

# SANFORD HEALTH

## CENTER FOR PREHOSPITAL CARE AND SIMULATION

**IMMERSIVE EMS SIMULATION ENHANCES EMS SKILLS AND CARE**

SOUTH DAKOTA FOUNDATION FOR MEDICAL CARE - APRIL 8, 2026



# DISCLOSURE

- No applicable disclosures to report for this presentation

# WHO WE ARE AND WHAT WE DO

- Currently log over 7000 student contact per year
- Log over 700 educational events/session per year
- To date – traveled over 2.5 million miles for education
- To date – 250,000 student contacts (since 2001)
- Team of over 50 educators and clinician (15 primary staff)
- Represent a broad array specialties and healthcare settings
- Impact initial and sustaining education and clinical practices
- Support a vast list of clinical professions (FR-Physician)

# WORK AND COVERAGE BY OUR TEAM

- Simulation Center(s) – Hospital and clinic settings
- Virtual Care Center – Telehealth and Distance Learning, VR
- Mobile Simulation – EMS, Hospital, Other
- Residency Simulation – Surgical, Cardiac, GI, EM, Peds
- EMS Initial Education – EMR, EMT, AEMT, Paramedic
- EMS Continuing Education – Monthly Education, Outreach, Standardized Courses, Annual EMS Symposium, support various conferences
- EMS / Hospital Outreach – Specialty Requests and Courses
- Community/Industry Education Requests – classes and courses
- International EMS and Sim Education – Special Projects

# CURRENT STATE

- Vehicles

- Simulation in Motion-SD trucks (2)
- Mobile Simulation outreach van
- Mobile Simulation outreach suburban
- Mobile Simulation outreach trailer
- Mobile Educational Outreach trucks (2)



# PRESENTATION HIGHLIGHTS

## Presentation Title - Immersive (EMS) Simulation Enhances Skills and Care

1. Describe the simulation learning platforms and scenarios related to EMS training
2. Explain the process for participating in or hosting a simulation learning experience
3. Highlight the benefits of collaborating with the mobile simulation team to improve EMS skills



# DESCRIBE THE SIMULATION LEARNING PLATFORMS AND SCENARIOS RELATED TO EMS TRAINING

- Sanford Health Mobile Simulation – mannequin platforms (50+)
  - Adult
  - Maternal
  - Pediatric
  - Toddler
  - Infant
  - Newborn
  - Micro Preemie
- Encompassed Medical and Paramedic Emergency Services
- Ambulance and Hospital Sim Rooms in the trucks
- In situ simulation – in the clinical environment
- Sim = a Educational Platform and Tool to achieve clinical outcomes and performance improvement



# EVENT AND OUTCOMES ARE FOCUSED ON

- Individual and Team Performance

- Clinical assessment
- Clinical judgement
- Critical thinking
- Clinical management
- Communication
- Teamwork
- Resource management
- Safe clinical practices
- Role clarification and responsibilities
- Enhances experiential learning based on the rural, volunteer, low call volume environment and setting in South Dakota



# EDUCATIONAL AND CASE DEVELOPMENT

- Consistency over time with updates from literature
- Implement internal care standards and protocols
- Shared education model for clinical standards
- Subject matter experts assist with case development
- Service lines assist with education – Neo, Trauma, Storke, etc
- Needs assessment at the sites
- Customized case and education development
- Robust case library of simulation scenarios
- Focus on both medical and trauma cases

# EDUCATIONAL AND CASE DEVELOPMENT

- Procedural application of skills and clinical assessment
- Use of medication and site-specific equipment
- Hemodynamic monitoring and clinical assessment
- Inclusion of education timeouts and simulation field trips
- Multidisciplinary simulations when possible
- Incorporate regulatory and accreditation requirements
- Incorporate grant funded objectives for scenarios

