

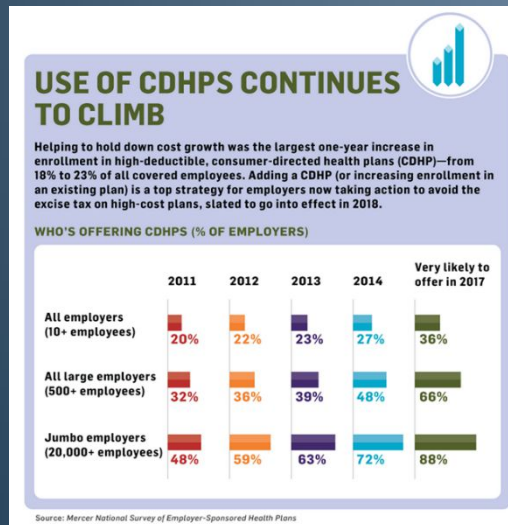
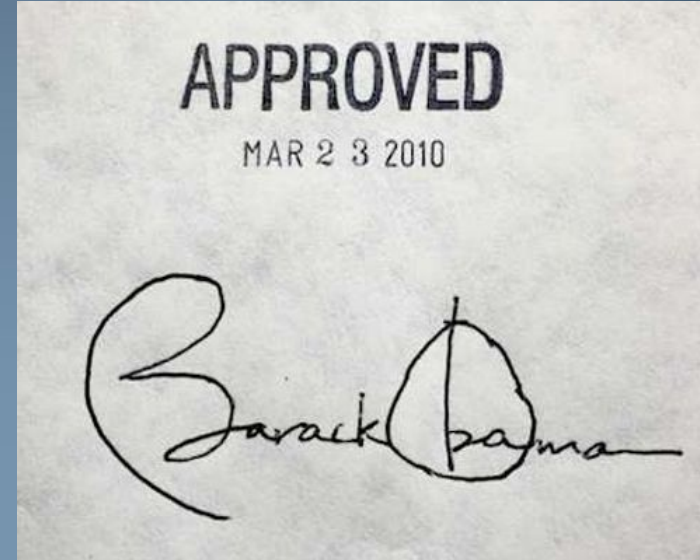
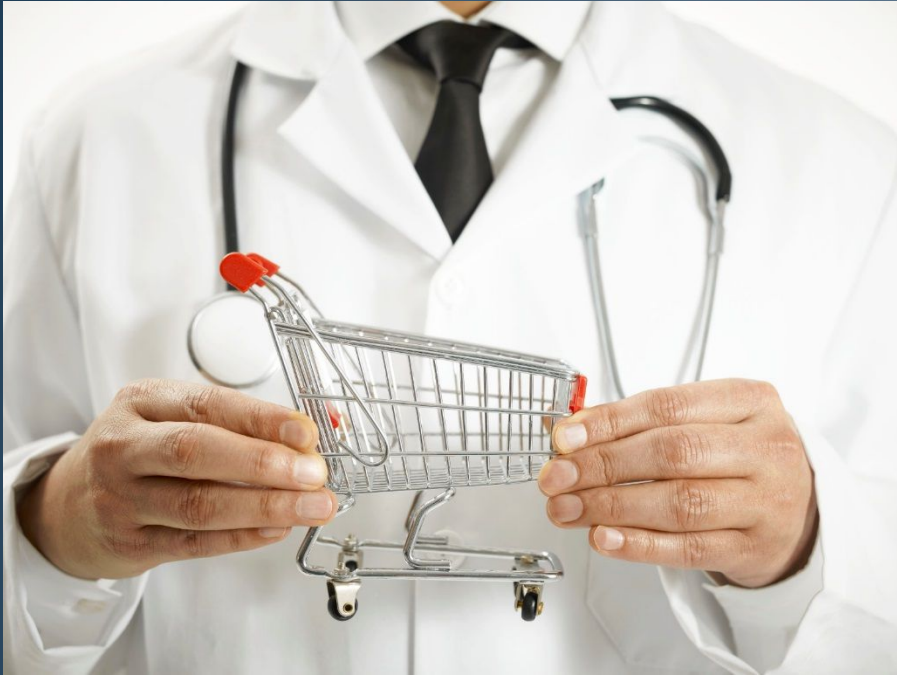


Health Care  
Doctor  
Hospital  
Pharmacist  
Nurse  
Dentist  
First Aid  
Surgeon  
Emergency

# OSF HealthCare: Transformation Through Innovation

Population Health Colloquium  
December 2, 2016







# Where We Serve

## Central Region Hospitals

- 1 OSF Saint Francis Medical Center
- 2 OSF St. Mary Medical Center
- 3 OSF Holy Family Medical Center
- 9 OSF Saint Luke Medical Center

## Eastern Region Hospitals

- 4 OSF Saint James – John W. Albrecht Medical Center
- 5 OSF St. Joseph Medical Center
- 10 OSF Saint Anthony's Health Center

## Northern Region Hospitals

- 7 OSF Saint Anthony Medical Center
- 8 OSF Saint Francis Hospital & Medical Group
- 6 OSF Saint Elizabeth Medical Center
- 11 OSF Saint Paul Medical Center

