

Technology in Medicine: New Frontiers Leading to Better Care

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Disclosures



- **Research/Grants:** Clayton Foundation; Merck & Co., Inc.; National Institutes of Health (NIH); National Science Foundation (NSF); Texas Alzheimer's Research and Care Consortium
- **Advisory Board:** Prapela, Inc.

Learning Objective 1

Explore the role of novel biosensors, signal processing algorithms, and user interfaces that will enable clinicians to track and predict the health of individual patients as well as entire populations.

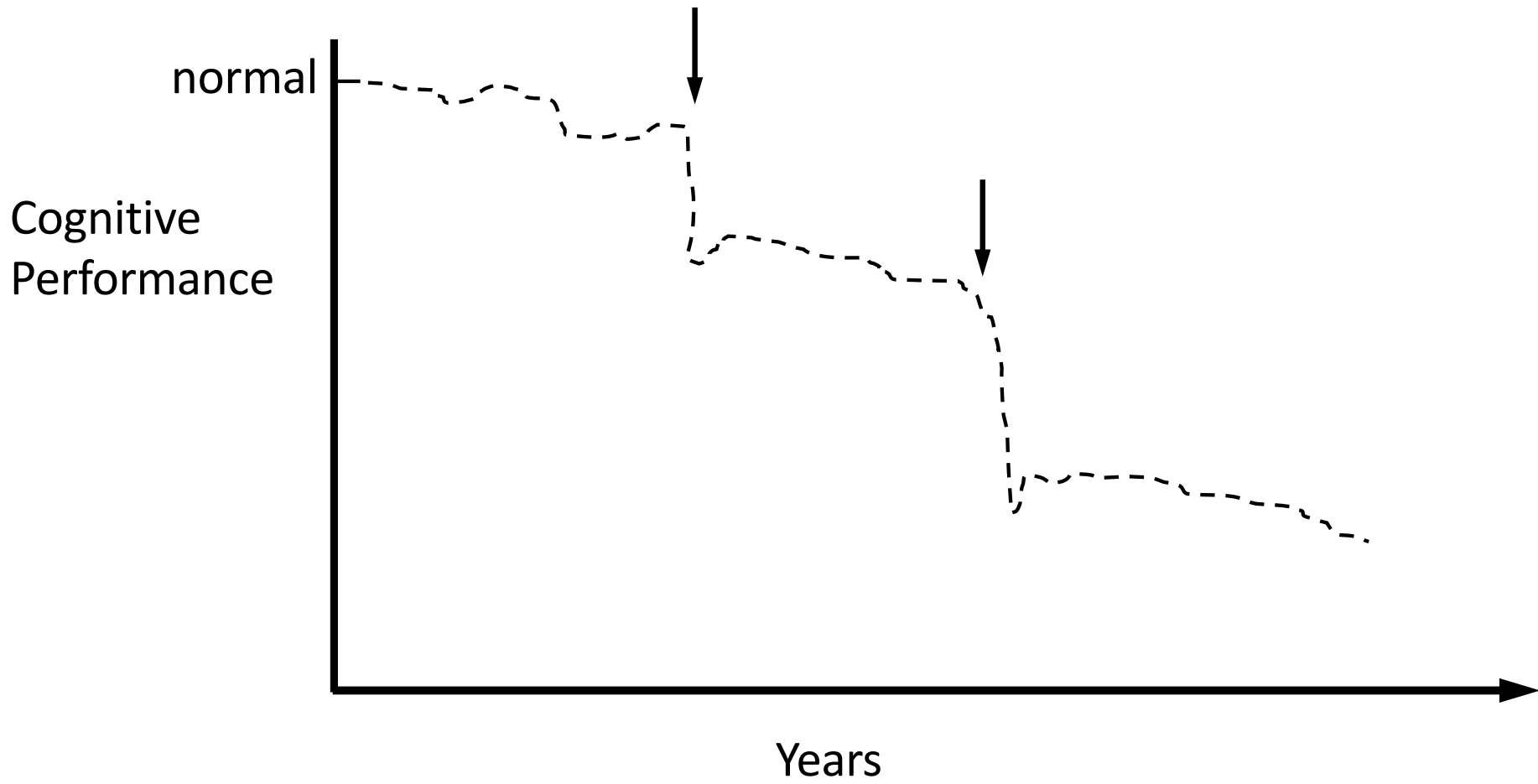


In the New Frontiers break out session we will discuss novel biosensors, signal processing algorithms, and user interfaces that will enable clinicians to track and predict the health of individual patients as well as entire populations.

