

OSF INNOVATION LABS



There are many complex issues to solve for in health care and many ways to get there. How do we stay focused as we move forward? In collaboration with universities, business partners and philanthropists, we've created seven OSF Innovation Labs to explore, develop, test and scale solutions that will help us improve the lives of those we serve. With connection to the entire health care system, investigators work directly with clinicians to ensure ideas bring value to OSF, our partners and patients.

CHILDREN'S INNOVATION LAB

How might we create big solutions for our smallest patients?

- Investigators are developing sensors that can constantly monitor lung function while also classifying sounds that can indicate respiratory changes. The sensors will also create a 3D representation of where lung sounds are coming from, helping a physician pinpoint issues.
- The Children's Innovation Lab is using pandemic and vaccination data to create a heat map showing areas of under-immunized children within OSF HealthCare service areas. The goal is to optimize delivery of vaccination resources.



4x

In 2018, the CDC reported the percentage of children under 2 years old who weren't vaccinated quadrupled in 17 years.



STEAM LAB

How might we inspire students curious about health care to become health professionals?

- Consistent with efforts to achieve equitable health outcomes for everyone, the STEAM Lab is partnering with community-based organizations to provide its programming to underserved youth at no cost. The idea is to reach young people who may not know all of the careers available in health care.
- The STEAM Lab will create an app that allows young people to explore career opportunities in an immersive environment. The goal is to expose kids to all types of health care professions early, so they understand the skills they need to enter this field.

**STEAM stands for Science, Technology, Engineering, Art and Math*



The U.S. faces a shortage of up to **139,000** physicians by 2033.

NEUROHEALTH LAB

How might we overcome barriers to build access?

- The lab group is developing a mobile device application to video record and objectively measure specific neurologic exam findings. This enables clinicians to accurately communicate and review results without concern for misinterpretation. The hope is to be able to make diagnoses earlier and easily monitor a patient's neurological conditions, regardless of location.
- The NeuroHealth Lab is designing a bed mattress that can autonomously provide site-specific pressure relief and whole-body repositioning without the need for a caregiver. The goal is to give patients the ability to readjust themselves when they want to, improving quality of life.



Studies project a **19%** shortage of neurologists in the U.S. by 2025.



INTERPROFESSIONAL EDUCATION (IPE) LAB

How might we create expert teams instead of teams of experts in health care?

- Researchers are exploring ways to change clinical education globally by bringing medical education, nursing and other health care students together at an early stage in their education.
- The IPE Lab has helped OSF HealthCare join a nationwide effort improving access to safe, effective emergency care to children regardless of where they live. As part of this work, Jump Simulation researchers are assessing every hospital with an emergency department on their readiness to provide pediatric acute care, and work with those sites to develop and implement quality improvement plans.



Research suggests major treatment gaps between children's hospital emergency departments and general community EDs.



DATA SCIENCE AND ADVANCED INFORMATICS LAB

How might we uncover data insights to become more discovery-driven?

- In collaboration with the University of Illinois at Urbana-Champaign, data lab researchers are prototyping an app that uses machine learning to assess vital signs and funnel that information into the electronic medical record and telehealth applications.
- Investigators are using a novel analytical approach that incorporates artificial intelligence, data analytics and machine learning to personalize data for those who could be COVID-19 positive as well as their treatment. Information gleaned from this method could identify virus hot spots in a community and determine where to allocate resources such as staffing, equipment, medicine and space.



Virtual visits could potentially account for **\$250 billion**, or about **20%**, of what insurers spend on patient care.



ADVANCED IMAGING AND MODELING LAB

How might we envision 3D modeling technologies to provide insight into future models of care?

- This group is envisioning a future where the Advanced Segmentation Team provides services clinically as well as for research. The goal is to make use of virtual reality (VR) as the standard of care for viewing anatomy, not just for cardiac surgical planning, but for all complex surgeries.
- The AIM Lab is converting existing in-person simulations into VR modules, so students can see mild, moderate and severe presentations of COVID-19. By creating mental representations of what clinicians are experiencing daily, learners can better understand how to treat these patients.

The market for virtual and augmented reality in health care is expected to reach **\$2.4 billion** by 2026.

DESIGN LAB

How might we create paths that fit each person's journey?

- Vaccinating children in underserved populations remains a high priority for OSF HealthCare. As a result, this team is partnering with Illinois State University to develop an artificial intelligence-driven dashboard. Data from the dashboard will direct a mobile vaccination program that provides free recommended children's vaccinations in underserved areas of central Illinois.
- The Design Lab is placing mobile devices in shelters that provide residents with access to resources, such as a faith community nurse, food and transportation. The device will eventually assist shelter residents with scheduling medical visits, refilling prescriptions, guides to help with foot care and hygiene for diabetics, transportation to health care visits, maternal and prenatal resources, and telehealth assets.



Homeless people have higher rates of illness and die on average **12 years** sooner than the general U.S. population.

PARTNER WITH US! If you are interested in learning more about the OSF Innovation Labs, participating in certain aspects of the journey, visit osfinnovation.org