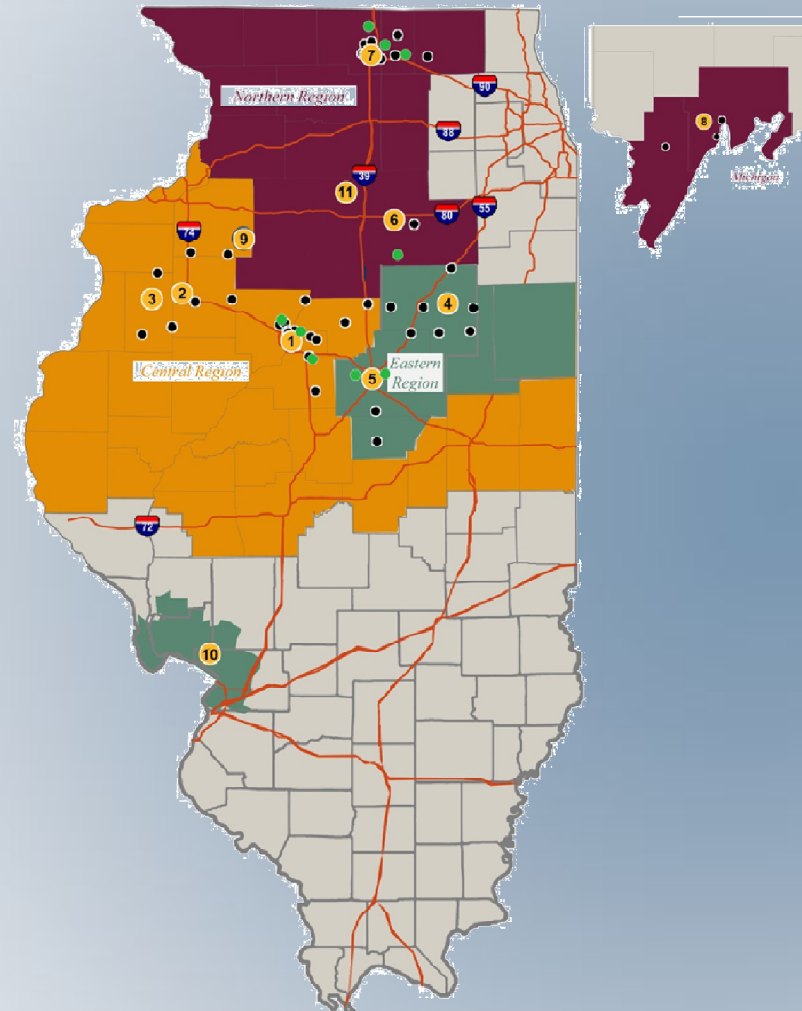
## Centers for Health

- OSF Center for Health – Belvidere – Belvidere, IL
- OSF Center for Health – Fort Jesse – Bloomington, IL
- OSF Center for Health – Glen Park – Peoria, IL
- OSF Center for Health – Morton – Morton, IL
- OSF Center for Health – Nord Farms – Bloomington, IL
- OSF Center for Health – Rock Cut – Loves Park, IL
- OSF Center for Health – Route 91 – Peoria, IL
- OSF Center for Health – State Street – Rockford, IL
- OSF Center for Health – Streator – Streator, IL

## Other OSF HealthCare Facilities

### Independent Affiliates

- Illinois Valley Community Hospital – Peru, IL
- Memorial Hospital – Carthage, IL
- Perry Memorial Hospital – Princeton, IL
- Rochelle Community Hospital – Rochelle, IL
- St. Margaret's Hospital – Spring Valley, IL



**115**

OSF Locations Including Hospitals

**738**

Employed Providers

**335**

Advanced Practitioners

**18,127**

Mission Partners

**200,381**

Home Health Annual Visits

**1,483,714**

Outpatient Visits

**1,626,748**

Physician Enterprise Office Visits

**63,501**

Inpatient Admissions

**2,652**

Hospice Patients Served

**700,316**

Number of Persons Served

**\$2.3 billion**

Net Revenue



# Integrated Health Care



**OSF Physician Enterprise is a comprehensive, integrated network of health care facilities, services, physicians:**

- OSF Multi-Specialty Group of approximately 542 physicians
- 244 advanced practitioners
- 250 physician offices and clinics
- Approximately 1.6M annual patient visits
- 260 specialty physicians

**Three system-wide service lines:**

- Cardiovascular
  - 80+ providers
- Children's
  - 132 devoted inpatient beds with 500+ full-time equivalent employees
  - Home of Jim and Trudy Maloof St. Jude Midwest Affiliate clinic and the nation's first St. Jude-affiliated pediatric hematology/oncology division
- Neurosciences
  - 60+ member physicians and scientists
  - Offers many complex neurological services not available outside major metropolitan areas – such as a Level 4 Epilepsy Center and a Comprehensive MS Center

## **Oncology Services:**

• The Center for Cancer Care includes: Chemotherapy, Antibiotic therapy, Blood cell transfusions, Hydration therapy, External beam treatments, High-dose rate brachytherapy, Prostate seed implants, Pain management, Mammosite, Research protocols, Social services, Nutrition support, Financial counseling, Pastoral care, Support groups, Educational materials, Rehabilitation

## **Ambulatory Services:**

- Ambulatory Care Sites
  - 9 Centers for Health, 13 Prompt Cares, 113 Medical Group locations
- Home Health Services
  - 201,429 visits, Telemonitoring and Case Management
- Home Medical Equipment
- Hospice Services
- OSF Hospice Home
  - 16-bed facility and 362 admitted patients
- OSF Pharmacies
  - 2 retail pharmacies
  - OSF Rehabilitation Services – Hospital and Outpatient

## **Supportive Services:**

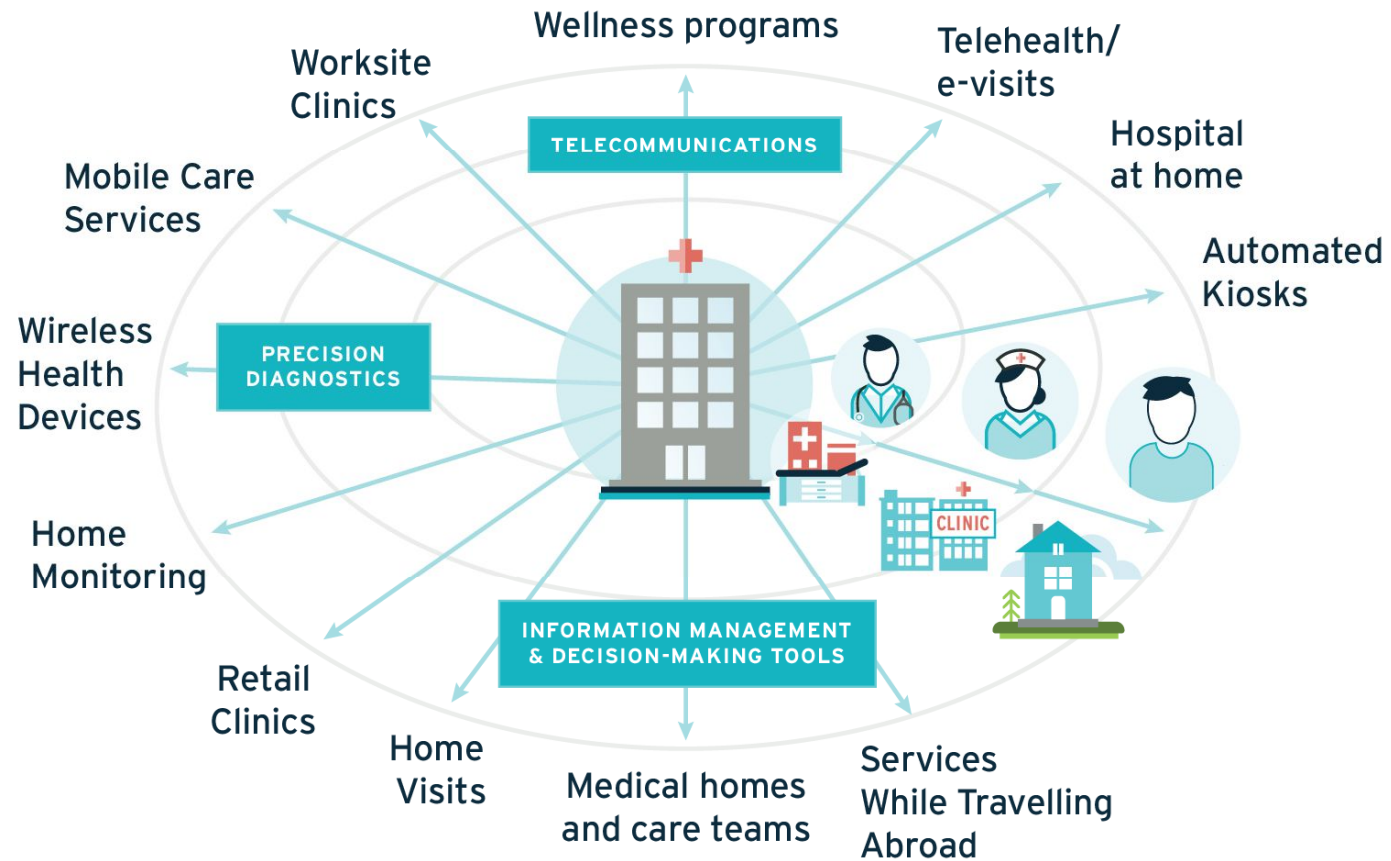
- Aviation
  - Average 2,200 patient transfers per year by 4 licensed helicopters
- Medical Education
  - 9 residency programs, 5 fellowship programs with 8 fellows, General Dentistry program, 1 PGY2 Pharmacy Practice residency with 10.5 FTE Pediatric Clinical Staff Pharmacists
- Ministry Shared Services
  - Compliance, Facilities and Management, Healthcare Analytics, Health and Wellness Services, Hosting, Performance Improvement, Retail Services, Supply Chain
- Preferred Skilled Nursing Network