We will focusing on real-time monitoring, predictive analytics, and interventions with engaged patients and/or caregivers.

75 year old retired schoolteacher is brought to clinic by her son for urgent evaluation of difficulty with memory. Yesterday her neighbor saw her wandering outside fearfully and called 911. EMS found her confused, and found a pot with burning rice on her gas stove. She has a history of type 2 diabetes, hypercholesterolemia, hypertension, hypothyroidism, and sleep apnea. Her son reported that she lives alone and has been having some difficulty maintaining her home and finances and for the past 2 years, but otherwise had been doing very well.

- Diagnostic approach to memory dysfunction
- Natural history of mild cognitive impairment
- How can technology improve diagnosis, monitoring, and treatment?



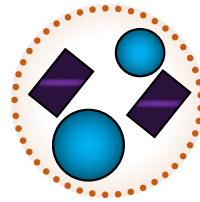
Clinical Hub-and-Spokes

Dell Seton Medical Center at the University of Austin and the Dell Children's Medical Center:

- Neuro ICU
- Epilepsy Monitoring Unit
- Comprehensive Stroke Service
- General Neuro Service
- Geriatric Psychiatry
- Neurosurgery Service
- Dedicated Complex (Robotic) Neurosurgery Suites (Cameras for Training Purposes)
- Pain Service

UT Health Austin Health Transformation Building and Dell Children's Medical Center Clinics:

- IPU's and Hospital Follow-Up
 - Cognitive Impairment
 - Movement Disorders
 - Epilepsy
 - Headache
 - MS/Neuro-immunologic
 - Stroke
 - Bipolar Disorders
 - Neural Recovery.
- Neuro-Diagnostic
 - EMG
 - EEG
 - Autonomic Testing
- Infusion
 - Neuro-immunologic
 - Pharmacologic
 - Chemo-therapeutic
 - Etc.
- Under 24hr Outpatient Monitoring
 - Epilepsy
 - Sleep



.....Hub

Highest-level specialized clinical consultative and direct care-delivery expertise combined with most advanced equipment and facilities

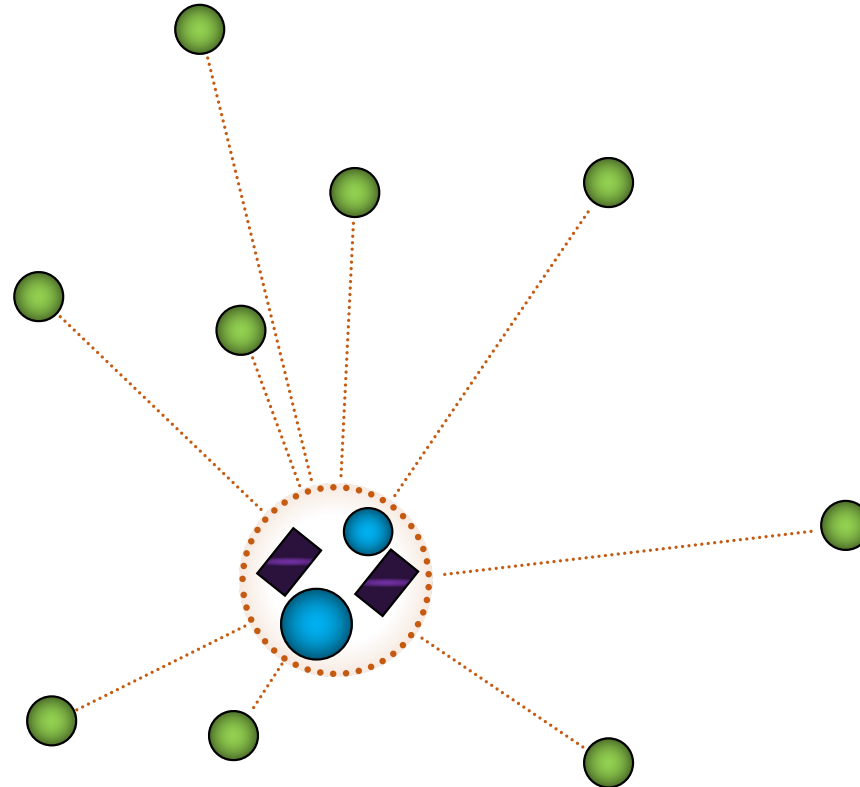
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Tel-neurology-, EMR-, device-connectivity and direct personal interaction and consultations

