for osteopathic diagnosis and treatment

# Ben Traun, MD

## Projects Completed During Residency:

### Scholarly Project:

Opioid Prescribing Trends in Postpartum Women: A Multicenter Study

### Community Health Learning Experience:

Community Based Smoking Cessation Small Groups:

The U.S. Department of Housing and Urban Development issued a smoking ban for all federally funded housing projects starting January 2018. Three of Madison's four housing projects are in the Wingra community, and many of the tenants are Wingra patients. While the smoking ban is a great idea for the health of smokers and non-smokers alike, there were not programs in place to help smokers successfully quit. Previous Wingra residents had trialed having smoking cessation small groups located at Wingra clinic, but there were challenges with participation, so it was decided to bring the small groups on-site, located at the Triangle Apartments on Park Street. Overall our results were somewhat disappointing. We again had poor participation in small groups. During four different small groups the number of participants ranged from 0-4. We attempted to administer pre and post surveys to the participants in order to collect data on the rate of smoking cessation success, but given the inconsistent participation, we were unable to do so. Ultimately, we shared our experience with one of the providers at the Erdman Access Clinic, Joe Eichenseher, MD, who was also interested in smoking cessation small groups. By learning from our challenges, he was able to adjust his plans to be more successful.



*I would like to thank my wife, Sarah, and both of our parents for all the support they provided me during residency. I could not have overcome the challenges of being new parent while going through residency without you all!*



Ben Traun grew up in Madison and earned both his undergraduate and medical degrees from the University of Wisconsin—Madison. He is drawn to family medicine for its focus on community health, and his experiences over the past 10 years reflect his

commitment to underserved populations. Before starting medical school, he spent a year in Detroit as an AmeriCorps volunteer, mentoring and tutoring at-risk middle school students. He then completed a second AmeriCorp year working with youth at the Goodman Community Center in Madison. During medical school, Ben volunteered with the student-run MEDiC Clinics, the Doctors Ought to Care program, and Medical Students for Minority Concerns. He also continued his interests in teaching and mentoring through groups such as Allied United for Health, the Mentoring and Achievement Program, and the Healthy Classrooms Foundation. In addition to his teaching and community health interests, Ben also has a strong interest in Sports Medicine. In his free time, he loves being outside, playing sports (ultimate Frisbee, softball, golf, soccer, basketball), hiking, cooking, and playing games.



## **Opioid prescribing trends in postpartum women: A multicenter study**

**Authors:** K. Sanchez Traun, MD; C. Schauburger, MD; L. Ramirez, MPH; C. Jones, MD; A. Lindberg, MD; R. Molero Bravo, MD; T. Wright, MD, MS; B. Traun, MD; S. Peterson, MD; V. Rudolf, MD, MPH

**Conflict of Interest:** The authors report no conflict of interest.

**Source of Funding:** This research did not receive any funding.

### **Presentation:**

This study has been accepted as a poster presentation at the ASAM Annual Conference of Innovations in Addiction Medicine and Science and will be presented by Karissa Sanchez Traun, MD on April 5, 2019 in Orlando, Florida.

### **Condensation**

Postpartum opioid prescription rates vary widely among hospitals, but providers within the same hospital tend to follow similar prescribing trends.

**Short title:** Postpartum opioid prescribing

### **AJOG at a Glance:**

A. Opioids have been identified as one of the medication classes most frequently associated with adverse events and postpartum women are frequently prescribed opioids for pain. This study attempts to provide a better understanding of opioid prescribing trends across the nation.

B. The percentage of women prescribed postpartum opioids varied significantly by hospital, ranging from 27.6% to 70.9% ( $p < 0.001$ ). Oxycodone-acetaminophen was the most commonly prescribed medication (50.3%) with each hospital having its preferred opioid type.

C. Our study confirmed that opioids are broadly prescribed in the postpartum period across the United States. In addition, we found that uniform prescribing trends among hospitals were lacking. These findings highlight the need for quality improvement projects to reduce inappropriate opioid prescribing and the formation of clear consensus guidelines for postpartum pain management.

## Abstract

### Background

The postpartum period can be a particularly vulnerable time for exposure to opioid medications and there are currently no consensus guidelines for physicians to follow regarding opioid prescribing during this period.

### Objective

The purpose of this study was to evaluate inter- and intra-hospital variability in opioid prescribing patterns in postpartum women and better understand the role of clinical variables in prescribing.

### Study Design

Data was extracted from electronic medical records on 4248 patients who delivered at six hospitals across the United States from January 2016 through March 2016. The primary outcome of the study was postpartum opioid prescription at the time of hospital discharge. Age, parity, route of delivery, and hospital were analyzed individually and with multivariate analyses to minimize confounding factors. Statistical methods included chi-square to analyze frequency of opioid prescription by hospital, parity, tobacco use, delivery method, and laceration type. ANOVA was used to analyze morphine equivalent dose by hospital.

### Results

The percentage of women prescribed postpartum opioids varied significantly by hospital, ranging from 27.6% to 70.9% ( $p < 0.001$ ). Oxycodone-acetaminophen was the most commonly prescribed medication (50.3%) with each hospital having its preferred opioid type. Median number of tablets prescribed ranged from 20 to 40 ( $p < 0.0001$ ). Primiparous women were more likely to receive opioids than multiparous women when broken down by a parity of 1, 2, 3, 4 and  $\geq 5$  (52.8%, 48.0%, 47.6%, 40.1%, 45.8%, respectively,  $p = 0.0005$ ). Among women who had vaginal deliveries, opioid prescription rates were higher in women who experienced either a 2<sup>nd</sup> degree laceration (35.5%,  $p = 0.0002$ ) or a 3<sup>rd</sup>/4<sup>th</sup> degree laceration (59.3%,  $p < 0.001$ ).

### Conclusions

Postpartum opioid prescription rates vary widely among hospitals, but providers within the same hospital tend to follow similar prescribing trends. The variation in prescribing found in our study illustrates the need for clear consensus guidelines for postpartum pain management.

**Keywords:** cesarean section, obstetrics, opioids, postpartum pain management, vaginal delivery

## Introduction

Opioids have been identified as one of the medication classes most frequently associated with adverse events. Specifically, respiratory depression and death have been associated with improper and excessive opioid prescribing.<sup>1</sup> Reproductive-age women receive opioids quite often, with 1/3 of reproductive-aged women filling an opioid prescription each year.<sup>2</sup> The postpartum period can be a particularly vulnerable time for exposure to opioid medications as 1 in 10 women suffer severe pain in the first 36 hours postpartum. Many factors contribute to increased postpartum pain, including cesarean section, forceps delivery, and higher degree perineal laceration.<sup>3</sup> Treatment of postpartum pain often involves opioids, but a significant concern is that 1 in 300 opioid-naïve patients who are exposed to opioids after cesarean section become persistent users.<sup>4</sup> Due to the frequency of exposure to opioids in the postpartum period, there have been many recent studies examining opioid prescribing in this population.<sup>5, 6, 7, 8</sup> A study by Osmundson, et al, found that a median of 30 opioid tablets were prescribed to women following cesarean section and 1/3 of those women thought that they had been prescribed excess medication. More than ¾ of the women had an excess of 10 oxycodone tabs and only 6% disposed of their extra pills.<sup>9</sup> This single-site study, along with others, suggests that opioids are being overprescribed in the postpartum period, but multicenter studies have been thus far lacking. With this in mind, we evaluated inter- and intra-hospital variability in opioid prescribing in postpartum women from multiple hospitals across the United States.