Figure 4: Decentralized Healthcare Opportunities

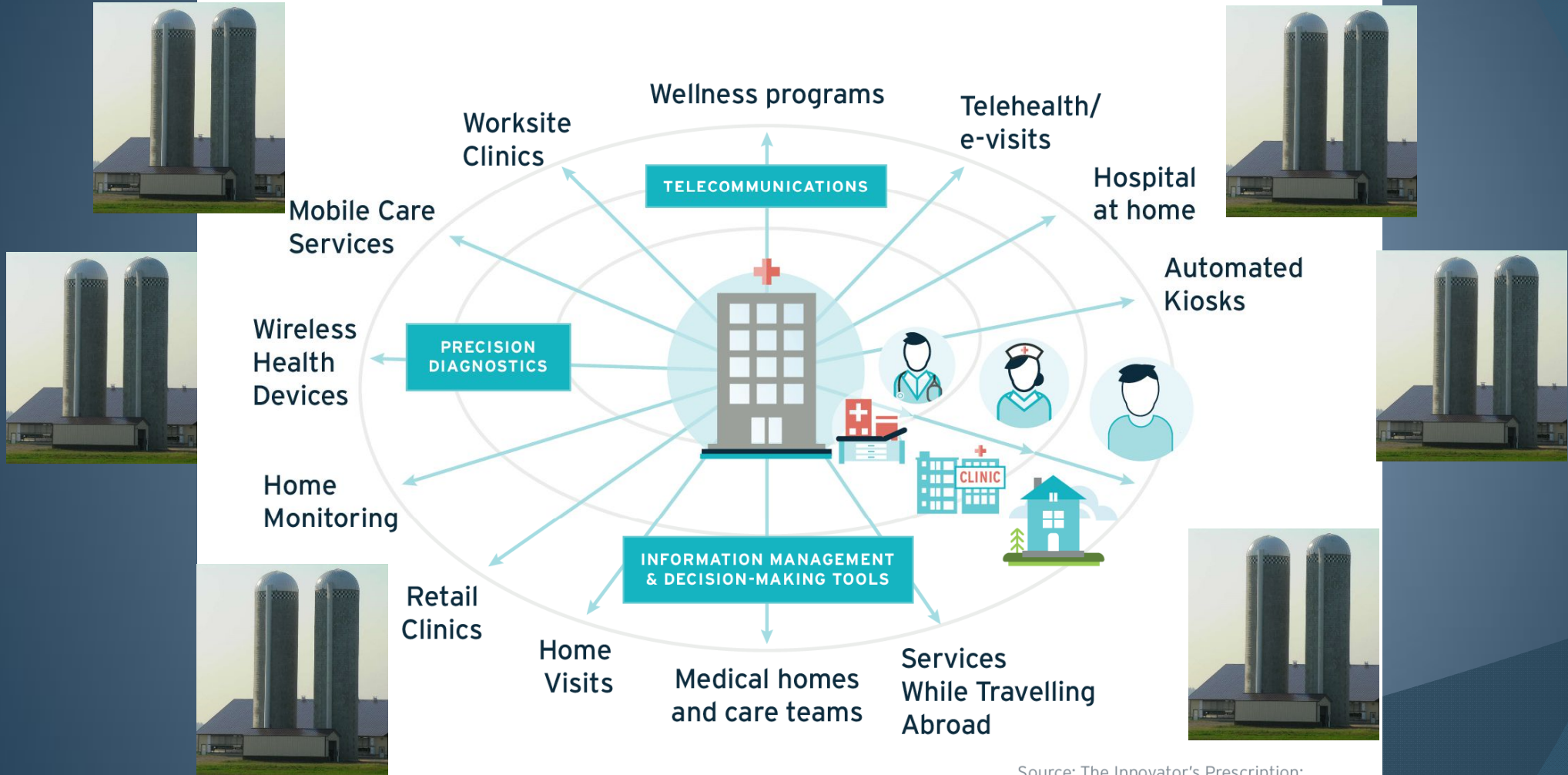
## A NEW ECOSYSTEM OF DISRUPTIVE BUSINESS MODELS MUST ARISE



Source: The Innovator's Prescription:  
A disruptive solution for health care 2008

Figure 4: Decentralized Healthcare Opportunities

## A NEW ECOSYSTEM OF DISRUPTIVE BUSINESS MODELS MUST ARISE



Source: The Innovator's Prescription:  
A disruptive solution for health care 2008



## Pre-Acute Care

## Acute Care

## Post-Acute Care

# Today's Continuum of Care.

Most appropriate care in the most appropriate setting.



# NEXT-GENERATION PRIMARY CARE MODELS

New models of primary care are emerging. Here's how to make sense of the shifting landscape.