● Health Facilities and Homes

Community-coverage based, tele-neurology-connected hospital, rehab, extended care, care centers and other community-based facilities and locations

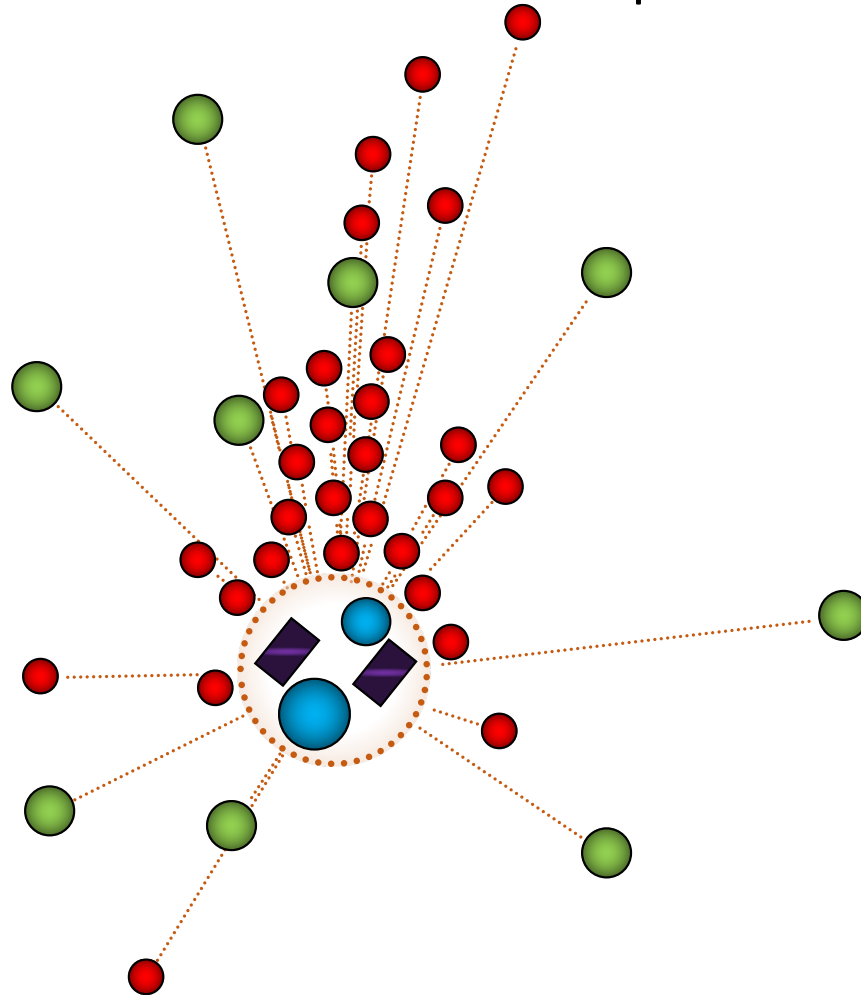
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Clinician Practices
Convenient, community-coverage based, tele-neurology-connected clinical practices and locations delivering standards-driven quality care supported by at-need specialty consultative expertise and non-emergency and critical patient transport services