## Materials and Methods

A retrospective study was performed to analyze opioid prescribing trends in postpartum women across the United States. Data from a 3-month period, January through March 2016, were collected from six hospitals. These hospitals included urban, rural, academic, and community sites. The number of annual deliveries at each site varied from hundreds to several thousand. Delivering clinicians varied by center, but most included all three provider types: obstetricians, family practitioners, and midwives. Institutional Review Board (IRB) approval was obtained from all participating sites.

Data was obtained on 4248 patients. Sample size was based on participating institutions. Women who delivered during the designated period at the six institutions were included in the study. Women whose babies were transferred to the neonatal intensive care unit, stillborn, or suffered neonatal death were excluded for ease of data collection. Women who underwent tubal ligation following delivery were not excluded. All data was collected by individual institutions through electronic health record identification and minimal chart review was necessary. Only Hospital B and Hospital E required chart review to provide the desired data. Hospital B provided data on only 2 of the 3 months of the study period. Additional data was missing from various hospitals, including data on 111 patients regarding tobacco use, 1194 for lacerations, and 1242 for episiotomy. Missing data was labeled as unknown and not included in their respective analyses. The primary outcome of the study was postpartum opioid prescription at the time of discharge from the hospital. The study also looked at the specific opioid medication prescribed, the dosage, and the number of tablets prescribed. Other factors that were analyzed included the patient's age, parity, tobacco use, route of delivery, and type of laceration, including episiotomy. Hospitals were labeled A through F to provide anonymity. As different institutions tended to prescribe different types of opioids, dosages were converted to morphine milligram equivalents (MME) to enable valuable comparison. Women who had both episiotomy and 3<sup>rd</sup> or 4<sup>th</sup> degree

lacerations (11 women) were categorized as 3<sup>rd</sup>/4<sup>th</sup> degree when comparing the two and those who had both episiotomy and 2<sup>nd</sup> degree lacerations (27 women) were categorized as episiotomy. Data was collected in Excel and statistical analysis was performed with SAS software. Age, parity, route of delivery, and hospital were analyzed individually and with multivariate analyses to minimize confounding factors. Statistical methods included chi-square to analyze frequency of opioid prescription by hospital, parity, tobacco use, delivery method, and laceration type. ANOVA was used to analyze morphine equivalent dose by hospital.

## Results

Information on 4248 patients are included in this study with the number of patients delivered in the 3-month interval ranging from 179 patients at Hospital D and 1430 at Hospital E. The mean age of women in this study was 30.7 ( $\pm$ 5.7) years. Women who received opioid prescriptions were significantly older than those who did not, with a mean age of 31.6 years vs. 29.9 years ( $p < 0.0001$ ). However, the age difference was not found to be statistically significant when controlling for route of delivery, parity, and hospital. Median parity was 2 with a range of 1-12. Other patient factors and the corresponding opioid prescription rates are described in Table 1. Race and ethnicity data were not collected.

The percentage of postpartum women who were prescribed opioids varied significantly by hospital, ranging from 27.6% at Hospital A to 70.9% at Hospital E ( $p < 0.0001$ ). These differences remained after controlling for route of delivery, age, and parity of women at the different hospitals. For vaginal deliveries, opioid prescription rates ranged from 6.9% at Hospital F to 58.1% at Hospital E ( $p < 0.0001$ , Table 2). Opioids were prescribed to 86.2% of women following cesarean section at Hospital D and 100% of women at Hospital A ( $p = 0.0002$ ). In our study, 28.0% of the deliveries were cesarean sections. Cesarean sections ranged from 17.9% of deliveries at Hospital A to 33.5% of deliveries at Hospital F ( $p < 0.0001$ ). Women who underwent cesarean sections were more likely to receive opioids than women with vaginal deliveries (97.7% vs. 30.7%,  $p < 0.0001$ ).

For vaginal deliveries, opioid prescribing at discharge was also examined as it related to the presence of perineal lacerations (Table 1). Differences in opioid prescription frequencies were not statistically significant when comparing patients who had an episiotomy versus those who did not (36.9% vs. 31.8%,  $p = 0.38$ ) or when comparing episiotomy to 2<sup>nd</sup> degree lacerations (34.3% vs 35.4%,  $p = 0.8391$ ). However, the percentage of patients who experienced a 3<sup>rd</sup>/4<sup>th</sup> degree laceration and received a discharge opioid prescription was significantly higher than the percentage of patients who experienced only episiotomy (59.3% vs. 34.3%,  $p = 0.001$ ). Opioid dosing was standardized across hospitals using morphine milligram equivalents as various types of opioids were prescribed. Oxycodone-acetaminophen was the most commonly prescribed medication (50.3%). The medical staff at each institution had its own prescribing patterns illustrated in table 3. For women who underwent cesarean sections, the median number of tablets prescribed ranged from 30 at Hospitals B and D to 40 at Hospitals C, E, and F ( $p < 0.0001$ ). The MME per tablet prescribed after cesarean section ranged from a mean of 5.2 at Hospital A to 7.5 at Hospital E ( $p < 0.0001$ ) with the mean MME per prescription ranging from 171.1 at Hospital A to 284.6 at Hospital E ( $p < 0.0001$ ). For vaginal deliveries, the median number of tablets prescribed at discharge ranged from 10 at Hospital E to 30 at Hospitals B and D ( $p < 0.0001$ ) with the mean MME per tablet prescribed ranging from 5.2 at Hospital A to 7.4 at

Hospitals C and D ( $p < 0.0001$ ). The mean MME per prescription ranged from 95.4 at Hospital E to 177.7 at Hospital D ( $p < 0.0001$ ).

## **Comment**

### Results in the Context of Other Observations

Our findings show that the percentage of postpartum women who received opioids varied significantly by hospital, ranging from 6.9% to 58.1% for vaginal deliveries and 86.2% to 100% for cesarean sections. While many forms of opioid medications were prescribed, each institution appeared to have a preferred medication. The popularity of oxycodone in our study is striking in light of recent recommendations to avoid oxycodone due to increased abuse potential.<sup>10</sup> The use of codeine is also notable given its variable metabolism and potential for neonatal adverse effects in breastfeeding women. With respect to number of tablets prescribed, the median varied between hospitals, from 30 to 40 tablets ( $p < 0.0001$ ) for cesarean sections and 10 to 30 ( $p < 0.0001$ ) for vaginal deliveries. The mean number of tablets prescribed among all hospitals in our study is similar to numbers found in other studies,<sup>8,12</sup> but our data highlights the variability that exists between hospitals.

We found that primiparous women were more likely to receive opioids than multiparous women when broken down by a parity. The need for more aggressive pain management in primiparous women is supported by findings by Declercq, et al. that primiparous women are more likely to experience perineal pain, painful intercourse, and pain that interferes with activities during the first two months after vaginal birth.<sup>13</sup>

When comparing opioid prescribing trends among women who use tobacco compared to those who do not, we did not find a statistically significant difference. Previous studies have suggested that women who use tobacco may require more opioids in the postpartum period.<sup>7,14</sup> Our lack of statistical significance in this group could be explained by low power due to only 2.6% of women in our study endorsing tobacco use.

