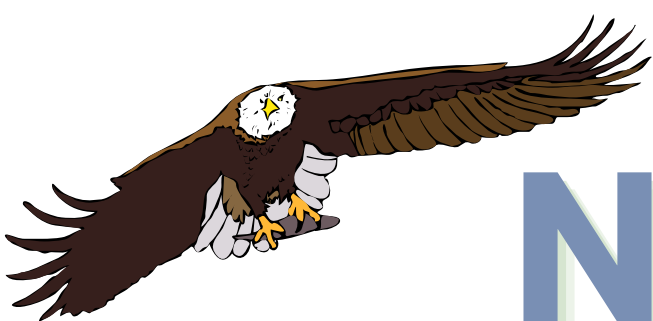




News Letter

2024-2025



Sanford Pharmacy
● ● ● Residency



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Current PGY2 Critical Care Resident

BEN ARENDS



- **Hometown:** Saint Paul, MN
- **Pharmacy School:** NDSU
- **Career Plans Post-Residency:** Staying on at Sanford as an ICU/EM Pharmacist
- **Hobbies:** Playing board games, trying new restaurants and breweries, traveling
- **Quote of the Year:** Chris during 3rd PGR practice run "Hi, my name is Ben"
- **Favorite Memory from Residency:** Post pharmacy grand rounds outing with preceptors and co-resident

Recently at our practice site we made a practice change in the emergency department to use push-dose levetiracetam rather than piggyback. For my research we wanted to evaluate if this operational change conferred patient-centered benefits. Due to this change being so recent we did not have the best patient population unfortunately and thus our data was quite limited in its applicability. We did not find any differences in our data between the pre/post cohorts.

RESEARCH

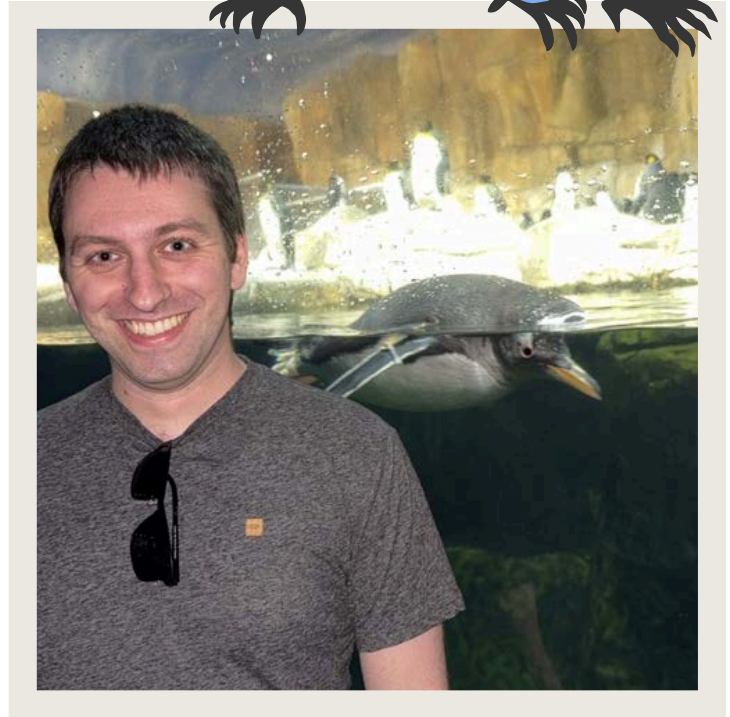
MUE

My MUE evaluated propofol vs non-propofol induction for Rapid-sequence intubation (RSI) in patients with septic shock. Looking at both hemodynamic and mortality outcomes. Based on our findings we did not find egregious harm from propofol induction but reinforced need for good stewardship and continued tailoring of our induction agents to the patient and situation in front of us.

Current PGY2 Critical Care Resident

CHRIS DIPEDA

- **Hometown:** Moorestown, NJ
- **Pharmacy School:** Temple University
- **Career Plans Post-Residency:** Staying on at Sanford as an ICU/EM Pharmacist
- **Hobbies:** I really enjoy being active outdoors, hiking and experiencing nature whenever I can
- **Quote of the Year:** "I want you to think about what you just saw, and then never do that"
- **Favorite Memory from Residency:** Visiting the Omaha Zoo with other residents



RESEARCH

The usage of continuous fentanyl infusions has become a standard of therapy for intubated patient as part of an analgo-sedation regimen, treating pain and uncomfortably to minimize the need for sedative agents. Most data existing for this practice examined the use of fentanyl in patients with elevated pain scores, rather than patients without any documented evidence of pain or discomfort. My research examined this patient population, and demonstrated the the use of fentanyl within the first 72 hours of intubation did contribute to the achievement of goal sedation levels.