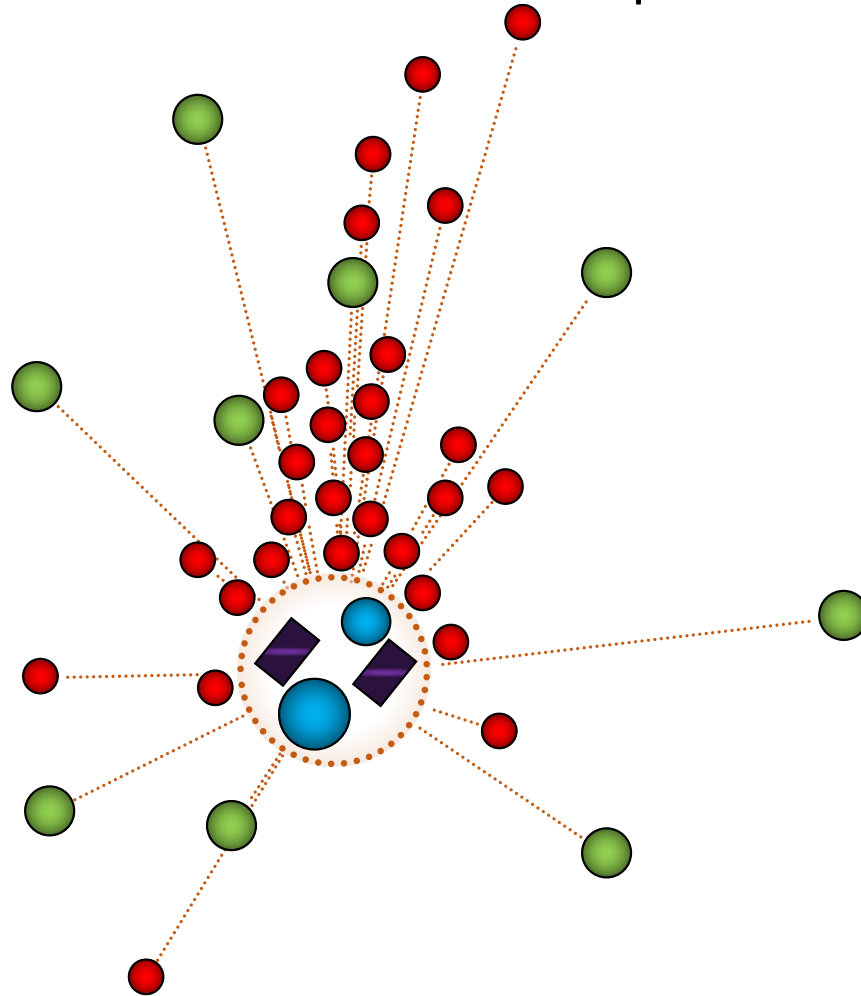
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Clinical Hub-and-Spokes