# EXPLAIN THE PROCESS FOR PARTICIPATING IN OR HOSTING A SIMULATION LEARNING EXPERIENCE

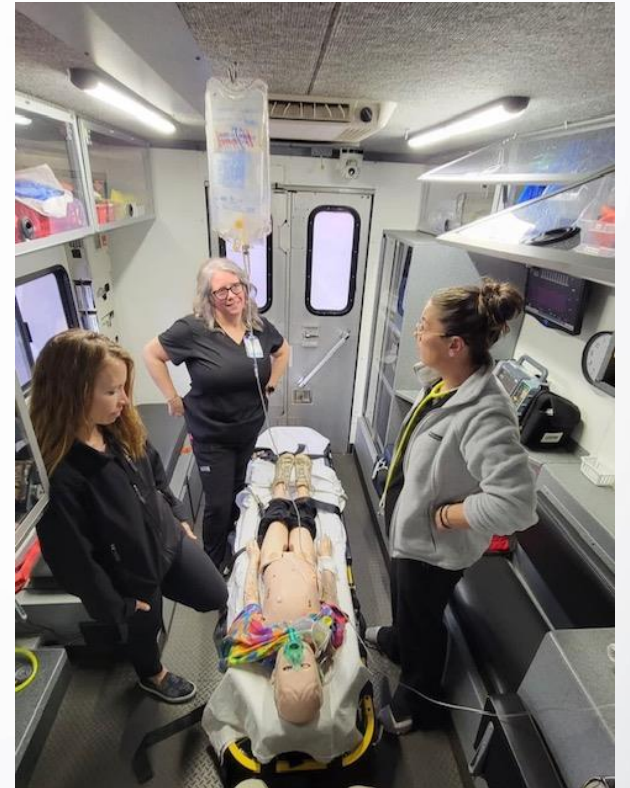
- Request from an agency, facility or clinical group
- Needs assessment for the site and staff
- Event/Scenario design and development
- Build the pre/post participant assessment tool
- Educational delivery and formats
- Debriefing – education, discussion, coaching, mentoring
- Scenarios build off of the prior sim case
- Conduct low frequency high risk/HALO scenarios
- Recurrent education and performance improvement





# COURSE PAPERWORK AND WORKPLAN

- Introductions and agenda
- No surprises and Program Rules – HAVE FUN
- Event registration and consent form
- Pre-assessment paperwork
- Pre-brief and safety discussion
- Equipment and Environmental Brief
- Scenario and debrief x 4 cases
- Post-assessment paperwork



# HIGHLIGHT THE BENEFITS OF COLLABORATING WITH THE MOBILE SIMULATION TEAM TO IMPROVE EMS SKILLS

- Improved performance comes with repetitive exposure and experience
- Built on improving participant and team comfort and confidence for clinical cases
- Low frequency right risk / high acuity low occurrence (HALO)
- Cases build off of the prior scenario and learning objectives
- Emphasis on assessment/recognition and critical thinking on clinical management
- Reduces risk to the patient by promoting sustaining education and clinical competency

# CLINICAL ASSESSMENT TOOL

- Subjective evaluations – self reported – anonymous
- Track facility progress over time
- Likert score of 1-5 (similar to Dreyfus model)
  - (novice, emerging, established, mentor, educator)
- Pre and Post assessment form per learner
- 10-15 questions per session (3-4 questions per case)
- Focused on assessment, recognition, management, skills
- Core educational factors – assessment, critical thinking, clinical judgement, clinical management, team communication, teamwork, safe clinical practices, application

# CLINICAL ASSESSMENT TOOL

- Utilize a list of 150 clinical conditions and actions
- Library of 600 questions – multi-platform application
- Feedback report available for facility at the time of departure
- Best reported data is the free text feedback
- Best data is the clinical application to real life cases
- Questions identified during needs assessment interview
- Risk and Quality data that can drive requests
- Service line feedback and involvement

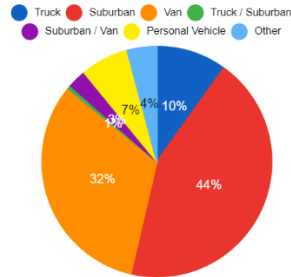
# PERFORMANCE DASHBOARD

## 2023 Mobile Simulation Dashboard

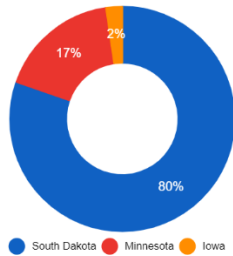
Total Events	Total Event Hours	Average Hours/Event	Total Participants	Contact Hours
464	1533.25	3.51	3350	13084.5