My MUE evaluated the use of vasopressin in septic shock, looking at timing of initiation compared to current literature and any possible practice improvements. Over the past year, the timing of vasopressin initiation as a second-line vasopressor was at much higher rates of norepinephrine compared to literature, which is an area of possible improvement since earlier vasopressin initiation has been shown to have a mortality benefit in patients with septic shock. There was also a considerable delay between vasopressin ordering and administration. The ERx for vasopressin has since been changed to default as a STAT medication, hopefully reducing this delay moving forward.

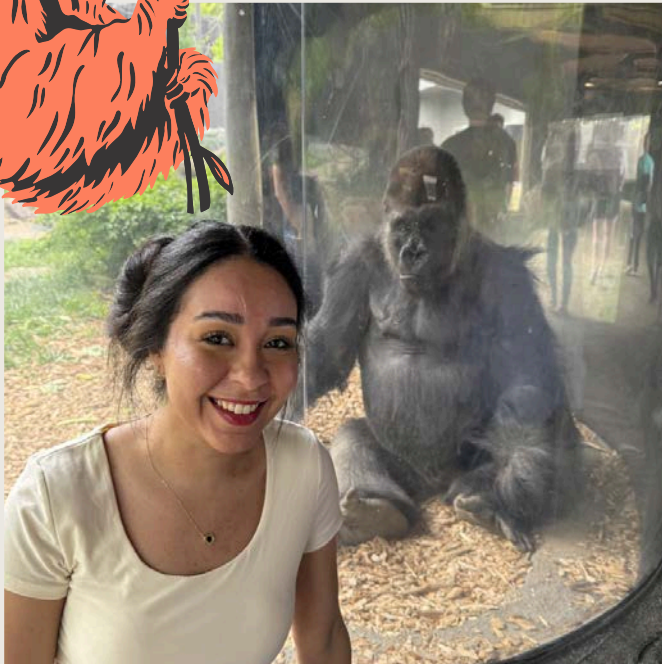
MUE



Current PGY1 Ambulatory Care Resident

HABIBA AFIFI

- **Hometown:** Egypt /Dubai/ New York
- **Pharmacy School:** NDSU
- **Career Plans Post-Residency:** *staying on with Sanford as an ambulatory care Int Med Pharmacist*
- **Hobbies:** Traveling, lifting weights, and beach activities
- **Quote of the Year:** "What a sad life"
- **Favorite Memory from Residency:** Hanging out with co-residents at Midyear and Midwest conferences!



My research involved conducting a retrospective analysis to assess whether initiating SGLT-2 inhibitors in patients with type 2 diabetes mellitus and a history of diabetic foot infections increases the risk of lower limb amputations. Given the known benefits of SGLT-2 inhibitors in glycemic control, cardiovascular disease, heart failure, and chronic kidney disease, there remains concern about their safety in patients at higher risk for amputations. Our findings revealed a higher risk of amputation and mortality in the control group, which contrasts with the outcomes reported in previous studies.

RESEARCH

MUE

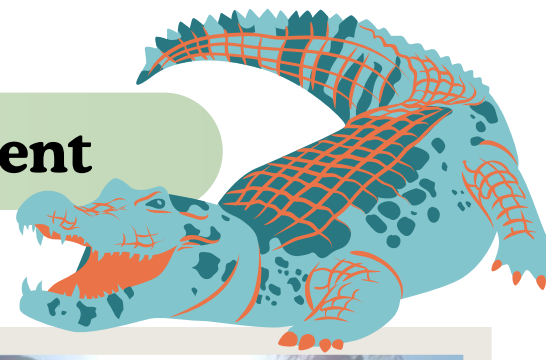
I conducted an MUE regarding vancomycin dosing in hemodialysis patients. The purpose of this MUE was to assess the efficacy and safety of our current protocol and to identify opportunities for improvement. Our current protocol was risking supratherapeutic levels with our supplemental dosing in hemodialysis patients.

The data collected served as a guide to find the optimal dosing strategy for loading and supplemental dosing. This included the creation of a new protocol for our institution to help optimize vancomycin therapy in hemodialysis patients, ensuring therapeutic efficacy while minimizing the risk of toxicity.