**Coordinated Care:
Stroke**



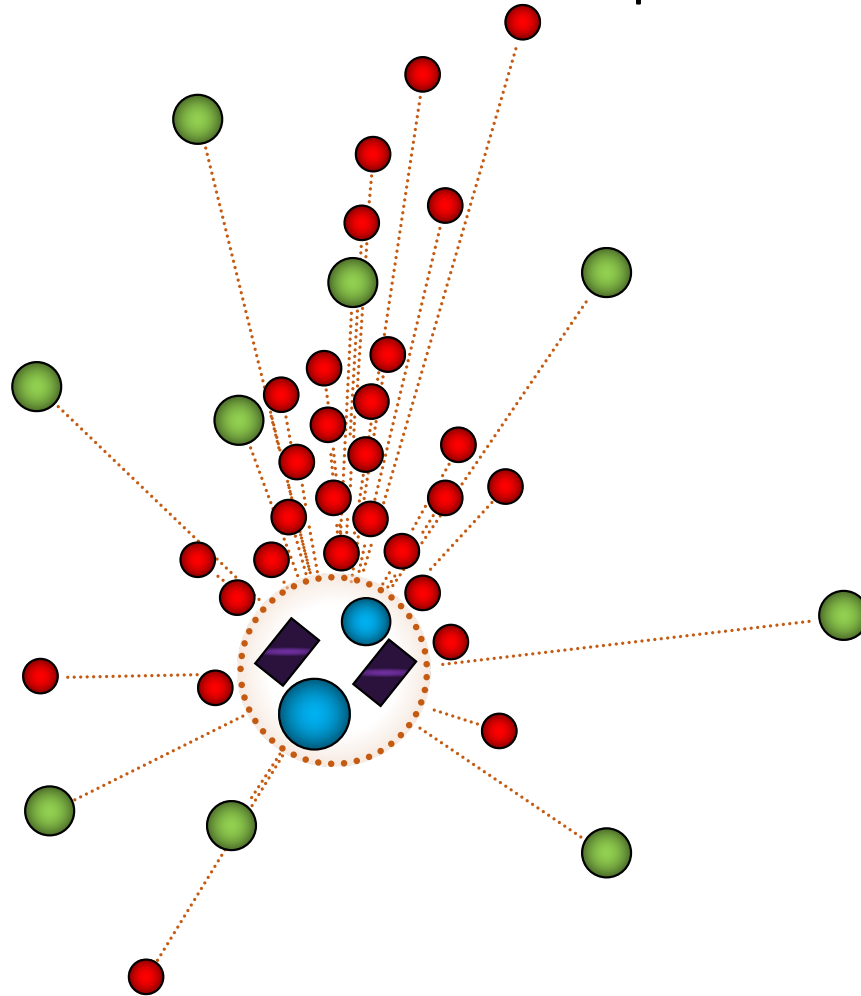
**Advanced Care:
Neurocritical Care**



**Collaborative Care:
Cognitive Impairment**



**Efficient Care:
Consultative Services (Anesthesiology)**



Clinical Hub-and-Spokes

Cognitive Impairment

Coordinated Care:
Stroke



- Connected ambulance alerts HUB that Cognitive Impairment IPU patient will require surgery upon arrival

Outcome: Patient's length of stay is 6 days (rather mean 4 weeks for this high risk group) and she is discharged to outpatient rehab (rather than chronic facility).

Hypothesis: This intervention slows the degenerative process

Collaborative Care:
Cognitive Impairment



- Patient falls and needs health care: ambulance local hospital

- HUB Neurologist consults with community hospital anesthesiologist to use specialized anesthesia and perioperative "Delirium Prevention" protocols



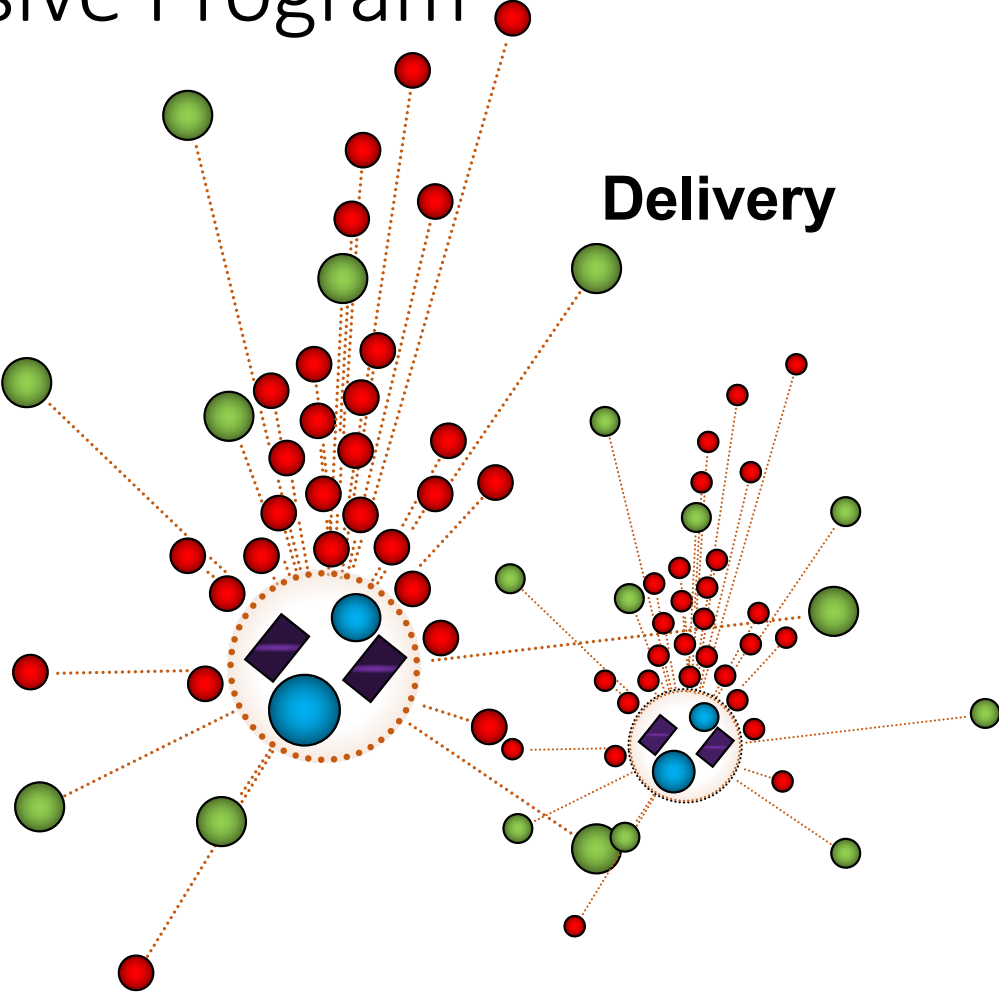
Create technologies and care delivery systems