Travel Time (hrs)  
641.32

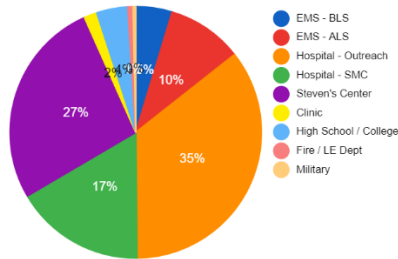
### 2023 Vehicle Usage



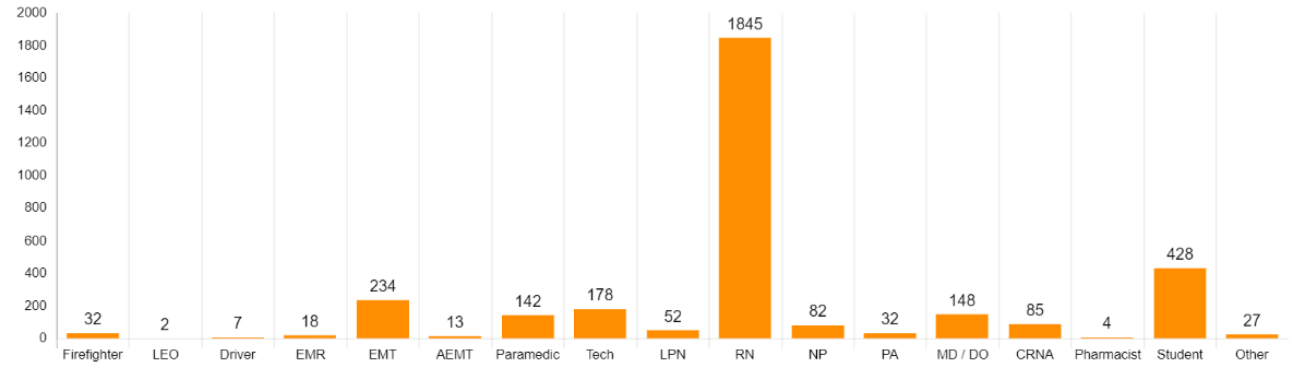
### 2023 State Visits



### Facility Type Visits



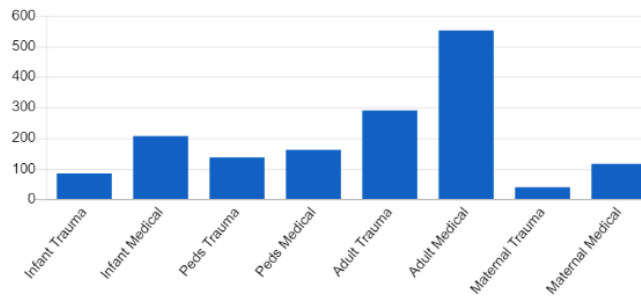
## Participant Breakdown



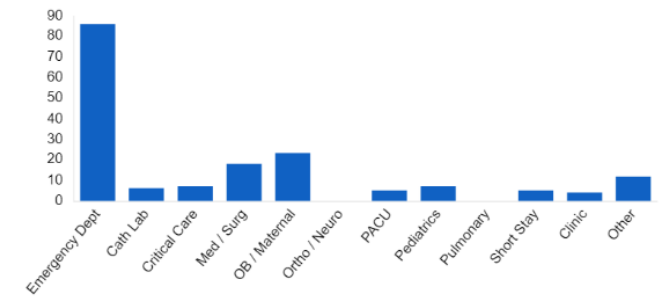
## Comments for 2023

Date	Comments / Feedback
12/12/23	The patient with angioedema presented early morning with night shift still on. The night shift nurse was not at the training, but contacted the provider right away and this provider was a part of the training. Patient was on Lisinopril. The provider had actually taken care of the patients mother with the same issue. We gave the TXA and symptoms improved.
10/30/23	I enjoyed the experience and feel like I learned a lot of information. I am looking forward to the next session.
10/30/23	I thought the education received during the simulation was very useful. It made you stop and think more into each patient and look more into what is going on with the patient. I enjoyed going through different scenarios and having to think about each patient in a different way.
10/18/23	I found the crush injury simulation very engaging and beneficial for our critical access hospital. Critical think was applied with review of systematic responses of the injury. Along with the crush injury, the pediatric burn simulation was very informative with great resources. Thank you for the great education.
10/20/23	I think that simulation is a really good way to practice medicine and prepare us for high intensity situations that we may face in our rural ER facilities. Even if things don't always go as planned in SIM (and there are differences between SIM and real life don't get me wrong) these scenarios make us think differently when we are actually faced with similar situations in our ER settings later down the line. One thing that SIM has taught me is the importance of practice and it's one thing to study with a book, but a completely different thing to physically work with your other team members to try to come up with treatment plans and solutions for patient in real time compared to written testing/reading. I have practiced and have become more comfortable with intubations as a result of SIM. Additionally, I