Current PGY1 Pediatric Resident

ANDREW HOLICK

- **Hometown:** Tucson, Arizona
- **Pharmacy School:** Roseman University College of Pharmacy, South Jordan, Utah
- **Career Plans Post-Residency:** Stand-alone pediatric hospital, specialty, remote-verification, or retail depending on current job market
- **Hobbies:** Concerts (music and comedy), movies, arts and crafts, reading
- **Quote of the Year:** "Is it time for a vacation?"
- **Favorite Memory from Residency:** Long train rides to and from Chicago



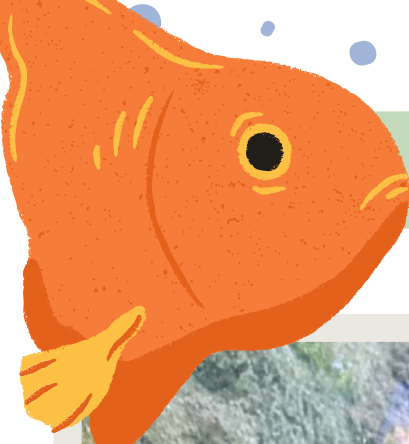
RESEARCH

Studied the clinical impact of dexmedetomidine compared to traditional opioid use in sedation and analgesia in the Neonatal Intensive Care Unit.

Dexmedetomidine demonstrated similar short-term sedation effectiveness compared to opioids, with no delay in reaching target N-PASS scores. The group receiving dexmedetomidine required significantly fewer opioid boluses and had reduced cumulative opioid exposure, indicating potential for opioid-sparing benefits.

Evaluated the Health Maintenance aspect along with CareGaps functionality in EPIC to implement consistent vaccination administration across all of the Sanford Health Systems to ensure the right vaccination is given to the right patient at the right time.

MUE



Current PGY1 Traditional Resident

BRIAN MEISSNER

- **Hometown:** Mandan, ND
- **Pharmacy School:** NDSU
- **Career Plans Post-Residency:** PGY2 Psychiatry Resident at Regions Hospital St. Paul, MN
- **Hobbies:** Piano, cooking, working out, reading
- **Quote of the Year:** "Big Psych Guy"
- **Favorite Memory from Residency:** Co-Resident bonding at Omnicell party at ASHP Midyear!



My flipped research project evaluated the independent effect CYP2D6 functionality has on metabolic outcome measures with oral aripiprazole therapy. Our outcomes showed that there was a statistically significant increase in LDL levels in poor metabolizers when compared to normal metabolizers; however, was deemed to be not clinically significant. All other metabolic parameters did not reach statistical significance. Manuscript has been accepted into AJHP and is in the process of revisions.

My second research project is assessing comparative efficacy between different LAI antipsychotics on 90-day readmission rates in our inpatient psychiatry service and will be continued by a future resident.

RESEARCH

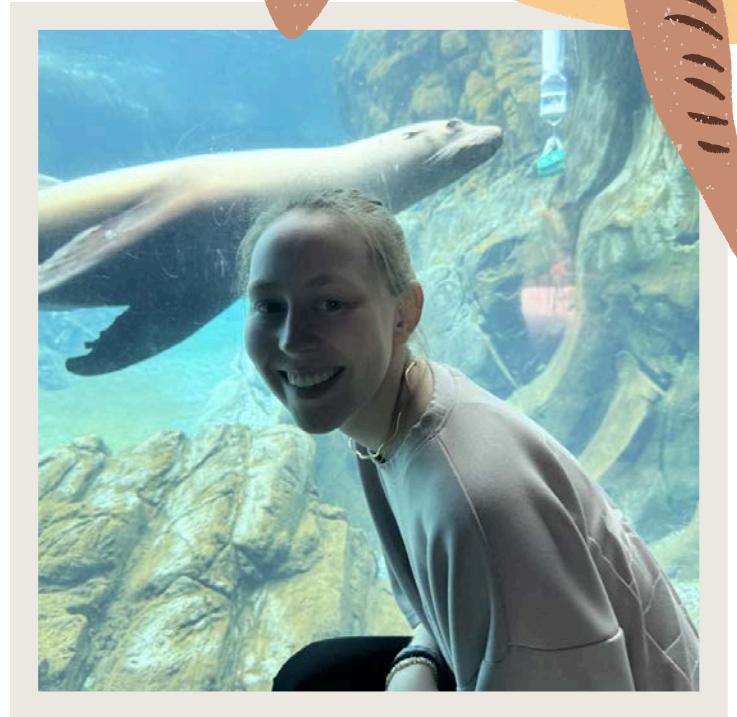
MUE

Evaluated the current non-intuitive workflow of reordering tacrolimus from a patient's home medication list. Goal was to assess how we are doing as a group pre/post non-intuitive training. Future directions for this project include assessing whether we should implement a "pharmacy to dose" consult to manage patient's tacrolimus therapy instead of the usual nephrology management.