Regarding route of delivery, women who underwent cesarean section were more likely to be prescribed opioids compared to those who had vaginal deliveries (97.7% vs. 30.7%,  $p < 0.0001$ ). Our opioid prescription rate for vaginal deliveries was similar to that found in a 2018 study, showing a rate of 30.4%; however, in our study, five of the six hospitals had opioid prescribing rates  $> 97\%$  for cesarean sections, while the 2018 study rate for cesarean sections was lower at 86.7%. Both are consistent with opioids being frequently prescribed for cesarean sections in particular.

Among women who had vaginal deliveries, opioid prescription rates were higher in women who experienced either a 2<sup>nd</sup> degree laceration (35.5%,  $p = 0.0002$ ) or a 3<sup>rd</sup>/4<sup>th</sup> degree laceration (59.3%,  $p < 0.001$ ). Opioid prescribing rates according to laceration type corresponded to reported pain levels from other studies. Macarthur, et al. found that the mean duration of perineal pain ranged from 1.9 weeks in women with an intact perineum to 3.2 weeks in women with 3<sup>rd</sup> or 4<sup>th</sup> degree lacerations.<sup>15</sup> One unexpected finding was that women with 1<sup>st</sup> degree lacerations appeared to have been prescribed opioids less frequently than women with intact perineums. We

cannot offer a clear explanation for this finding, but incomplete documentation of 1<sup>st</sup> degree lacerations could be contributing.

### Clinical Implications

Our study underscores many of the conclusions regarding opioid prescribing trends in the United States and its implications are numerous. First, our study confirmed that opioids are broadly prescribed in the postpartum period. Even women with no identified perineal laceration after vaginal birth received opioid prescriptions 28% of the time, which may not be consistent with expected postpartum pain levels. Second, uniform prescribing trends among different hospitals are lacking. Interestingly, although prescribing trends varied widely *between* hospitals, within each hospital, certain medications and dosages were favored. These variations reinforce the need for clear guidelines for postpartum pain management.

### Research and Quality Implications

The abundance of opioids prescribed in the postpartum period and the differences in prescribing rates across hospitals highlight the need for quality improvement projects to reduce inappropriate opioid prescribing. Ordering sets may have influenced prescribing in the hospitals we examined, and promising interventions to promote appropriate opioid prescribing in the future include altering opioid prescription defaults in discharge order sets and discharge prescribing based on inpatient opioid utilization.<sup>16, 17</sup> How to best implement these types of changes continues to be an area for further investigation. Our study suggests an initial area of focus may be decreasing opioid prescriptions for cesarean sections and vaginal deliveries without lacerations.

### Strengths and Limitations

A strength of our study was that it was a multicenter study with a large sample size. Hospitals varied in obstetric volumes, patient demographics, region of the United States, institution type, and delivering clinician credentials. Our study also required minimal chart review, allowing it to be easily replicated and limiting the potential for human error. One weakness of our study was incomplete data. Incomplete data were noted for tobacco use, lacerations, and episiotomies, which limited the analysis. Because of our method of data collection, we were limited in our ability to obtain additional data. We were also prevented from being able to examine potential confounding factors, including past opioid use, chronic pain conditions, or mental health conditions. With the patient demographics that we did obtain, we performed multivariate analyses to reduce bias and limit other potential confounding variables.

### Conclusions

Postpartum opioid prescription rates vary widely among hospitals in the United States, but providers within the same hospital tend to follow similar prescribing patterns. Parity, route of delivery, and lacerations seem to account for much of the difference in prescribing rates, but even when controlling for these factors, different hospitals tend to prescribe varying dosages and quantities of opioids in similar clinical circumstances. The variation in prescribing found in our study illustrates the need for clear consensus guidelines for postpartum pain management. Improved guidelines and standardization of postpartum pain protocols may help reduce improper opioid prescribing and its adverse effects.

## References

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Table 1. Factors Correlated to Opioid Prescribing

	Opioids Prescribed n (%)	Not Prescribed n (%)	p-value
<b>Delivery</b>			<0.0001
Cesarean	1164 (97.7)	27 (2.3)	
Vaginal	938 (30.7)	2119 (69.3)	
<b>Laceration*</b>			
None	295 (28.2)	750 (71.8)	
1 <sup>st</sup> Degree	153 (23.6)	495 (76.4)	0.0363
2 <sup>nd</sup> Degree	413 (35.5)	749 (64.5)	0.0002
3 <sup>rd</sup> /4 <sup>th</sup> Degree	64 (59.3)	44 (40.7)	<0.0001
<b>Parity</b>			0.0005
1	899 (52.8)	803 (47.2)	
2	694 (48.0)	753 (52.0)	
3	293 (47.6)	323 (52.4)	
4	99 (40.1)	148 (59.9)	
≥5	93 (45.4)	93 (45.4)	
<b>Tobacco Use</b>			0.3081
Yes	182 (51.3)	173 (48.7)	
No	1832 (48.4)	1950 (51.6)	

\*Each laceration degree was compared individually to 'None'



Table 2. Opioid Prescriptions by Hospital and Route of Delivery

	<b>Cesarean</b>		<b>Vaginal</b>	
	Opioid Prescription Frequency n (%)	p-value	Opioid Prescription Frequency (%)	p-value
<b>Hospital</b>		0.0002		<0.0001
A	53 (100.0)		29 (11.9)	
B	215 (98.6)		216 (27.6)	
C	213 (98.6)		67 (11.5)	
D	50 (86.2)		40 (33.1)	
E	453 (97.4)		561 (58.1)	
F	180 (99.5)		25 (6.9)	

Table 3. Type of Opioid Prescribed

<b>Hospital</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>Opioid Prescribed n (%)</b>						
Acetaminophen-Codeine	0 (0)	153 (35.5)	2 (0.7)	0 (0)	0 (0)	1 (0.5)
Hydrocodone	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	13 (6.3)
Hydrocodone-Acetaminophen	75 (91.5)	20 (4.6)	47 (16.8)	2 (2.2)	182 (17.9)	3 (01.5)
Hydromorphone	0 (0)	0 (0)	6 (2.1)	2 (2.2)	44 (4.3)	2 (1.0)
Morphine Sulfate	0 (0)	1 (0.2)	14 (5.0)	0 (0)	0 (0)	0 (0)
Oxycodone	7 (8.5)	10 (2.3)	34 (12.1)	19 (21.1)	326 (32.1)	80 (39.0)
Oxycodone-Acetaminophen	0 (0)	247 (57.3)	177 (63.2)	66 (73.3)	462 (45.6)	106 (51.7)
Tramadol	0 (0)	0 (0)	0 (0)	1 (1.1)	0 (0)	0 (0)

# Xia Vang, MD

## Projects Completed During Residency:

### Scholarly Project:

“It hurts as if...”: Pain-Associated Language, Visual Characterization, and Story-Telling in Hmong Adults

### Community Health Learning Experience:

Advocating for Culturally Competent Mental Health Care:

In September 2018, Journey Mental Health announced the closure of Kajsib House, a program providing comprehensive and culturally competent mental health services in the Hmong community in Dane County. Due to low health literacy, language barrier, and significant social stigma regarding mental health, there is low utilization of mental health resources in the Hmong community. Thus, having a program such as Kajsib House is imperative to providing mental health care in this vulnerable population. I worked with UW Health colleagues, local organizations, and community members to help secure funding for the remainder of 2018 to avoid gaps in services. Specifically, my advocacy included writing to my local leaders as a representative of UW Health and testifying at a City Council Town Hall Meeting. We were able to secure emergency gap funding, as well as funding for 2019.