Digital Diagnosis & Self-Care	Retail Health & Wellness Hub	Concierge Lite	High-Touch, Holistic Team-based Care	Specialized, Population-specific Clinics
<b>DEFINED</b>				
Convenient, 24/7 access to mobile telehealth, a self-directed symptom tracker and digital or telephonic navigator or personal health advocate	Convenience-care retail model provides convenient, low-cost, low-acuity and preventative services	"VIP" service model focused on 24/7 access to physicians and highly personalized service with low monthly fee, low physician panel sizes, minimal administrative hassle, same-day appointments, telehealth, etc.	Personalized, empathetic integrated care model with proactive support from coach, physician, social worker, behaviorist support, nutritionist, community	Seamless 360-degree, multi-functional team-based support for specific populations that extends beyond healthcare to other wraparound services (e.g., transportation, Rx, stress, home assessments, fitness, caregiver, social, behavioral, palliative)
<b>RIGHT NOW</b>				
Telehealth, simple digital symptom-tracker with nascent adoption	Low-acuity, transactional services in retail clinic (more NP and Rx focused) with growing market acceptance and usage	Primary care clinics building partnerships with small- and large-group employers, state exchanges, etc.	Largely greenfield sites that aim to build scale through partnerships with large payers – 10-20%+ cost savings and high satisfaction ratings	Holistic models focus on total cost and value, typically aimed at frail elder and other Medicare Advantage populations; some starting in Medicaid

FUTURE				
Siri-like navigator with omnichannel telehealth, Rx with sophisticated diagnosis engines, precision medicine and cognitive computing (e.g., Watson), and early detection, triage and intervention. Could become a personalized chronic care hub with predictive analytics, sensors, remote monitoring, omnichannel coaching	One-stop shop for major health and wellbeing needs (health, behavioral, Rx, nutrition, stress), both in person and digital. Curated lifestyle-support apps, tighter integration with specialists' care team, efforts to offer single, integrated care-team ecosystem.	Scaling of solution with focus on total experience (insurance, scheduling, incentives, treatment and lifestyle)	Scaled clinics/ single ecosystem with sensors, personalized digital lifestyle and chronic care integrated solutions powered by cognitive computing and analytics	Holistic model with sensors and applied analytics that moves more care into the home
<b>ILLUSTRATIVE EXAMPLES</b>				
  	  	 	 	  

## MEANWHILE...

There is a set of players pushing on the more consumer-driven models with next-generation consumer navigation and care management tools and services.

### Next Gen Consumer Navigation and Care Management

Curated and integrated set of consumer navigation services, behavioral science driven care management approaches and a seamless front end to power consumer-driven care (e.g., Jiff, WellTok, Quantum, Accolade, Zest)

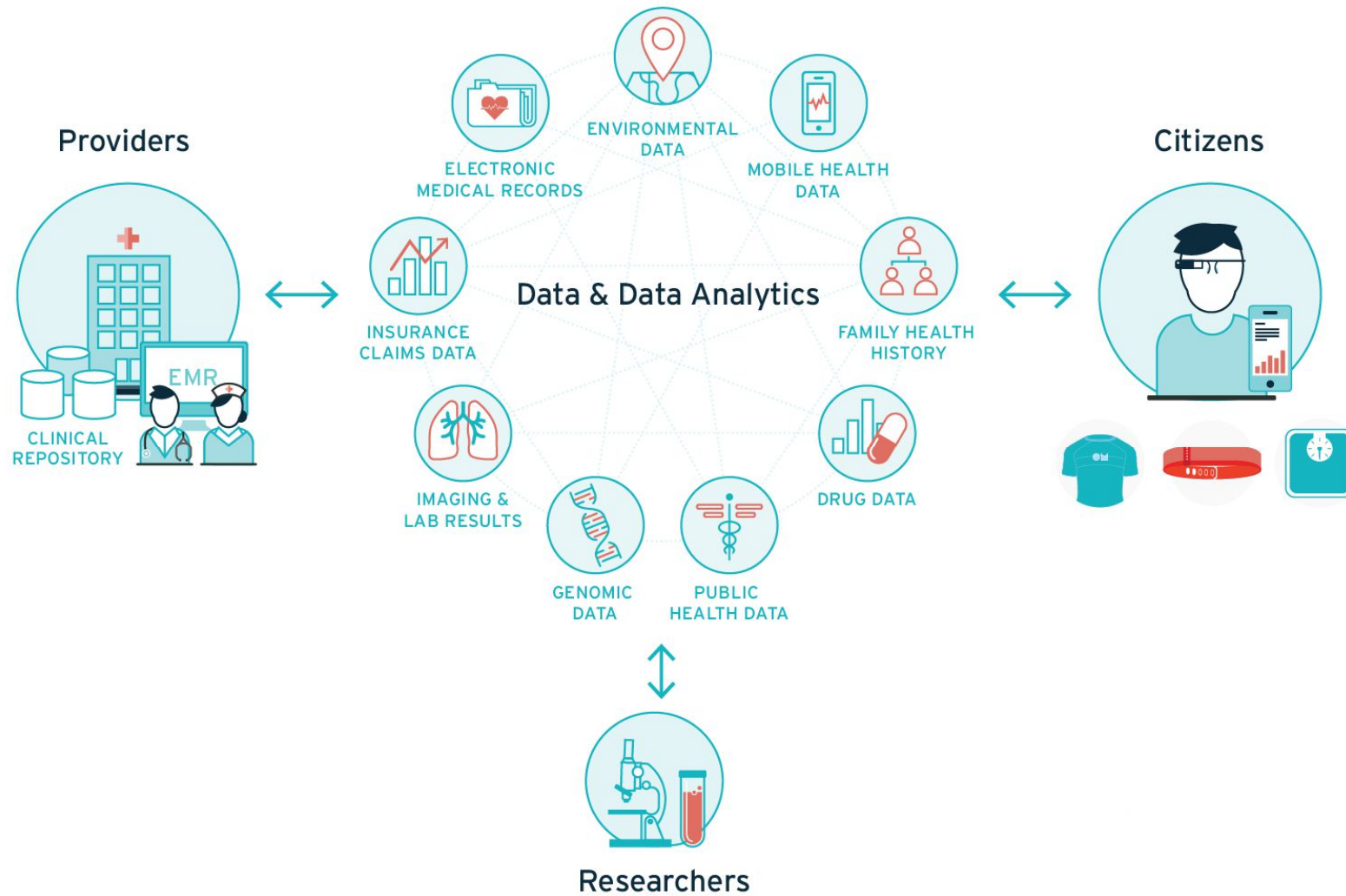
There is a set of players fueling the care-team-driven models with next-generation provider enablement tools, data, and services.

### Population Health Management Enablement

Turnkey set of analytics, tools and expertise required to power population health management (e.g., Aledade, Alignment, etc.)