Current PGY1 Traditional Resident

LEANDRE KALHAGEN

- **Hometown:** Edmore, ND
- **Pharmacy School:** NDSU
- **Career Plans Post-Residency:** PGY2 Critical Care Resident at UCHealth Memorial Hospital in Colorado Springs, CO
- **Hobbies:** Board games, reading, crocheting, and traveling when opportunities arise
- **Quote of the Year:** "Hokie poke"
- **Favorite Memory from Residency:** The many small bubble blowing parties in the resident area with my co-residents.



RESEARCH

Investigated the impact of two different pre-hydration strategies on methotrexate (MTX) clearance or time to hospital discharge in adults receiving high-dose methotrexate (HDMTX). This project aimed to determine whether our current standardized pre-hydration protocol effectively reduces the risks of MTX-related toxicity without contributing to fluid overload in volume-sensitive patients, compared to an unstandardized, provider-driven approach. Results showed no significant difference in time to MTX clearance or discharge between protocols. However, diuretic use was significantly higher in the standardized group, and there was a trend toward increased renal toxicity in the unstandardized group.

Evaluated inpatient Venofer prescribing patterns to assess clinical appropriateness and identify opportunities to transition therapy to the outpatient setting when feasible. Developed indication-based criteria to guide appropriate inpatient use and support prescriber decision-making. The goal of this project was to support timely initiation of iron replacement therapy and promote cost-effective use by transitioning non-acute administrations to an outpatient setting which allows for greater drug reimbursement.

MUE

Current PGY1 Traditional Resident

MAKAYLA NELSON

- **Hometown:** Monticello, MN
- **Pharmacy School:** NDSU
- **Career Plans Post-Residency:** Joining the Med Surg pharmacy team!
- **Hobbies:** Board games, pickleball, exploring new coffee shops, and traveling
- **Quote of the Year:** "Huh?"
- **Favorite Memory from Residency:** Getting to know my fellow co-residents and spending weekends playing Doomlings together at a local brewery



My research investigated the effect of pre-existing home beta-blocker therapy on vasopressor requirements following return of spontaneous circulation (ROSC) in patients who presented to or experienced cardiac arrest within the emergency department at Sanford Medical Center Fargo. Patients on beta-blockers were matched with control subjects based on initial arrest rhythm, underlying etiology, and age. A total of six matched pairs met the inclusion criteria. However, the small sample size limited the ability to perform meaningful statistical analysis.

RESEARCH

MUE

I evaluated the utilization of defibrotide and developed pediatric-specific use criteria to guide appropriate prescribing by pediatric oncologists, aiming to ensure timely initiation of therapy

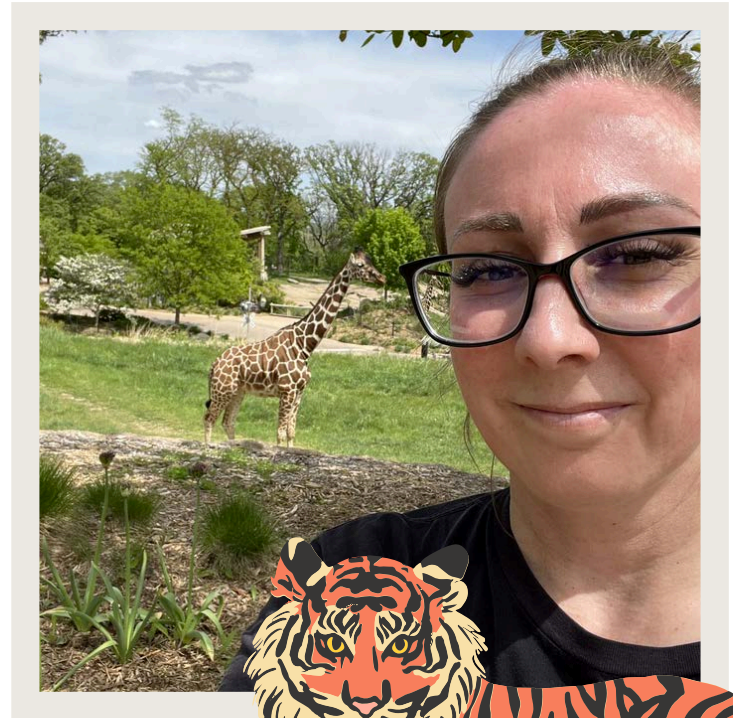
Additionally, I conducted a review of anakinra usage by the rheumatology and hematology groups, leading to its successful presentation and approval at the Pharmacy & Therapeutics (P&T) Committee. This included the creation of a new, rheumatology-restricted orderset and the integration of anakinra into the ICANS management orderset.