would say that I am also more comfortable with BIPAP as well. Triaging was a big focus of our most recent SIM and I think it is something our facility should practice more as I think about more as a result. It certainly is not something we see everyday, but would be beneficial if we had more focused plan prepared if it did walk through our doors and SIM calls these things to mind to help us to improve future cases.
10/12/23	Very great experience to practice caring for complex patients to prepare staff for potential situations we could encounter in the ED. Also great to have the patient status breakdown feedback afterward.
10/04/23	I love having hands in simulation based hands on. I'm a hands on learner
10/04/23	Good SVT review. Appreciated the critical thinking on angioedema and rhabdo. I needed the review on gunshots and penetrating injuries.
10/04/23	Love the complex scenarios! I feel we get a lot out of the debriefings after the scenario as well. lol love small groups
10/04/23	Really like the hands on education as it helps me better grasp concepts. Always enjoy working with instructors.

## Scenarios Delivered



## In-Hospital Department Type Totals



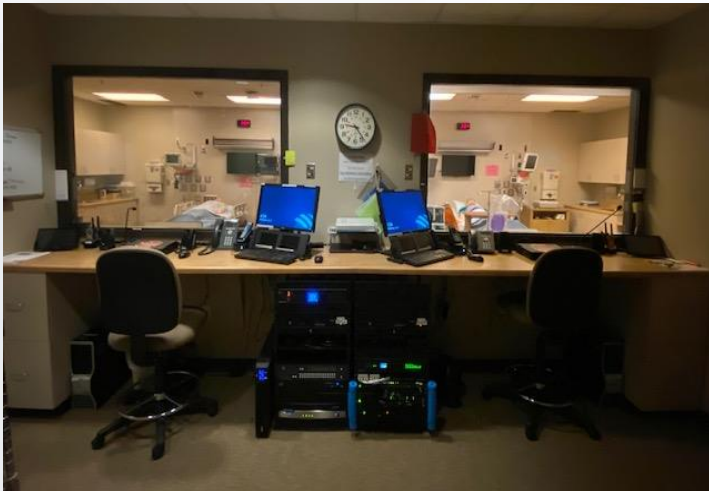
# SUCCESS IS IN THE STORY AND LEARNER FEEDBACK

- EMS and needle decompression and procedure
- EMS OB delivery
- EMS medical emergency
- EMS trauma case
- EMS triage and MCI
- Helping clinician positively impact the patients that they serve, throughout their entire healthcare career
- Impact Strategy:  $25 \times 48 \times 10 \times 10 \times 10 = 1,200,000$  lives impacted per instructor
- OB Story of Success – what impact simulation truly has on patient outcomes

# SANFORD HEALTH - SIMULATION CENTER

- Sanford Health - Stevens Center – Sanford Simulation Center
  - Opened in 2010
  - Two Sim Suites
  - Three Simulation Rooms
  - Task Training Room and Clinical Skills Lab
  - Two Debriefing/Education Classrooms
  - Control Room
  - Skills Lab
  - Classrooms and Computer Labs
- Support of Sanford USD Medical Center simulation requests
- Support of Clinic simulation requests
  - Sioux Falls and Rural Sites
- Support of Department Based Clinical Education and Sim
  - Clinical Skills and Simulation Experiences – AirMed example