Figure 5: Integrated Health Care



Source: MaRS Market Intelligence 2014



DBS

UBER

airbnb



# How are we organizing our innovation team

## Outside Innovation Partners



- Partnerships with outside companies
- Shared innovation methods
- Collaborative co-development of solutions
- Immersive design
- Shared risk and reward

## Breakthrough Innovation



- Developing concepts and inventing things for markets that don't yet exist
- Create greater efficiency or cost savings with current processes or products through disruptive innovation
- Transform care and existing models
- Employ new technologies and ventures
- Create innovation fellowship

## Core Innovation



- Optimize existing products, processes or assets for existing customers
- A culture sustaining acts of creativity
- Targeted at core activities
- Continual application of innovation to recurring details

## Venture Capital



- Seeks and manages funding for start-ups with long-term growth potential
- Review business plans
- Perform due diligence
- Track investments
- Ensure venture is meeting milestones
- Validates ROI on portfolio

## Simulation and Education



- Develop artificial representation of real world process
- Research strategy and grants
- Utilizes simulation-based learning practices for training and beyond
- Simulation-based clinical research
- Deploys cutting edge technology

## OSF innovation teams could explore...





We define innovation as

*The process of translating ideas that align with our vision of transforming health care into value for the benefit of the patients and communities we serve.*



## A culture for innovation and learning

Whether possibilities are generated by an OSF team, a new startup, or a combination, we provide a work environment that is healthy, flexible, high-performing and highly collaborative. Whether in our WORKplace, a balanced approach for creating effective work environments for our office-based Mission Partners or one of our simulation environments for clinical exploration and learning, we have made intentional environments for innovation and learning. We are innovators for life.

Surgery Simulation Space



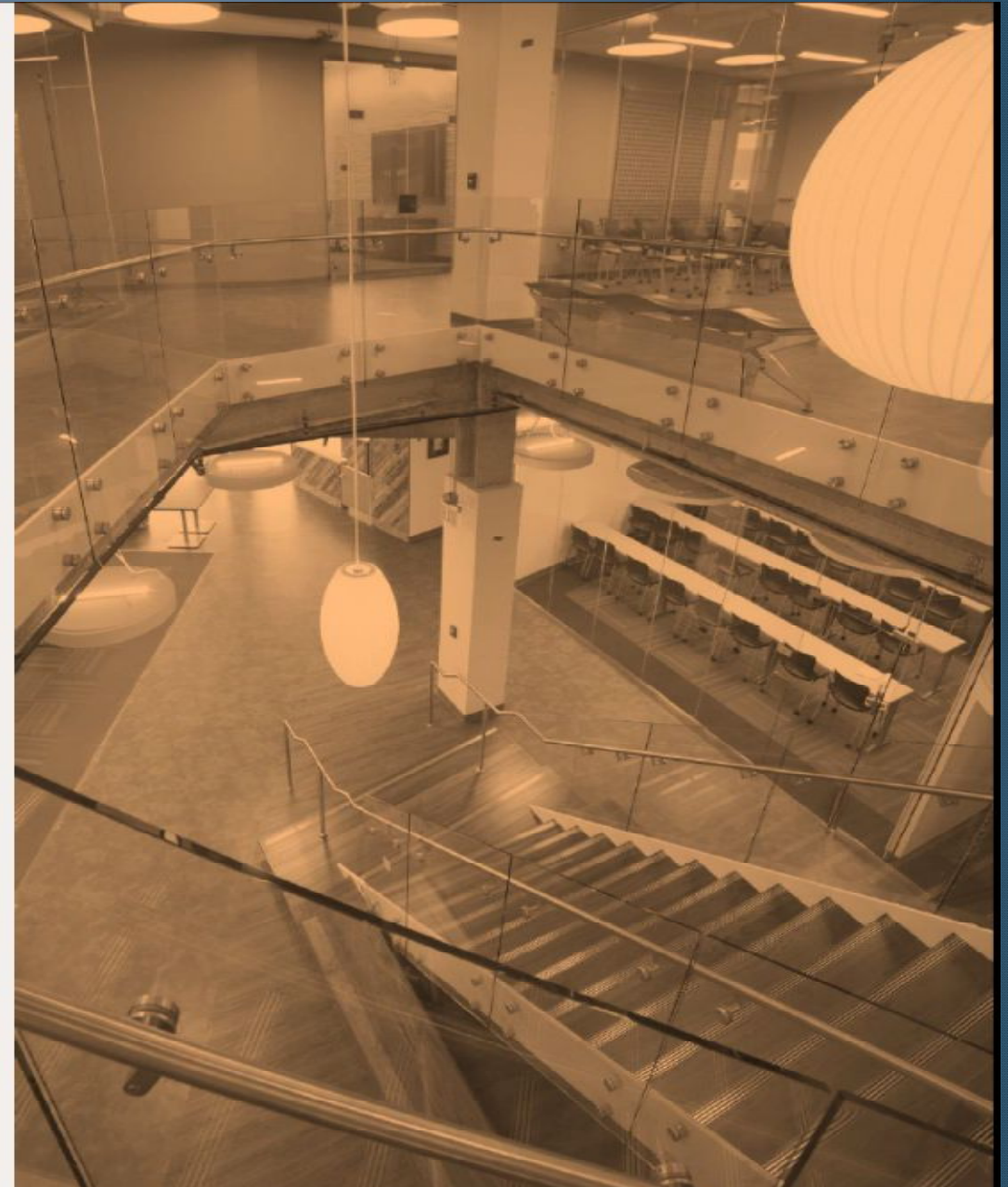
Patient Room Simulation Space



NICU Simulation Space



Emergency Transport Simulation Space





WHAT

## Advancing and Reimagining Simulation

### *How can OSF use simulation beyond education to transform health care?*

OSF has committed to leading the development and use of simulation technology and services in health care. Innovation in simulation can push the boundaries of education, training, and research, but also teach doctors empathy and add to our understanding of human behavior. Training and education simulation is only the beginning. OSF is leveraging disruptive technology to become a destination for simulation innovation—and in doing so, not only advance its own capabilities, but convert them into valuable products and services for other institutions.

### *Our population and their needs*

Simulation has the power to radically improve the way we deliver care, our ability to cut care costs, and the way we train and develop providers—at OSF and other institutions. Innovation here has the power to not only dramatically change the health care industry, but also create new sources of growth and funding for OSF.

UNIVERSITY OF ILLINOIS  
URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD



SUPPORTING DATA

# 19.1%↑

SIMULATION MARKET CAGR2014–2019

# \$2 BILLION

The estimated medical simulation market (2019)



Simulation in nursing education creates a higher level of knowledge and competence in nursing practice

*"Simulation is a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion"*



New Skills and new partners on our Team

## Revolutionizing partnerships between clinicians and engineers to stimulate advancement of health care

Jump Applied Research for Community Health through Engineering and Simulation (ARCHES) is a collaboration with the University of Illinois at Urbana-Champaign's College of Engineering and College of Medicine at Peoria. Focusing on the technologies and techniques of clinical simulation and its impact on patient care, ARCHES is creating new tools using imaging, health information technology, novel materials and human factors to enhance medical simulation and education.