Current PGY1 Non-Traditional Resident

Incoming PGY2 Non-Traditional Critical Care Resident

JANIE LUNDBERG

- **Hometown:** Elk River, MN
- **Pharmacy School:** University of MN Duluth
- **Career Plans Post-Residency:** Board certification and working in the ICU/ED
- **Hobbies:** I love spending time with my dogs Stella and Max, my boyfriend Nathan, friends and family. And I enjoy fishing, hunting, being outside, going to the gym and going to concerts.
- **Fun Fact About Yourself:** Previously have run several half marathons and a full; and planning to train for a full marathon again
- **What are you most excited for in completing your PGY2 at Sanford?** Getting to know everyone, building positive relationships, gaining experience, building my clinical knowledge, and growing my confidence working in the ICU.



RESEARCH

“Antimicrobial-Infused Bone Cement Plus Intravenous Antimicrobials Versus Intravenous Antimicrobials Alone: A Retrospective Comparison of Acute Kidney Injury Following Total Joint Arthroplasty”

A total of 2100 patients chart reviews included in study; 701 in ABC group and 1399 in IV group.

132 patients met criteria for AKI according to KDIGO guidelines, 67 patients in ABC group and 65 patients in IV group $P < 0.0001$. Hospital LOS 2.5 days in ABC group compared to 2.2 days in IV group $P < 0.0001$. RRT within 30 days 12 patients in the ABC group compared to 8 patients in the IV group $P < 0.05$. Incidental finding of topical antibiotics used in OR, total 621 patients with 470 doses in ABC group compared to 534 doses in IV group.

“Gentamicin dosing protocol for neonatal sepsis review”

107 patients identified by electronic report, 55 patients excluded due to TTM or one level drawn leaving total 52 patients included in analysis. Following current dosing protocol, 27/52 (52%) patients at peak goal for all age groups and neonates 25/36 (70%) patients at peak goal. 41/52 (79%) patients trough ≤ 1 .

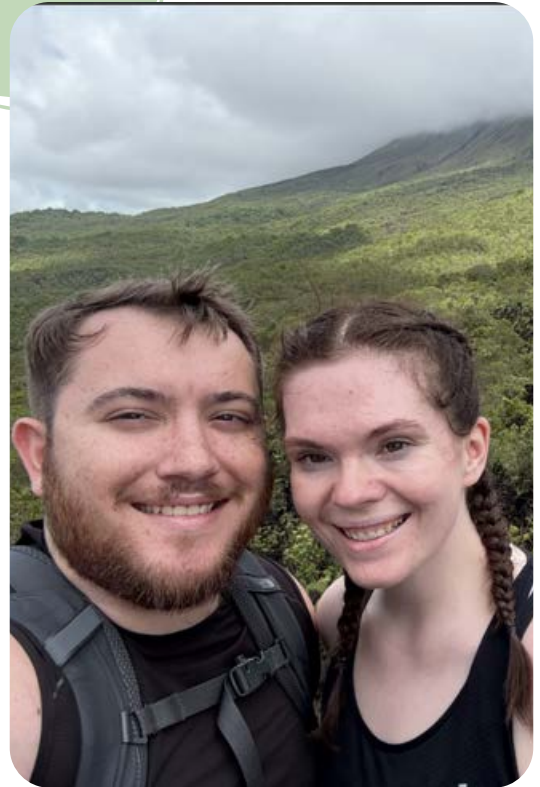
MUE

Incoming Residents

Tristan Houle

PGY2 Critical Care Resident

- **Hometown:** Walcott, ND
- **Pharmacy School and PGY-1 Completed:** NDSU; Essentia Health in Fargo, ND
- **Career Ambitions:** I aspire to become a board-certified critical care pharmacist practicing at a level one trauma center. My goal is to work alongside multidisciplinary teams to provide high-impact, evidence-based care for critically ill patients in fast-paced, high-acuity settings. I am passionate about optimizing medication therapy, improving patient outcomes, and continuously advancing my clinical knowledge to support life-saving interventions in the ICU.
- **Hobbies:** Avid sports fan, hiking, traveling, basketball, board games, cornhole, and spending time with friends and loved ones.
- **Fun Fact About Yourself:** My girlfriend and I went to Costa Rica this summer!
- **What are You Most Excited for in Completing Your PGY2 at Sanford?** I am very excited to begin my critical care PGY2 at Sanford, where I will have the opportunity to practice in a level one trauma center and fully apply the entirety of my critical care knowledge in complex, high-acuity situations. I look forward to collaborating with my fellow residents and mentoring APPE students as we grow together through challenging clinical experiences. Most of all, I am excited to work alongside Sanford's exceptional critical care team, whose expertise and commitment to patient care will undoubtedly shape me into a stronger, more versatile pharmacist.