# SIMULATION CENTER AND SKILLS LAB



# SANFORD HEALTH - VIRTUAL CARE CENTER EDUCATION INSTITUTE

- Opened in November 2024
- Dedicated education space and classrooms in the VCC
  - Simulation lab/room
  - Control room and dedicated Debriefing room
  - VR simulation labs
  - Clinical skills lab and Production Studio
  - Breakout rooms with classroom space and tech
  - Flex room and patient apartment
- Single day and multiday education events

# SANFORD HEALTH - VIRTUAL CARE CENTER





# VCC SKILLS LAB / PRODUCTION STUDIO



# SANFORD HEALTH - MOBILE SIMULATION

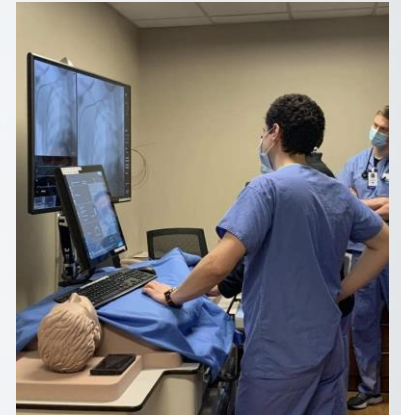
- Simulation Trucks- two trucks at Sanford Health
  - Initially funded in 2008 - grant and private funding (SDDOH and Helmsley Charitable Trust/\$5 million) program replicated
  - Organizational fiscal accountability in 2016
  - Emergency Room environment in the front of the truck
  - Ambulance environment in the back of the truck
- In situ Simulation
  - In the hospital department and patient rooms
  - Task training opportunities at a facility
- Additional funding options
  - Contracted Work, Grants, Fee for Service, Sponsored Funding

# MOBILE SIMULATION



# RESIDENCY SIMULATION AND EDUCATION PROGRAMS

- Surgical Simulation Room at the Medical Center
  - GI/Broch robotic mentor
  - GI Mentor
  - Laparoscopic robotic mentor
  - Interventional Cardiac/Neuro robotic mentor
  - FLS Task Training
  - Invasive Skills Task Training
  - Interactive Ultrasound Trainer
  - da Vinci Xi Robotic Counsel
  - Task Based Education
  - Cadaver Labs



# SANFORD HEALTH - EMS INITIAL EDUCATION

- Emergency Medical Responder (EMR) – 60h course
  - As requested by sites – approximately two classes .per year
- Emergency Medical Technician (EMT) – 160 hours
  - Fall, Spring, Summer sessions offered annually
    - Online LIVE – Tuesday/Thursday evenings 6-10p plus one Saturday per month
    - HOSA High Schools (40+ schools) and Sioux Falls Career Technical Education
    - Southeast Technical College – Spring, Summer, Fall semesters
  - Fee Based, Contracts, Grant enrollment
    - SAMSHA grant - \$775K from 2021-current
    - Federal Department of Labor Grant – \$425K/4 years
    - SD Regional EMS Grant – Simulation and EMS Education – \$400K/3 years

# PARAMEDIC INITIAL EDUCATION

- Paramedic – 5 semester - Associate of Applied Science Degree
  - Business partnership with Southeast Technical College
    - August start date
    - January start date
    - Collectively four concurrent cohort groups occurring at once
  - Sanford Stevens Center is an STC Approved Campus by the Higher Learning Commission (HLC)
  - CAAHEP/CoA accredited paramedic program
  - Previously partnered with University of South Dakota School of Health Sciences