### IDENTIFYING FALL RISK

*Falls are a leading cause of serious injury and death in the elderly, especially when they are at home alone*

- Collaboration of University of Illinois Colleges of Engineering and Applied Health Sciences (UIUC), Illinois Neurological Institute at OSF HealthCare
- Assess fall risks and predict falls
- Utilizes camera-capture motion data of participants in home environment
- Targeted interventions in an individual's home



### IMPROVING THE PATIENT DISCHARGE PROCESS

*About 20-25% of patients discharged from hospitals are readmitted within 30 days costing roughly \$42 billion per year to insurance providers*

- Most companies are not set up to explore or commercialize things that are new to the world, even if the promise is huge
- Involves the greatest amount of risk and degree of uncertainty
- Delivers the greatest returns when you hit it right
- Comprises a smaller number of initiatives driven by focused resources



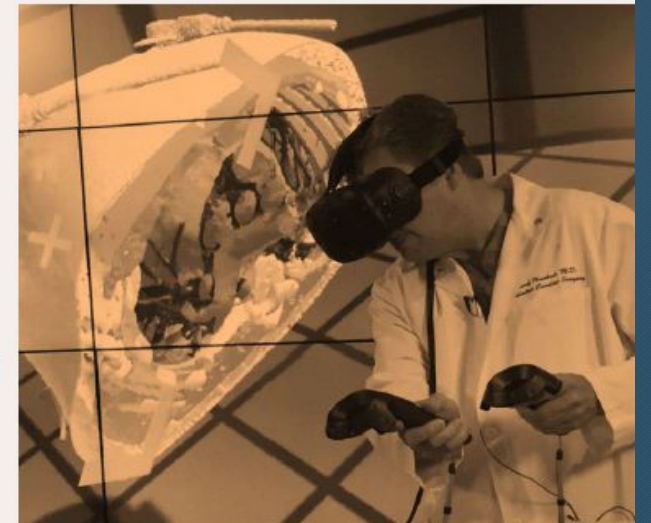
HOW: IMPROVING UNDERSTANDING



## Viewing medical images using immersive and visual technologies

Advanced Imaging and Modeling (AIM) has garnered nationwide attention. AIM began in 2013 when pediatric cardiologist Matthew Bramlet, MD worked with Jump engineers to develop a process for converting two-dimensional images of the heart into 3D-printed replicas for pre-surgical planning. Since the first model that changed the course of a 9-month-old girl's surgery, we now have a team of engineers at Jump and the University of Illinois College of Engineering working to advance diagnostic effectiveness of imaging tests around the world.

Our engineers at Jump have created a prototype program to view 3D images of hearts and other parts of the human anatomy for the HTC Vive, a virtual reality headset.





WHAT

## Address Social Impacts to Provide More for Those with Less

### *How can OSF best serve its most disadvantaged populations?*

The greatest health issue for some members of our community is finding their next meal. When people face daunting obstacles like hunger or homelessness, it's hard to focus on health until there's a costly crisis. Innovation here finds new ways to engage disadvantaged individuals through new business models, care delivery, and / or preventive care. Currently, many existing solutions are available to only certain social classes. Innovation here seeks to remove that barrier, providing effective treatment to all who need care.

### *Our population and their needs*

Disadvantaged individuals—burdened by low income, racial discrimination, language barriers, and other issues—often struggle to get care until extreme situations result in emergency visits. These situations are exacerbated by the lack of affordable preventive care. OSF must understand this population intimately and develop solutions that fit its unique needs and context.

#### SUPPORTING DATA

46%

OF HOUSEHOLDS  
OSF SERVES ARE  
LOW-INCOME

1.4 MILLION

non-profits working on independent solutions to major social problems, often working at odds with one another and increasing the perceived resources required to make meaningful progress.

50%

of a community's health is attributed to social, economic, and physical environment factors

22%

OF OSF  
HOUSEHOLDS  
ARE BELOW THE  
POVERTY LINE



WHAT

## Aging in Place (and with Grace)

### *How can OSF empower elderly patients and their caregivers?*

Tapping into new technologies, communities, and services can afford the elderly more flexibility and choice. For example, distributed sensors in the home and analytics can shift the focus from institution-based aging to community-supported aging that largely happens in the individual's home. Innovation here avoids unnecessary hospitalization of the elderly by providing them services and tools to make the right choices for themselves. It will transform how end-of-life planning, geriatrics, home care, and assisted living are addressed and delivered.

## *Our population and their needs*

The elderly are the fastest growing population that OSF serves, yet where and how they wish to spend their lives often takes a back seat to budget, clinical, and caregiver limitations. Their families are often not effectively engaged in care decisions, particularly end-of-life planning. This population needs new options and models that fit into their lives, rather than asking them to disrupt where and how they live.

SUPPORTING DATA

BY 2020, THE 65+ POPULATION THAT OSF SERVES IS EXPECTED TO GROW

**13.6% ↑**

IN ALL REGIONS

*Many parts of the country—especially counties in the rural Midwest—are “aging in place” because disproportionate shares of young people have moved elsewhere*

  
**87%**

Of adults age 65+ want to stay in their current home and community as they age

**50%**

of all people in a nursing home are there because of social deficits, not physical deficits



WHAT

## Radical Access to Care

*How can OSF radically democratize access to care, regardless of setting or context?*

Radical Access includes care through mobile delivery, community groups, and peer-to-peer relationships. It seeks to increase care for the population, provide Mission Partners more flexibility, and / or expand the footprint of OSF in rural areas. Innovation here may also focus on building communities that foster health care beyond the hospital—at school, home, and work—making a healthy community everyone's priority. OSF will initially focus efforts here on its rural population; as it makes progress, it will consider expanding its focus to other segments.

## *Our population and their needs*

The significant rural population OSF serves can struggle to access care conveniently or effectively. Other populations, like Millennials, want health care to fit their lives in ways other generations never expected. Innovation here will make it dramatically easier and more elegant for Mission Partners to connect with their community, whenever and wherever they are.

SUPPORTING DATA

**230,000**

doctor's visits could be avoided if patients 15+ with sore throats used a home strep test

RURAL COMMUNITIES CONTAIN 20% OF THE POPULATION BUT ONLY

**09%** of practicing physicians

**12%** of pharmacists

2012-2013

**50%**

market growth rate of at-home diagnostics (e.g., heart rate monitors, A1C test kits, HIV tests)



**19%**

of smartphone owners have downloaded an app specifically to track or manage health

## Partnering for Innovation

OSF identifies partners with opportunities that will improve patient outcomes, enhance patient experience, and reduce the cost of health care. We believe in not only investing financially, but also strategically through comprehensive collaboration.