Kyle Butzke

PGY1 Ambulatory Care Resident

- **Hometown:** Salem, SD
- **Pharmacy School:** SDSU
- **Career Ambitions:** After residency, I hope to establish practice in an ambulatory care setting, though not sure of any particular specialty at this time.
- **Hobbies:** In my free time, I enjoy hiking, reading, and board games with friends
- **Fun Fact about yourself:** Growing up, I had pet rabbits for over 12 years!
- **What are You Most Excited for in Completing Your Residency at Sanford?** Excited to get to know Fargo area, to meet and work with lots of great preceptors, and to get to know my patients in the clinic setting.

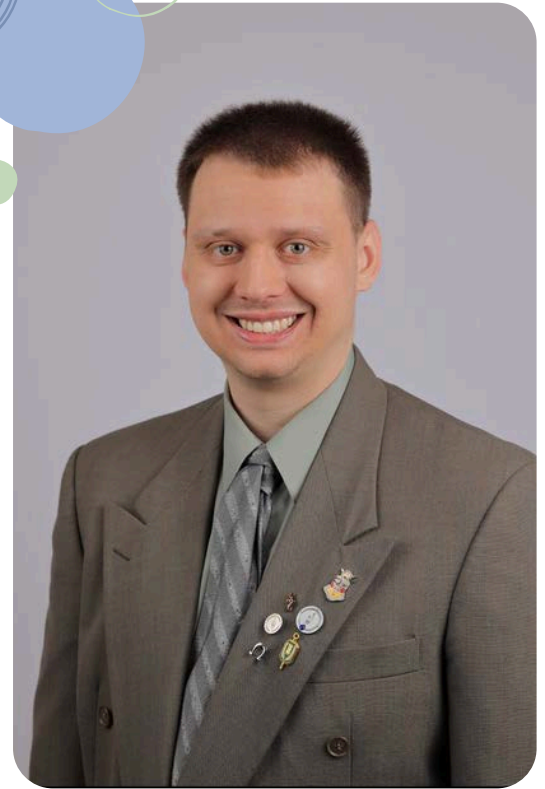


Incoming Residents

Evan Johnson

PGY1 Pediatric Resident

- **Hometown:** International Falls, MN
- **Pharmacy School:** NDSU
- **Career Ambitions:** Pediatric/Neonatal ICU with some research and academia mixed in
- **Hobbies:** Depends on the season, but either watching sports/playing games with my brother and friends, or anything outdoors
- **Fun Fact about yourself:** I can turn my feet so that they point opposite directions from each other
- **What are you most excited for in completing your residency at Sanford?** I am most excited to expand upon my learning from pharmacy school at an in-depth level. The fact I can experience different areas of pharmacy combined with experiences such as academia and research. I also have previous rotation experience at Sanford. So, I have been very fortunate to experience the dedication Sanford has to their learners.



Alexis Cha

PGY1 Traditional Resident

- **Hometown:** Portland, OR
- **Pharmacy School:** University of Montana
- **Career Ambitions:** I strive in becoming a reliable clinical pharmacist that advocates for patients-care and continues to grow through learning and improving my skills
- **Hobbies:** I do enjoy reading novels, playing video games, watching anime, and growing plants
- **Fun Fact About Yourself:** I never learned how to ride a bike
- **What are You Most Excited for in Completing Your Residency at Sanford?** I have always had an interest in learning about pediatric medicine and ambulatory care, so I am excited to complete these rotations during my residency and expand my knowledge