# SANFORD HEALTH - EMS CONTINUING EDUCATION

- Monthly Education Program
  - Weekly LIVE (*Live Interactive Video Education*) televised lectures every Monday evening from 6p-8p – Meets NCCCR continuing education requirements
  - Recorded lectures housed on the online education portal – 100+ hours
  - Subscription based program – domestic and international participants
  - Previously offered through a grant from the South Dakota Department of Health (2001-2016)
    - Over 200,000 student contacts in 25 years
    - Facilitated with 65+ contracted instructors
    - In-person onsite education for over 110 sites every month
- CAPCE - nationally accredited EMS education program
- Support State EMS Associations Conference and Education Requests

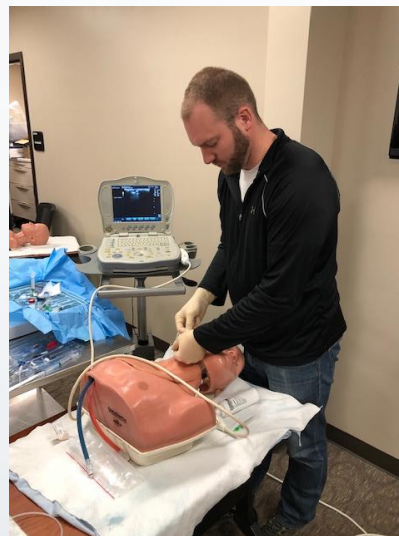
# EMS CONTINUING EDUCATION

- Outreach
  - Annual EMS Symposium – annually February – three day event
  - Standardized course - ACLS, PALS, NRP, PHTLS, AMLS, TNCC, ENPC
  - EMS Skills Labs
  - Special request course – Dental Centers, Industrial sites, etc.
  - Community requests – business and industrial sites for CPR, First Aid, AED classes
  - Support Clinical Nurse Educators and Learning Development Specialists with Good Samaritan Society
    - Basic Life Support (BLS) CPR education support – 60 staff members
  - AHA Training Center at Sanford Health – supportive alignment
    - BLS, ACLS, PALS courses

# SANFORD HEALTH - EMS AND HOSPITAL OUTREACH

- Rural sites – affiliate and non-affiliate locations
  - New equipment education – BiPAP, Ventilators, PPH Carts, Meds
  - New policy, procedure, changes in standards of care
  - Annual skills validations for agencies and sites
  - Mock Codes and Emergency Situations
  - Standardized course - ACLS, PALS, NRP, PHTLS, AMLS, TNCC, ENPC
  - Provider Education – Physician and APP
    - Ultrasound, Chest Tube Placement, Airway Management, Remedial Experiences on Low Frequency Skills
- Business Development Support for Services Lines
  - Cardiac, Trauma, Stroke, Pediatrics, Neonates, OB, Diabetic

# EDUCATION AND SIMULATION EVENTS



# HIGHLIGHTS OF PRIOR WORK AND ACCOMPLISHMENTS

- SD Department of Health and American Heart Association
  - Educational program design and delivery
  - Mission: Lifeline STEMI – \$9.2 million+ - SD, MN, IA, and National presence and education design
  - Mission: Lifeline Stroke SD – contracted work for EMS and hospitals
- ANEW Rural Nurse Practitioner Grant
  - SDSU as an Educational Partner \$700,000 three-year grant
- Co-authored a textbook on Mobile Simulation
- Design and Development a participant assessment tool for clinicians attending simulation sessions
- Presented domestically and internationally on EMS and simulation topics

# INTERNATIONAL RELATIONSHIPS WITH OUR OFFICE

- Ghana
  - GHANA National Disaster Management Organization (NADMO)
    - Disaster Preparedness and Basic First Aid
  - Ghana National Ambulance
    - EMS Education and Paramedic Program Development
    - Clinical skills and simulation
    - Collaborative discussions with USAID and North Dakota National Guard
- Saipan/Guam
  - Continuing Education
  - EMT Program
  - EMS System Management
- Costa Rica
  - SAAT Flight Team Continuing Education
  - SAAT Standardized Courses – ACLS, PALS, NRP, PHTLS, TNCC
- India
  - Intensive Care Nursing – cognitive, clinical skills, and simulation experiences