*Thank you to my husband, Fong, for his unconditional love and support. This journey would not have been the same without him. Thank you to my parents, siblings, and in-laws for their sacrifices and for always believing in me. Lastly, thank you to the wonderful faculties and colleagues in this residency program for making these past 3 years fly by.*



Xia Vang was born in Ban Vinai Refugee Camp in Thailand and immigrated to California at the age of three as a refugee before her family eventually settled in Milwaukee when she was eight. She earned her bachelor's degree in Biology at the University of Wisconsin

in Madison and continued there for medical school. Before she began medical school, Xia spent a year in Milwaukee as an AmeriCorps member at Milwaukee Health Service, Inc., a FQHC. She served as a program coordinator for the Social Work department where she helped implement numerous health fairs and coordinated a prescription assistance program to help uninsured patients receive their medications. During medical school, she volunteered at the student-run, free MEDiC clinics. She was also a member of the Medical Students for Minority Concerns where she helped promote awareness of health challenges in minority populations. Xia is drawn to family medicine because of the emphasis on disease prevention and continuity of care, and is specifically interested in geriatrics, behavioral health, and women's health. In her spare time, Xia enjoys hiking, yoga, baking, potlucks with friends and family, and painting.

## **“It hurts as if...”: Pain-Associated Language, Visual Characterization, and Story-Telling in Hmong Adults**

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### **Abstract**

**Objective:** Pain is a complex phenomenon that is challenging to diagnosis and manage in primary care, especially when patients have limited English proficiency (LEP). Little is known whether LEP patients can provide pain information in the expected medical conventional manner. We explore how LEP Hmong patients communicate their pain to providers in primary care settings.

**Methods:** A qualitative study with 67 Hmong participants were recruited from a Midwestern state. Semi-structure interviews on pain communication and experience were conducted. Interviews were audio recorded, transcribed, and analyzed using directed content analysis.

**Results:** All Hmong participants described pain using stories that generally have the same dimensions of information that providers need for pain assessment. These included references to time, causality, associated symptoms or related experiences, magnitude, and consequences of pain. However, there were pain dimensions that did not have shared language with providers: visual metaphors that were generally in reference to pain quality and fewer words for pain location, intensity, and some qualities. Participants used two strategies to assess whether they should tell their pain story: assessing the provider and determining whether their story was appreciated. Perceptions of providers underappreciating stories resulted in dissatisfaction and under-treatment of pain. Ultimately, this resulted in having less frequent contact with providers or changing providers.

**Conclusion:** Although LEP Hmong patients described pain using some descriptors consistent with medical convention, they also used descriptive visual metaphors and have fewer words for pain location, intensity, and some qualities. These differences suggest for culturally appropriate pain assessments in this population.

**Key Words:** pain assessments, Hmong, Limited English Proficiency, Primary Care, Qualitative Methods

\*Manuscript submitted to the *Clinical Journal of Pain* on May 5, 2019

## Introduction

Pain is a complex phenomenon that is challenging to diagnose and manage, particularly in primary care settings.<sup>1</sup> Pain is defined as a sensory and emotional experience, where an individual's experience is viewed as subjective.<sup>2</sup> Given that pain is a subjective experience, healthcare providers, as external observers, conduct a comprehensive pain assessment on patients, which involves a thorough review of a patient's history, a physical exam, and appropriate evaluation. Such information provides important diagnostic clues to generate the necessary information to serve as a foundation for medical pain diagnosis and treatment planning and management.<sup>3</sup> Specifically, the history assessment should involve not only pain intensity but pain location, response to medical treatments, number of episodes, onset, position, quality, radiation, severity, and triggers (a useful clinical mnemonic is LMNOPQRST).<sup>4</sup> In addition, formal validated pain intensity scales are used to assess pain severity.<sup>5</sup> Three commonly used scales are the numeric rating scale (0 to 10, with 0 indicating no pain, and 10 the worst possible pain), the visual analog scale, and the categorical scale (none, mild, moderate, severe).<sup>5</sup> Studies have demonstrated that such scales do not capture the pain descriptions of patients because they are based on predetermined criteria that focus solely on the intensity of pain as a sensory modality, and as such, the transposition of the tools from one culture and/or language to another may be invalid and deemed inappropriate.<sup>6,7</sup> As a result, these tools often overlook important attributes of each individual, i.e., individuals' subjective experience, such as personal context and meaning, or their experience within a larger context of culture, ethnicity, and language.<sup>6,8,9</sup>

Individuals who have language and cultural differences from healthcare providers in the U.S. are often from a racial and ethnic minority background. Evidence suggests that racial and ethnic minorities in the U.S. suffer disproportionately from unrelieved pain in comparison to whites.<sup>10-13</sup> This represents a significant health disparity that is in need of attention, since the U.S. is a multicultural society with a foreign-born population that grew by 9% from 2010 to 2016.<sup>14</sup> Approximately 62 million people in the U.S. speak a language other than English at home.<sup>15</sup> Of those, 25 million have LEP,<sup>15</sup> defined as the inability to read, write, and speak English.<sup>16</sup> Despite growing research on pain among racial and ethnic minorities, subgroup and LEP populations are underrepresented in pain research.<sup>11,13</sup> More research is needed to understand how LEP and subgroup racial and ethnic minorities communicate about their pain. Without understanding pain expression among such groups, disparities in pain diagnosis and management will likely increase in racial and ethnic minorities.

Culture is shaped by the values, beliefs, norms, and practices that are shared by members of the same cultural group<sup>17</sup> and influences the beliefs and behaviors by which individuals give meaning to their pain experience and express their pain.<sup>12-14</sup> For instance, culture strongly influences behavioral and verbal expressions about pain and affective response to pain. In a study conducted with four cultural groups, Asian and Caucasian participants shared that their family members were less likely to express their pain symptoms than members of African American and Hispanic families.<sup>19</sup>

Furthermore, language plays an important role in pain assessment.<sup>20-22</sup> Descriptive words in one's native language are not always congruent with terms in another's language.<sup>23</sup> Pain communication is thus particularly problematic when patients and healthcare providers do not share the same language.<sup>6,24</sup> More research is needed to understand whether non-native and LEP populations can provide the expected pain information (e.g., LMNOPQRST) to providers.