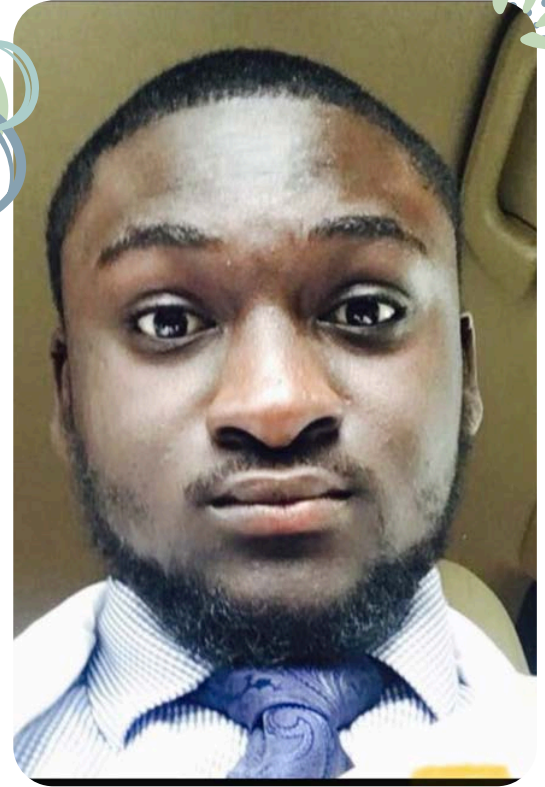


Incoming Residents

Jude Agyeman

PGY1 Traditional Resident

- **Hometown:** Kumasi, Ghana
- **Pharmacy School:** South College School of Pharmacy
- **Career Ambitions:** Emergency Medicine, Medical Critical Care, Infectious Disease
- **Hobbies:** Podcasts, TV/movies, swimming, and traveling
- **Fun Fact About Yourself:** My favorite number is 2 in Spanish, I just like how it sounds
- **What are You Most Excited for in Completing Your Residency at Sanford?** Opportunity to engage in high-acuity areas such as critical care and emergency medicine—fields that align closely with my professional interests. I look forward to both contributing to and learning from a multidisciplinary team that manages complex and rapidly evolving patient cases.



Morgan Theis

PGY1 Traditional Resident

- **Hometown:** Minot, ND
- **Pharmacy School:** NDSU
- **Career Ambitions:** Critical Care or Cardiology
- **Hobbies:** Playing volleyball and reading
- **Fun Fact about yourself:** I am a huge dog lover and plan to continue to volunteer at the dog shelter I did throughout college
- **What are You Most Excited for in Completing Your Residency at Sanford?** I am excited to continue to learn and grow as a pharmacist and meet new people along the way!



Incoming Residents

Haley Johnson

PGY1 Traditional Resident

- **Hometown:** Wheaton, MN
- **Pharmacy School:** NDSU
- **Career Ambitions:** I am not sure at this time what area of pharmacy I am interested in pursuing, but interested in oncology and critical care
- **Hobbies:** I enjoy reading, going on walks, golfing, and spending time with family and friends
- **Fun Fact About Yourself:** I can play the piano
- **What are You Most Excited for in Completing Your Residency at Sanford?** The variety of different experiences I will get that will deepen my clinical knowledge and skills. The variety of rotations and patient population at Sanford will allow me to have a solid clinical foundation.



Residency Graduation Dinner



2024-2025 Preceptor of the Year

Each year the current residents vote for the preceptor of the year: a preceptor that has inspired and encouraged residents to work hard, develop their clinical skills, and provide safe and effective patient care.



Brady Diveley, PharmD, BCPS, BCCCP, BCEMP

Impact on this year's residents:

- Avid Bison Fan
- Longitudinal resident mentor
- Preceptor for longitudinal resident research project
- Customized rotation goals to fit individual resident's career plans
- Precepted almost every resident throughout this year on an ED rotation
- Precepted topic discussions across rotations in the ED, ICU, and Neurology
- Developed lecture materials and taught lectures at NDSU



Favorite aspects of precepting:

- Helping people realize what they ACTUALLY know versus what they have been taught in the past
- Facilitating the learner's ability to bolster their own confidence and break down hard situations into bite sized problems to solve. I know the program has been successful when we feel comfortable leaving learners to tackle a critical situation by themselves.
- My favorite part is learning together with students/residents and always making sure I'm ready to answer some off the cuff questions.

2024-2025 Armamentarium Award

The Armamentarium Award recognizes a pharmacy preceptor who exemplifies excellence in clinical teaching, mentorship, and the development of future pharmacists. This year's recipient has demonstrated unwavering dedication to advancing resident education through evidence-based practice, hands-on learning, and compassionate guidance. Their ability to transform complex clinical scenarios into meaningful teaching moments has left a lasting impact and elevated the standard of pharmacy education.



Josh Collett, PharmD

Impact on this year's residents:

- Avid Bison fan
- Resident mentor
- Advocate for resident wellness events
- Precepted numerous topic discussions
- Primary preceptor for multiple pharmacy grand rounds
- Invested considerable time in advancing our clinical acumen, ensuring each learning moment was both impactful and relevant to our growth
- Adaptability of rotational experiences to be individualized based on resident's ambitions and professional interests

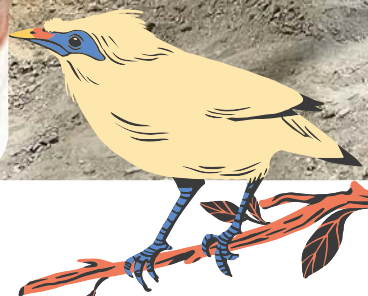


Favorite aspects of precepting:

- Experiencing that "Aha!" moment when a concept truly clicks for a learner
- Supporting residents as they grow into the confident, capable pharmacists they aspire to be
- Watching learners make thoughtful, evidence-based recommendations that positively impact patient care