# STAFFING

- Enterprise Director – RN/Paramedic
- Medical Directors (2) – Emergency Medicine with EMS Fellowship and Family Practice
- RN Simulation Specialists (3)– ICU, ED and Air Transport background
- Lead EMS Educators (9) – Paramedics
  - PRN staff
    - Sr. EMS Educators (3), Nurse Practitioner (3), Registered Nurses (5)
    - 25 - contracted EMS Education staff – EMS focus staff
    - Float staff (5) based on education and sim requests – EMS and Simulation focus

# COLLABORATIVE WORK AND REQUESTS

- United States Navy
  - 2<sup>nd</sup> Fleet – Corpsman EMT course
  - 2<sup>nd</sup> Fleet – Simulation and Standardized Courses
- Ghana
  - Paramedic Program Development
  - NADMO – Disaster Management Education
  - PPH Education and Simulation program
- Costa Rica
  - Hospital staff development –nursing education and specialty education
- South Dakota National Guard
  - SD Air National Guard
  - SD Army Guard
  - SD Naval Reserve



# COLLABORATIVE WORK AND REQUESTS

- Network Pharmacy
  - Long-term care/Lewis Drug Clinical Education Requests
- Virtual Care Center and Hospital
  - Residency Education and Simulation Center
  - Dedicated staff supporting VR education and simulation
- Sioux Falls School District/Southeast Technical College Sim Center – healthcare simulation and collaborations
- International Nurse Onboarding
  - Simulation sessions for International Nurses arriving at Sanford

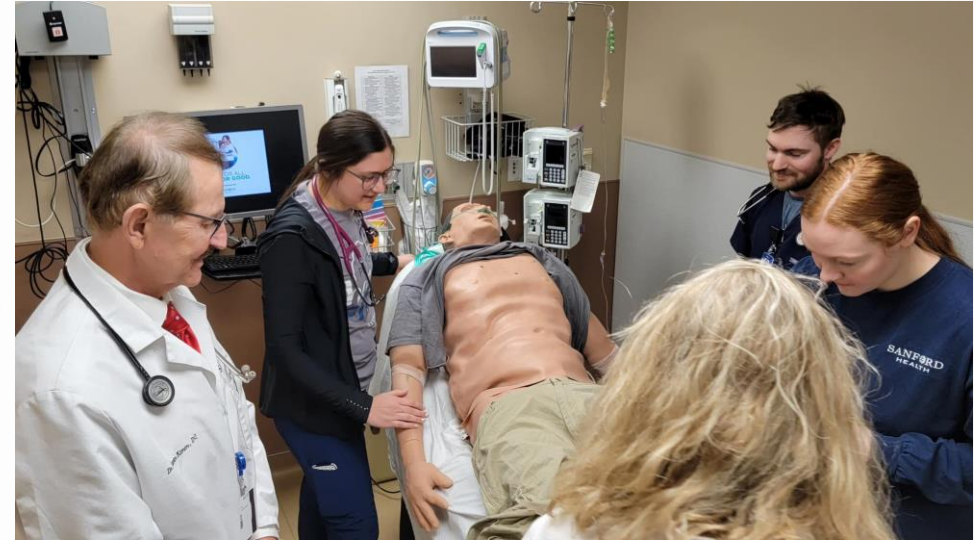
# SIMULATION AND MOBILE SIMULATION COMMITMENT

- Focus on 250+ communities visits per year (4-7 events per week)
  - Fulfill 2-3 visits per Sanford/Affiliate site per year
- Vehicles
  - Mobile Simulation Trucks - two
  - Outreach Vehicles – two+
  - Outreach Trailer
  - Mobile Education Trucks - two
- Presented Nationally and Internationally on Sanford Health Simulation and Mobile Simulation Programs
  - U.S. Patent on mobile simulation platform
  - Research and Design with industry partners on simulation equipment