Therefore, this study's purpose is to understand how one LEP minority group—the Hmong—communicate their pain to healthcare providers in primary care settings. The Hmong is a Southeast Asian population that immigrated to the U.S. as refugees. During the Vietnam War, the Hmong were recruited by the U.S. Central Intelligence Agency (CIA) to fight for the U.S. against the communist North Vietnamese and Pathet Lao.<sup>25</sup> After the U.S. defeat in 1975, the Hmong relocated to refugee camps in Thailand and were given the opportunity to immigrate to the U.S.<sup>25</sup> We chose to focus on the Hmong for three reasons. First, of the nearly 261,000 Hmong living in the U.S.,<sup>26</sup> approximately 228,000 speak Hmong at home, and 90% of older Hmong have LEP.<sup>27</sup> Secondly, the Hmong are traditionally an oral society. Although Hmong is within the top 20 languages spoken in the U.S.,<sup>15</sup> the Hmong written language was only created in 1952, and even so, most Hmong individuals are unable to understand materials that are written in Hmong.<sup>28,29</sup> Third, the Hmong language has few discrete words, which often makes distinction between subtle concepts difficult.<sup>30</sup> For example, there is no specific word for 'pain', as it can be interpreted as an 'illness' in the Hmong language. Consequently, it is critical to understand how the Hmong communicate their pain under such conditions. In addition, it is likely that the existing pain assessment approaches in the U.S. may not be congruent with the Hmong culture and language, placing the Hmong at high risk for disparities in pain care.

## Materials and Methods

This study was approved by the University of Wisconsin-Madison Health institutional review board (IRB).

### Recruitment and Study Sample

We used two strategies to recruit participants for this study. The first strategy was to identify potential participants through billing records in one Midwestern Family Medicine clinic with a large Hmong patient population. Inclusion criteria were as follows: (1) patients listed Hmong as their preferred language, (2) patients were  $\geq 18$  years old, and (3) patients had seen or received treatment for pain as identified by the 10<sup>th</sup> revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). For patients who met the inclusion criteria, the clinic's interpreter obtained permission from patients to release their contact information to researchers and determine patients' interest in the study eligibility criteria. The second strategy was referral through word of mouth ("snowballing"), in which researchers asked interviewed participants to refer them to other potential participants who met the inclusion criteria. Researchers then conducted screening by telephone to ensure that these participants met the eligibility criteria. Patients who were interested and eligible were scheduled for an interview. Participants were able to choose their interview location (e.g., clinic, library or home). All but one participant preferred to be interviewed in their homes.

### Data Collection

Data collection occurred in two phases. In Phase 1, we asked participants to sort colors with different pain intensity categories and describe their pain. In Phase 2, we asked participants to share with us their pain experience with their healthcare providers in primary care settings and rate their pain using four pain intensity scales. This study focused on the responses that were related to participants' experiences with their healthcare providers in primary care settings.

At the beginning of the interview, we provided the participants with information about the study and obtained their verbal consent. We used semi-structured questions to ask about participants' pain experience, including their pain communication with their healthcare providers and use of the pain intensity scales. Acknowledging that the word for "pain" in the Hmong language is less discrete than in English and can have two meanings, we distinguished pain from an illness by providing participants with an example in our interviews. For instance, we asked the participants the following question: "In the past, when you went to see your doctor, where on your body did it hurt? For example, was it your legs, back, abdomen, head, etc.?" The 30-60-minute interviews were audio recorded. Demographic characteristics that we collected included age, country of birth, education, health insurance, literacy proficiency in English and Hmong, and acculturation. Participants received a \$20 honorarium for their time at the end of the interview.

### Data Analysis

Interviews were transcribed by a bilingual, bicultural Hmong undergraduate student. The first author, a bilingual, bicultural Hmong researcher, reviewed all transcripts. Any discrepancies in the transcriptions were discussed and reconciled by the student and first author. Directed content analysis<sup>31</sup> was used to analyze the data, as it is a data analysis method that is used to analyze data with predetermined categories. Since our interview questions were semi-structured, we established "pain communication" and "pain intensity" as predetermined question categories. We analyzed data from two questions from the semi-structured interviews: (1) "In the past, when you went to see your doctor, where on your body did it hurt? For example, was it your legs, back, abdomen, head, etc.", "Tell me more about your hurting. (Probe :) How did it start? What does it feel like? For how long have you had it?", and (2) "Now, I want you to think of the most recent area on your body where you have been hurting in the last two weeks. I want you to identify the location and describe how it hurts." For instance, when a participant stated, "My stomach hurts," we coded it as a pain location. Furthermore, we organized the data into categories of whether participants' responses corresponded with what providers generally expect of patients. Data that corresponded with what providers generally expect of patients were coded as "information with shared meanings to healthcare providers." Any data that did not correspond with the questions that providers generally asked were coded as "information with no shared referent with healthcare providers." Data were coded by two coders (ML, XV) individually and then consolidated. Any discrepancies in codes were confirmed by reviewing the transcripts. After completion of the initial coding, the results were presented to a research team that consisted of a qualitative expert and doctoral students with medical expertise. The research team met to discuss the categories to ensure that the results were transparent, communicable, and coherent.

## Results

A total of 67 participants were included in the study. Participants had a mean age of 53.7 (range 28-80). Seventy-three percent were females, 67% had Medicaid as their health insurance, 47% could not read or write in Hmong at all, and 68% could not read or write in English at all (Table 1). Fifty-five percent of participants were not taking pain medication.

While healthcare providers typically ask open-ended questions to obtain general descriptions of pain, they also ask specific questions that are designed to elicit brief responses to questions about a single dimension of pain. Overall, when Hmong participants were asked to describe their pain in a single dimension, all older Hmong adults responded by telling a story, whereas younger Hmong adults responded with a direct answer to most of the questions. However, in reviewing both types of response and comparing them across both age groups, we demonstrated that the responses to specific, focused questions about pain and the stories told by older adults generally included most of the same dimensions that providers seek. These common elements included time, causal attribution, associated symptoms or related experiences, magnitude, descriptors using visual metaphors, and consequences of pain (Figure 1). Although participants included information about pain that had a shared meaning with the information expected by healthcare providers', they also included information that did not have a shared meaning. Table 2 illustrates the correspondence of elements in the stories with providers' typical pain questions.

### Information with Shared Meanings to Healthcare Providers

The majority of the pain stories were told in a consistent order: location, magnitude, consequences, time, causal attributions, visual metaphors, associated symptoms, and related experiences. Specifically, all pain stories began with where it hurts (*location*), proceeded with how bad the pain is (*magnitude*), how long the pain has been present over time (*duration*), using events (*time*) as a reference, and ended with causal attributions. These *attributed causes* included giving birth, aging, changes in the weather, or activities that involved heavy work. The most common attributed cause of pain was the lifestyle before and during the Vietnam War, in which participants often carried heavy items on their backs (e.g., heavy baskets of clothes, food, water, banana stalks, and younger siblings or children), resulting in chronic pain. The majority of the chronic pain was in the shoulders and entire or lower back. Some Hmong participants attributed their pain to falls (e.g., falling into a stream, or falling off a cliff when running from the Vietnamese and Pathet Lao) and starvation during the Vietnam War. Participants whose pain had become chronic shared that changes in the weather caused their pain to worsen or recur. A participant with active back pain at the time of the interview indicated that "When it is going to rain or shine then it will hurt. If it is raining all day then it doesn't hurt. If it is sunny all day then it doesn't hurt." (P34) Younger Hmong generally attributed their pain to repetitive tasks.