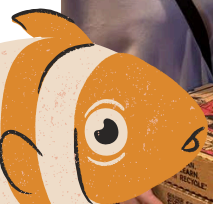
Snapshots from the Year



Snapshots from Midyear



Snapshots from MPRC



Med Safety

2024-2025



Sanford Pharmacy



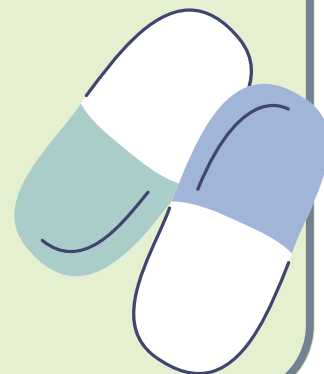
Residency

Overview

This year, as part of our commitment to medication safety, we identified key risk-connect safety events that required focused improvement to ensure we continue delivering the highest standard of care to our patients. Each event was carefully evaluated to determine its root cause, followed by collaborative brainstorming to develop effective solutions aimed at enhancing safety and preventing recurrence. These focused efforts were termed "drilldowns."

Nicole Munsterman, Maja Stoneberg, and Kassy Vettleson played a vital role in mentoring us through our monthly drilldowns and guiding our team in advancing safe medication practices here at Sanford.

The following pages highlight a selection of the impactful drilldowns completed over the past year, each contributing to improved patient outcomes and a safer healthcare environment.



Dispense Logic

Fixing whether medications dispense as unit dose vs. extemp labeling and automation vs. central dispensing

- Levocarnitine oral solution >500mg now dispenses as central pharmacy with an extemp label
- Prednisolone oral solution other than 15mg now dispense as central pharmacy with an extemp label
- In the process of updating Modafinil tablets to dispense through central pharmacy with an extemp label for doses <100mg (needs splitting)
- Working with IT to adjust the dispensing of paroxetine oral suspension 20mg doses to default with an extemp label
- Phenobarbital oral elixir now dispenses from the 473 mL stock bottle with an extemp label
- Sucralfate oral solution now dispenses in the 10 mL cup if the dose is exactly 1 gram or from a stock bottle with an extemp code if any dose other than 1 gram
- Omegaven now dispenses from a premix coming from automation
- Hydrocortisone peds/NICU now includes an extra label on dispense for the light protective bag
- Ofloxacin otic panel was updated to default to the ophthalmic solution product vs. previous non-form otic solution

ERx Updates

*Improving order clarity, and efficacy
to optimize patient care*

- Worked on a dedicated ERx for continuous ampicillin infusions
- In the process of adjusting prn Ativan order in CIWA EtOH withdrawal order set to include verbiage if the patient is also on Precedex
- Potassium Chloride IMS will allow EPIC to help in the selection of central compared to peripheral line administration
- Iohexol contrast was updated to have automatic stop times on all orders
- Meropenem extended infusion panel updated naming and frequency of bolus dose
- Topical medication instructions added to ensure adequate instructions for nursing
- Zosyn extended infusion updated frequency of bolus dose
- Vancomycin enema prep instructions updated with specific verbiage to ensure final dispense is in an irrigation NS bottle
- Methylprednisolone IV piggyback updated to include clearer prep instructions for patient-specific doses when ordered as high-dose in pediatric patients.
- Worked on a dedicated CNR entry for Nafcillin 40mg/mL for safe aliquot preparation associated with the peds/NICU ERx.

Workflow Improvements

*Improving the way medications are prepared,
distributed, and documented*

- Ensured proper documentation of clonidine patch removal times on patient MARs
- Fentanyl patch monitoring
- POM workflow is in the process of utilizing an electronic platform integrated in Epic
- Flushes for line maintenance - bringing to nursing leadership to create a workflow for proper maintenance of all types of lines and nursing-driven ordering of flushes if needed
- Pump updates
 - Thymoglobulin updated to 12-hours from 6-hour default
 - Oxaliplatin updated to hard stop min infusion time over 2 hours from soft min 100 minutes
- Post-op pituitary orderset - updated admin instructions defining more clearly which patients meet criteria for DDAVP

Other

*For everything else to improve medication
safety across SMCF*

- Created a BPA that fires when nursing opens a chart for a Rh (-) patient that has not received Rhogam, and discharge orders have been placed.
- Provided education for the recommended usage of linked order parameters in EPIC
- Nursing provider education on proper administration of oral glucose tablets and proper dosing in a hypoglycemic event
- In the process of adjusting IM methotrexate orders to fire a 'high risk' Medispan alert if ordered daily, in addition to implementing a BPA
- In the process of implementing an alternative alert function that recommends ordering hospital-compounded enalapril suspension when ordering non-formulary enalapril solution from a home med list.
- Provided education for lab technicians on appropriate lab collection techniques when drawing serum tacrolimus labs for patients who previously received the IV drug through their lines.