The OSF Innovation Partnership Portfolio

### AVIA Partners

binaryfountain

HealthLoop

SimplePay™

SilverCloud

tonic

WiserCare

### Matter Partners

innoblative™

Cancer IQ

regroup  
THERAPY

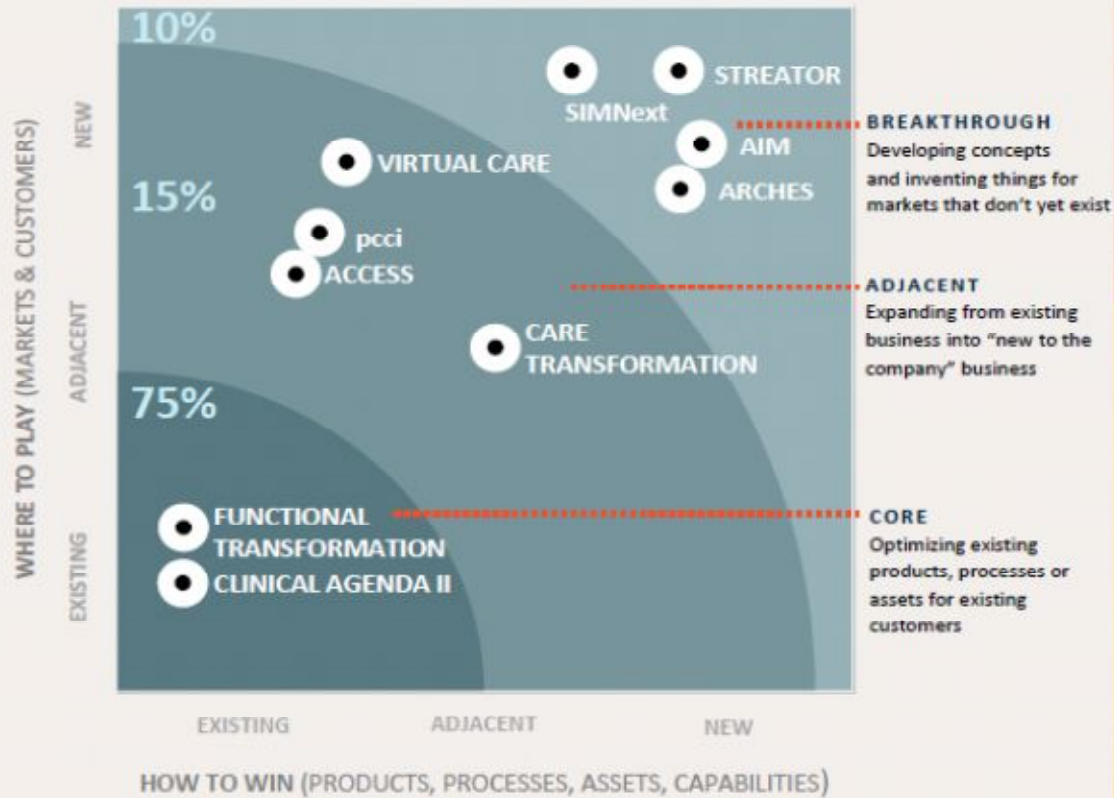
SAFESTART  
Start Surgery. Safely.





WHAT

# OSF Innovation Current Portfolio



CORE: IMPROVING THE KNOWN

*Optimizing existing products and services for existing patients*

- What we feel most comfortable doing
- Most consistent and predictable—we're experts in the space
- Lower returns than transformational innovation
- Driven widely across OSF by a wide range of Mission Partners

BREAKTHROUGH: INVENTING THE NEW

*Developing breakthroughs and inventing things for markets that don't yet exist*

- Most companies are not set up to explore or commercialize things that are new to the world, even if the promise is huge
- Involves the greatest amount of risk and degree of uncertainty
- Delivers the greatest returns when you hit it right
- Comprises a smaller number of initiatives driven by focused resources

HOW: INTEGRATING ANALYTICS

## Predicting the Future

*The dilemma is not about understanding the population risk, but identifying WHO is at risk*

The rapid deployment of EPIC coupled with the strategic investments in Analytics, specifically data science/predictive modeling and data warehousing, have built an industry leading ecosystem for advanced analytics.

## Improving the Lives of Those We Serve

What if we knew you were predisposed to be readmitted to the hospital in less than 30-days and could put preventative solutions in place for you before you left the hospital the first time? Through our OSF Healthcare Analytics, we are working on predictive 30-day Readmission models along with models for Sepsis, COPD, Cardiovascular Bundles and more. We are advancing innovation through data to ensure healthier communities.

SUPPORTING DATA

HIGH RISK PATIENTS PRODUCE

**\$22M ↑**

COST THAN THOSE IDENTIFIED VIA  
CURRENT HCC MODEL



The OSF Utilization Model allows for a unified risk score for all 350,000+ medical group patients

*Risk stratification, whether through our Readmission Model, ACO Cost model or OSFMG Utilization model, allows us to categorize patients by risk in order to align resources. By doing so, we can most effectively manage a populations risk, while simultaneously maintain appropriate stewardship of our resources.*

**\$2M**

In bedside nurse time was shifted from data collection from the readmission model back to patient care



# Investing in Innovation

## OSF Ventures

OSF Ventures invests financially and operationally in opportunities that will improve patient outcomes, enhance patient experience, and reduce the cost of health care. We believe in not only investing financially, but also strategically through comprehensive collaboration.

### The OSF Ventures Portfolio





HOW

## How we will gather ideas and innovate together

Innovation at OSF unfolds in interconnected and mutually-reinforcing parts. Each part operates under a common vision and focus, integrates a diverse set of Mission Partners and external partners, and has distinct activities and processes to achieve and scale success across the system.