Descriptors of pain were not normally shared within the stories unless explicitly requested by the researchers. There were some descriptors of pain quality in the Hmong language that were consistent with English, such as "sharp," "numb," "tingling," "squeezing," "pinching," and "throbbing" (Table 2). Furthermore, when asked for descriptions of pain with *co-occurring symptoms or related experiences*, the participants provided them in reference to related problems that happened simultaneously and often referred to symptoms that occurred at the time of the pain incident. Examples of symptom-like incidents included bruising, the sensation of needing to defecate and urinate at the same time, forgetfulness, and paresthesia. A participant described his lower abdominal pain as, "It hurts that it makes you forgetful. Your face looks pale and you feel like you are going to fall..." (Participant 16). Another participant with back pain explained that "You are hurting like when you fall and bruise up" (Participant 41). The pain stories also included descriptions of the *consequences* of the pain.

### Information with No Shared Referent with Healthcare Providers

Although the Hmong participants shared many elements in their pain stories, descriptors of pain quality, intensity, and location were challenging elements for them. Such pain elements did not have shared *language* or referents with providers. The *language* used to describe such pain information included (1) visual metaphors that were generally in reference to pain quality and (2) less discrete words for pain location, intensity and some quality.

**Visual Metaphors.** The visual metaphors were generally in reference to pain quality: (1) animals (chickens in particular), (2) sensations, and (3) something that caused the pain or things that would happen that would cause the sensation (e.g., feeling like someone had used a pole to hit one's head). For example, one participant described her abdominal pain as "It hurts as if a knife is slicing it" (Participant 41). Another participant described her back pain as "It hurts like someone is using a pole to hit your back" (Participant 21). Another participant described her body pain as "It's hurting like the spicy chili" (Participant 31). A typical example of a reference to chickens was when a

participant described the pain from her head to shoulder and left arm: “It hurts like when a chicken is pecking” (Participant 25).

**Indiscrete Pain Information.** It was difficult for Hmong participants to provide discrete information with regard to the location and intensity of their pain and some pain qualities. In particular, older Hmong participants were consistently unable to localize pain, sometimes identifying multiple locations or changing locations during their descriptions. This was most notable when the participants described pain in larger body areas, such as the abdomen or back. In particular, vague terms such as *plab* (in Hmong) can refer to a specific organ (i.e., the stomach) or to the entire abdomen, and *nrab qaum* (in Hmong) can refer to the upper, lower, or entire back. Hence, when we asked participants to distinguish between their upper and lower back by providing a single word, older Hmong became confused, as this distinction is not made in the Hmong language.

Another example of less discrete distinctions in the Hmong language was reflected in participants’ descriptions of pain intensity. For example, when participants were asked to describe the different ways of indicating the intensity of pain, they only indicated “hurting the most” or “hurting a lot.” However, by listening to the participants’ stories, we identified three main categories of pain magnitude. These included (1) no pain (in Hmong, *tsis mob*), (2) hurting a little (in Hmong, *mob me me*), and (3) hurting a lot (in Hmong, *mob mob heev*). While there were three categories of pain intensity, there was more than one word in the Hmong language that had the same meaning for each of the three categories of magnitude (Table 2).

Furthermore, there were some pain qualities that did not have a word or commonly used metaphor in the Hmong language. These pain qualities were “dull,” “aching,” “cramping,” and “sore.” All participants used the same word, “hurting,” for such pain qualities, even when we provided examples to elicit such qualities. For example, to elicit “dull pain” in the Hmong language, we asked, “When you have a bruise, how would you describe the feeling?” Similarly, to elicit “aching” in the Hmong language, we asked how the participants would describe a toothache. We received the word “hurting.” One participant stated, “When my tooth hurts, it just hurts. I don’t know how to explain it to you” (Participant 3).

### **Healthcare Provider Indicators for Sharing of Pain Story**

Participants also shared that there were two strategies that they used to assess whether they should tell their story about pain. These strategies included (a) assessing the provider and (b) determining whether their story was appreciated once it had been told.

**Assessing the Provider for Whether They Should Tell Their Story.** Most participants shared that touch indicated whether it was likely that the provider was going to listen attentively to the story or that their stories would be appreciated by the provider. Specifically, for older Hmong participants, when a provider entered the room, lightly touched them on their back, and asked them about how they were doing, this suggested that the provider welcomed their story. A participant shared that “she [the provider] would touch me [*plhws kuv*] and ask me, ‘...since you left [your last visit], are you doing any better? She worries and cares about me” (Participant 36). For some younger Hmong participants, when the provider immediately examined them, i.e., assessed them after their story, this indicated that the provider had listened to their story and concerns. A participant with pain on the left side of his back shared that “The doctor listens to me and really checks me well” (Participant 43).

**Determining Whether Their Story Was Appreciated Once It Had Been Told.** Some participants shared that providers’ facial expressions and demeanor during the interaction were indicators that providers did not appreciate and might even be annoyed with the patients’ stories about their pain.

**Providers’ Facial Expressions or Demeanor.** Facial expressions such as scowling indicated that the providers were not interested in the patient’s stories about pain. A participant shared, “When I go get a checkup, I look at him, and he is emotionless and scowling [*dub muag*]” (Participant 52).

Participants also shared that when providers interrupted, imposed on the focus of the discussion, or limited the scope of the participants’ stories about their pain, they perceived that their providers did not like them or their stories and that their pain was unimportant. One participant shared, “I feel like the doctor doesn’t like me and does not want to help me; that’s why they don’t want to spend time listening to me” (Participant 42). Another participant shared how the provider had dismissed his pain concerns: “When I have concerns and I talk about it, she doesn’t answer or discuss it with me” (Participant 49). As a result, participants reported feeling that their stories were incomplete and therefore unable to provide an accurate representation of their pain experience.

**Feeling Rushed by Providers.** Other behaviors that participants perceived as indicators that providers did not appreciate their stories were when their providers were not looking at the patient, were standing up, or were beside the door and ready to leave while participants were talking. Specifically, these behaviors indicated to



participants that their providers were in a rush. A participant shared, “He would come in and hurriedly say a couple of sentences. You haven’t finished talking about your concerns, and he would be out already” (Participant 56).

### **Consequences of Providers’ Responses to Pain Stories**

The consequences of participants’ inability to discuss their pain stories and concerns, or not being listened to, resulted in their (1) dissatisfaction with pain care, (2) untreated or undertreated pain, and (3) distrust. This ultimately resulted in Hmong participants changing to a different care provider.

**Distrust.** Participants reported distrusting their providers when providers did not listen to their stories, did not touch or examine them, did not provide a treatment (in most cases, prescription medications), or referred them to another provider. One participant shared her reason for not trusting her provider:

“The reason why I don’t trust [the doctor] is because one time I went to see my doctor and shared that “oh, when I walk or climb up a hill, I have shortness of breath and I cannot breathe.” Then she said, “I don’t know but I will send you to see the heart doctor.” (Participant 54)

Distrust occurred when there was a lack of verification of concern, evidenced by the provider’s failure to conduct a physical assessment or her lack of explanation for referring the patient to another provider.