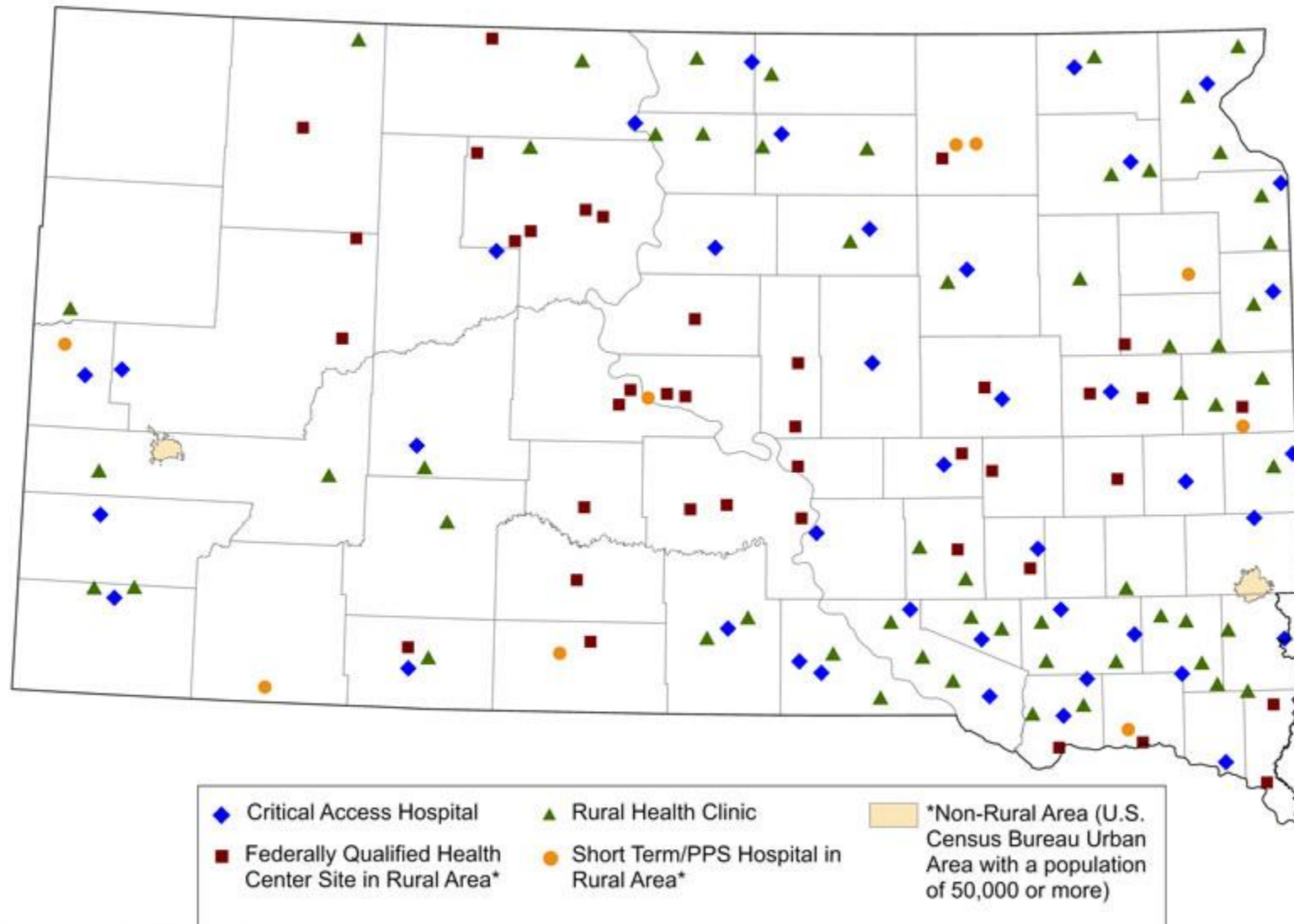


# PRIMARY FOCUS ON MOBILE AND RURAL HEALTHCARE SERVICES AND SITES

- Rural hospitals and EMS
  - Critical access facilities and Rural EMS
  - Limited staff and EMS Rosters
  - Low clinical volumes for HALO events
  - Prolonged transport times
  - Limited resources and facility services
  - Mixed services for provider coverage
  - Clinically complex cases – low volume
  - Volunteer EMS agencies basic life support
  - Engaged, energetic, thankful staff



## Selected Rural Healthcare Facilities in South Dakota





# QUESTIONS

- Thank you for participating today!

- Contact information

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