CONNECTING NURSES  
WITH ENGINEERS TO  
CONVERT IDEAS INTO  
REAL SOLUTIONS

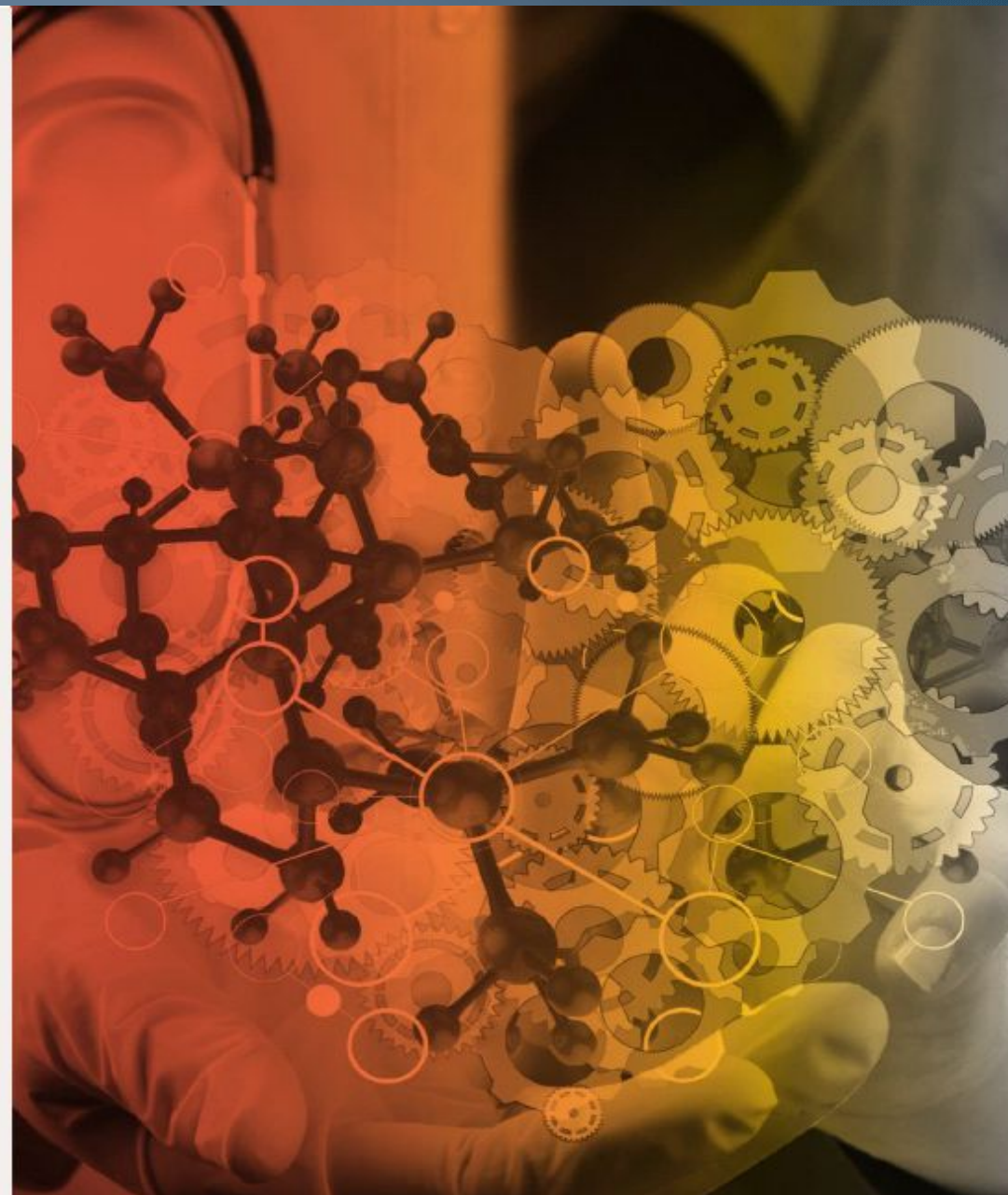
**SPARK**

CRICOTHYROTOMY TRAINER  
3D PRINTED HEAD AND NECK  
SUPPORTING A PIG TRACHEA  
ALLOWING SIMULATION FOR  
ESTABLISHING AN AIRWAY

ENGINEERING INTERNS FROM  
U OF I COLLABORATE TO SOLVE  
TECHNICAL CHALLENGES

The estimated number  
of lives saved  
through medical innovation  
since 1990:  
**56 MILLION**

source: [www.valueofinnovation.org](http://www.valueofinnovation.org)





TOOLS AND TECHNOLOGY SUMMARY

Objective/Purpose	Tool/Technology	Description	Status	Streator	Patient Segment(s)
Gather Patient Input	 OSF Listens	OSF Listens provides a safe, private, online environment for patients to be able to freely share their opinions and input on various health care related topics	Implemented and production ready		ALL
Chronic Care Management	 care innovations an Intel-GE company	Remote patient monitoring technology to better manage the health of patients with chronic conditions. The telehealth technology used to deploy remote care management is expected to assist in reducing costs by better engaging and educating patients, promoting adherence to treatment and early intervention to keep readmissions at a minimum	Care Innovations is currently in use at OSF for remote patient management of CHF patients; we are expecting to extend this to Diabetes and COPD management as part of the Streatotr future state care model		Perpetual Complex Critical
Virtual Visits	 OSF OnCall virtual urgent care, 24/7	OSF OnCall provides 24/7 urgent care services over the Internet or phone. You can receive a diagnosis and treatment for a variety of conditions without having to leave your home or office.	Implemented and production ready		Occasional Elective Perpetual
Behavioral Health	 regroup THERAPY	ReGroup Therapy provides an easy, secure, online platform for licensed mental health professionals to offer online therapy sessions.	Implementing as part of the six Care Transformation pilot sites		Perpetual Complex Critical
Patient Portal	 OSF MyChart	OSF myHealth provides a web based connection to your doctor's office, allowing a patient to schedule appointments, request prescription refills, review their health history and more—online, any time!	Implemented and production ready		ALL
Reputation Management	 binaryfountain	Facilitates us in analyzing and understanding our online presence so we can prioritize and respond to feedback and promote positive experiences. Allows us to improve our transparency and build trust by showcasing authentic patient reviews and turning our performance data into social & web based content-turn surveys into star ratings, etc.	Demos and ongoing discussions have been occurring internally; still trying to vet		ALL
Improve Patient Provided Data Collection	 tonic	Medical data collection platform used to drive better engagement while also improving access to the information needed to complete patient intake, patient screening, academic research, clinical trials and evaluate patient satisfaction, patient reported outcomes, etc.	Demos and ongoing discussions have been occurring internally; will likely be used to assist with capturing real time patient experience information		Elective Perpetual Complex Critical
Social Health Information Exchange	 pcci	PCCI Iris is a shared information exchange (IEP) for healthcare organizations, social service agencies and other community resources that are caring for a population of people. Integrating information from social and healthcare organizations will provide quality and safe healthcare for the broadest range of citizens in our communities. The IEP will provide a higher, more consistent level of healthcare to even the most vulnerable populations across the community, resulting in a more efficient, cost-effective use of resources and, most importantly, lives saved.	Initial demos completed in April. Demonstrations for a broader OSF stakeholder group are scheduled for June 7th. An SBAR has been submitted to IT for initial investment in FY17.		ALL
Treatment Options	 WiserCare	Online tool that helps guide people to the best treatment options that meet their own needs and preferences; WiserCare provides a platform that patients can use to share information with their care team electronically. Having this communication platform may increase the likelihood they will discuss those things that can sometimes be uncomfortable to talk about in person and therefore are many times avoided.			Complex Critical