**Voluntarily Changing Providers.** Participants who changed voluntarily to a new provider usually did so after several years of not receiving the care and treatment that they needed for their pain. These participants sought advice from extended family members or their children on better providers. ‘Better’ providers were considered to more smiley, more amiable, more accommodating, and more engage in the patient’s opinions. A participant shared that his son suggested a new provider, to which he changed: “Now because my son works over there [at a new clinic] and suggested that I change to that one [referring to a new doctor], he [referring to the new doctor] is good” (Participant 52). Another participant shared that she spoke with her sister-in-law for advice on changing to a new provider: “My sister-in-law told me that her doctor was good. Because of how she [the participant’s original doctor] had been behaving, I stopped going and now I see a male doctor, who is my sister-in-law’s doctor” (Participant 28).

**Staying With the Same Provider but Withholding Information.** Many participants who were dissatisfied with their providers remained with them. They shared that they did not know how to change to a new provider. Hence, they continued to see the same provider but did not report their pain until it was severe. Similarly, when providers were perceived to be rushing, participants reported that they did not ask questions or elicit additional information about their treatment plan. One participant explained, “Sometimes I want to know more about my illness, like why I have this illness. For example, with gallstones, how do people have this illness? Is it something that they eat? Questions like this I want to ask, but because they [the providers] are so busy and in a hurry, I don’t ask” (Participant 41).

### **Discussion**

To our knowledge, this is the first study to explore how Hmong patients communicate their pain to healthcare providers in primary care settings. The findings reveal that all Hmong participants’ pain expressions provide the information that providers want to know and seek. For example, we found that there are some descriptors of pain quality in the Hmong language that are consistent with the providers’ language, such as “sharp,” “numb,” “tingling,” “squeezing,” “pinching,” and “throbbing.” However, there are also some descriptions of pain quality that do not have shared meanings or referents between the Hmong language and English, such as “dull,” “aching,” “cramping,” and “sore.” The most striking characteristic of Hmong patients’ communication about their pain symptoms is their use of stories and visual metaphors rather than short answers to questions about specific pain dimensions. However, these references to pain quality may have shared meanings within the Hmong community. This finding indicates that using a story approach may be more effective in eliciting pain information from Hmong patients.

Our study findings with regard to the Hmong participants’ descriptions of their pain in the format of story are consistent with other patient populations, including children<sup>32</sup> and adults.<sup>33,34</sup> However, the difference between the Hmong participants in our study and the general patient population is that the Hmong participants had language barriers, and there are fewer discrete words for pain location, intensity, and quality in the Hmong language. Consequently, the success of their pain stories is dependent on medical interpreters. Existing research on the use of medical interpreters with Hmong patients have documented the quality of interpreting to be poor.<sup>35,36</sup> Given that the Hmong language has fewer discrete words with which to describe pain quality and location, it is plausible that this may have contributed to the poor quality of interpreting (i.e., the interpreter was unable to translate the Hmong language sufficiently to provide care in an English language setting). As a result, Hmong participants’ pain may be inaccurately assessed, and they are therefore at a high risk of their pain being underdiagnosed and untreated. More

research is needed to better understand how to improve pain communication between Hmong patients and their providers in a culturally sensitive way.

Another major finding of this study is that Hmong participants want to be able to finish their stories about their pain without being interrupted and want to be listened to by providers. When they were not, they became dissatisfied with providers and care. Consistent with existing literature, the quality of patient-provider communication is associated with patient satisfaction.<sup>37</sup> The patient-provider relationship is equally important with regard to patient satisfaction in pain treatment.<sup>38</sup> However, a number of provider factors hindered relationship development and trust between Hmong patients and their providers. This included the perception that providers were rushing, failing to explore concerns through assessments, and displaying unwelcoming facial expressions toward Hmong patients. Trust has previously been associated with patient-centered behavior.<sup>39</sup> Moreover, the finding that providers do not spend sufficient time with patients to discuss their pain is consistent with the existing literature: pain-related discussions in primary care last a median of 2.3 to 5.9 minutes.<sup>40,41</sup> A possible solution to improve patient-provider relationships is for providers to ask their patients additional questions and validate their concerns about pain. Shields and colleagues (2013) evaluated the extent of pain assessment, studied physicians' vocal tones, and measured the degree to which physicians explored and validated patient concerns.<sup>42</sup> They reported that physicians who engaged in more exploration and validation of patients' concerns were perceived to be more engaged in the thorough assessment of pain.<sup>42</sup> Hence, this suggests that if providers demonstrate curiosity by exploring Hmong patients' concerns and by listening attentively to their stories, they are more likely to develop a better understanding of what is important to patients, and thus improve patient satisfaction.

A consequence of Hmong participants being dissatisfied with their providers and the care that they have received was changing providers or seeking less medical care altogether. The results of these actions undermine care quality and continuity of care for Hmong participants. A review study reported that increased provider continuity is associated with improved patient outcomes.<sup>43</sup> This suggests a possible need for providers to structure care in a way that allow Hmong patients to share their pain story, thereby fostering a relationship and improving the patient-provider interaction. This will not only build trust, but will ultimately improve the continuity of care.

### **Limitations**

This study has some limitations. Firstly, the Hmong participants that were interviewed had LEP. Hence, it is possible that their expression of pain may differ from that of English speakers. Future research should be conducted with English-speaking Hmong to compare their expressions and experiences of pain. Secondly, our study was conducted within one large healthcare system in one Midwestern city, thus limiting generalizability. Future studies could replicate this study in other geographic locations. Finally, we did not focus on a specific type of pain. Therefore, it is possible that pain expressions may differ depending on the type of pain. Future studies could compare different pain expressions across different types of pain.

### **Conclusion**

Since pain is a subjective phenomenon, understanding how language and culture influence the reporting of pain is imperative to generate reliable pain diagnosis, treatment, and management. We found that Hmong participants' pain stories are mostly consistent with providers' pain language that is generally used in a medical setting. However, there are also differences in Hmong participants' language that should be taken into account. While the focus of this paper is on LEP Hmong, many of the study's implications also apply to other LEP populations and other patient populations with limited means of communication, such as children or adults with limited language abilities. Furthermore, more cultural- and language-centered pain assessment tools are needed to elicit accurate pain information from Hmong patients.

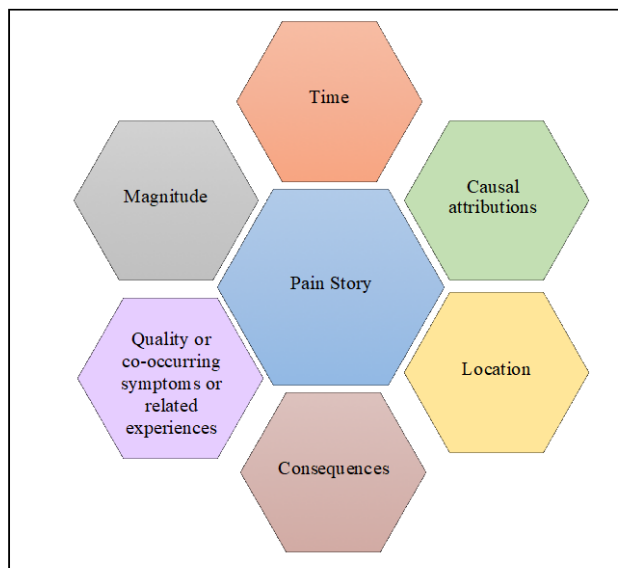
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**Table 1. Hmong Participant Social Characteristics (N=67)**

	Count	Percent
<b>Sex</b>		
Male	18	27.7
Female	49	73.1
<b>Health Insurance</b>		
Employer	16	23.9
Medicaid	45	67.1
Medicare	3	4.6
Medicare/Medicaid	2	3.1
None	1	1.5
<b>Literacy Level</b>		
Write in Hmong		
Very well	55	7.7
Pretty well	21	31.3
Not too well	9	13.8
Not at all	32	47.7
Read in Hmong		
Very well	4	6.2
Pretty well	22	32.8
Not too well	9	13.8
Not at all	32	47.7
Write in English		
Very well	4	0
Pretty well	17	6.2
Not too well	44	26.2
Not at all	45	68.7
Read in English		
Very well	0	0
Pretty well	6	9.2
Not too well	15	23.1
Not at all	49	73.1
<b>Taking Pain Medications</b>		
Yes	30	46.2
No	37	55.2
	<b>Range</b>	<b>Average</b>
Age	28-80	53.7
Length of Stay in United States	4-38	19.28

**Figure 1. Pain Story Elements**



**Table 2. Correspondence of Elements of Pain Stories with Providers' Typical Pain Questions**

	Provider Questions	Examples of Extracted Information From Pain Story	Quotes From Pain Stories
Location	Where do you have pain? Show me where it hurts. Does it radiate?	<ul style="list-style-type: none"> <li>• Leg</li> <li>• Fingers</li> <li>• Arms</li> <li>• Back</li> <li>• Knees</li> <li>• Stomach*</li> <li>• Shoulders</li> </ul>	<ul style="list-style-type: none"> <li>• "My stomach (<i>plab</i>) hurts."</li> <li>• "It hurts from my shoulder down to my hand."</li> </ul>
Quality	Describe the pain (e.g., throbbing, stabbing, dull)	<ul style="list-style-type: none"> <li>• Chicken pecking (throbbing pain)</li> <li>• Knife slicing/stabbing/sticking inside (sharp pain)</li> <li>• Needle poking (tingling)</li> <li>• Spicy chili/ hot (burning)</li> <li>• Hit head on pole (sharp shooting pain)</li> <li>• Pinching</li> <li>• Squeezing</li> <li>• Numb</li> <li>• Explode like a bomb (pressure)</li> <li>• Frozen shoulder (stiffness)</li> </ul>	<ul style="list-style-type: none"> <li>• "It hurts as if there is a knife inside."</li> <li>• "The pain is hot (<i>kub</i>) with a burning sensation, burning like a chili pepper"</li> <li>• "It hurts like when someone is using a pole to hit your back."</li> <li>• "It hurts like when a chicken is pecking, shallowly poking (<i>mob li qaib thas; ib teg ib teg</i>)."</li> <li>• "It hurts like something is squeezing it."</li> <li>• "It hurts like my head is going to explode like a bomb."</li> <li>• "It hurts like my shoulder is frozen."</li> </ul>
Severity	How intense is the pain? On a scale of 1-10 how would you rate the pain?	<ul style="list-style-type: none"> <li>• No pain</li> <li>• Hurting a little</li> <li>• Hurting a lot</li> </ul>	<ul style="list-style-type: none"> <li>• "It is not hurting (<i>tsis mob</i>)."</li> <li>• "It is hurting a little (<i>mob me me; mob tsis heev; mob tshaw; tshaw; mob tas mas das; mob tseem nyob tai</i>)."</li> <li>• "It is hurting a lot (<i>mob mob heev; mob lej; mob kawg quas; mob mob li</i>)."</li> </ul>
Timing	When does it occur? (Onset, duration, frequency, pattern). Have you ever experienced this before?	<ul style="list-style-type: none"> <li>• Constant</li> <li>• Intermittent</li> </ul>	<ul style="list-style-type: none"> <li>• "It is hurting all the time (<i>mob tas li</i>)."</li> <li>• "It was hurting intermittently (<i>mob ib zag ib zag tuaj lawm xeb; ua tsuj tsawv ua tsuj tsawv</i>)."</li> </ul>
Associated signs and symptoms	What other symptoms appear with this? Does anything else happen when this occurs?	Associate pain experience with nausea, immobility, twisted/sprain ligament, shivering	<ul style="list-style-type: none"> <li>• "It is hurting like when you have a sprain, like when you twist the ligaments"</li> <li>• "Whenever I am having intense pain, I feel nauseas. At the same time, it also feels like I need to go to the bathroom but then I don't."</li> </ul>
Modifying factors	What makes it better? What makes it worse?	<ul style="list-style-type: none"> <li>• Massaging</li> <li>• Laying down</li> <li>• Stretching</li> <li>• Taking medications</li> <li>• Spiritual healing ceremony</li> <li>• Patting skin with cool water</li> <li>• Weather</li> </ul>	<ul style="list-style-type: none"> <li>• "I have my husband massage my back."</li> <li>• "I have to lay down so the hurting would go away."</li> <li>• "When it is going to rain or shine then it will hurt. If it is raining all day then it doesn't hurt. If it is sunny all day then it doesn't hurt."</li> </ul>
Treatment	What have you tried for the pain at home? Have you seen anyone for this? Have you tried alternative treatment such as acupuncture or herbs?	<ul style="list-style-type: none"> <li>• Over-the-counter medications</li> <li>• Prescription medications</li> </ul>	<ul style="list-style-type: none"> <li>• "I take the medications the doctor gave me."</li> </ul>
Patient's perception (causes)	What do you think it is? (Patient will often voice their concerns, e.g., thinks that it is appendicitis, pain is a result of a sprain that occurred years ago)	<ul style="list-style-type: none"> <li>• Childbirth</li> <li>• Falls</li> <li>• Carrying heavy things on back</li> <li>• Starvation</li> </ul>	<ul style="list-style-type: none"> <li>• "When I began to have the stomach ulcer, it was like... we were seeking refuge and were very hungry so we starved. When we arrived to Thailand, we were poor and once he bought the bowl of curry, I finished the bowl and afterwards my stomach hurt.... (<i>mob huam leej huam ceem</i>)."</li> </ul>
Consequences of Pain	Are you having trouble sleeping? What is your functional status? Are you still able to work? Who is part of your support system? Are you able to complete your activities of daily living?	<ul style="list-style-type: none"> <li>• Poor sleep</li> <li>• Interruption of daily activities (e.g., unable to do daily chores)</li> <li>• Inability to return to work</li> <li>• Physical limitation</li> <li>• Weak</li> <li>• Decline in sensation</li> </ul>	<ul style="list-style-type: none"> <li>• "When the pain arises, you cannot sit at all. You must slowly walk around."</li> <li>• "It hurts so I am unable to do my daily work."</li> <li>• "My hand was tingling and weak and I cannot put up my hair."</li> </ul>

\* The term "stomach" (*plab* in the Hmong language) refers to both the organ (i.e., stomach) and the entire abdominal region.

<sup>1</sup>Note: *italicized* words are words in the Hmong language.