Enabling persons with cognitive impairment to live independently at home using new interactive technologies

DMS Population Health, Cockrell School of Engineering, Design Institute for Health

Hypothesis: We can halt or reduce progression of mild cognitive impairment to dementia through preventive measures

Comprehensive Program



Comprehensive Program

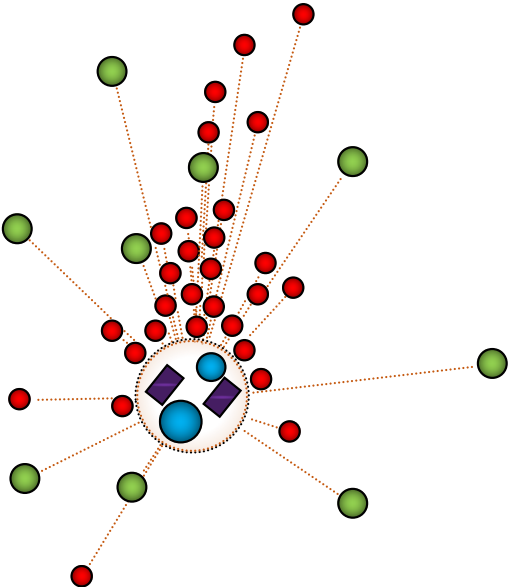
Components

Technology
(Connectivity, etc.)

People
(Expertise)

Process
(Care / Operations)

Delivery



Comprehensive Program

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Technology
(Connectivity, etc.)

People
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Process
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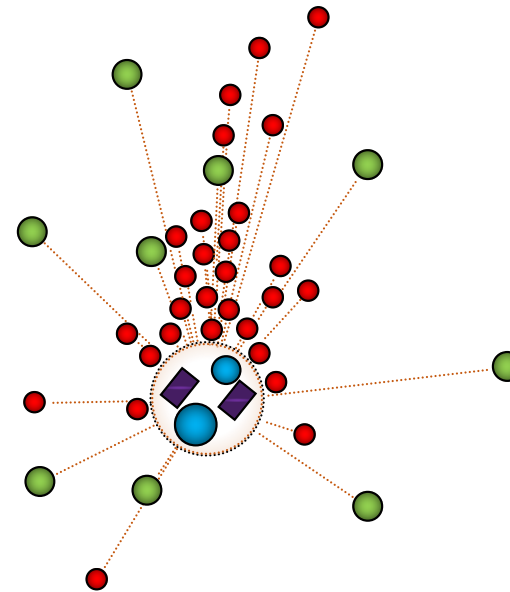
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Specialties

Categories
Movement Disorders
Cognitive Disorders
Headache
Acute and Chronic Pain
Visual Impairment
Vertigo
Seizure Disorder
CSF Disturbances
Brain Tumors
Autonomic Disorders
Sleep Disorders
Neurocritical Care
Cerebrovascular Diseases
Neuroimmune Disorders
Neuromuscular Diseases
Neuroinfectious Diseases
Inherited/Developmental
Neurorehabilitation
Neuropsychiatric

+

Delivery



Comprehensive Program

Prioritization • Plan • Implementation

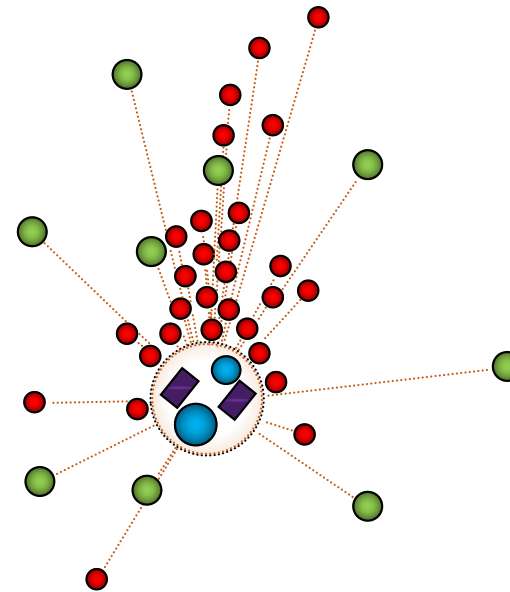
Components + **Specialties** + **Delivery** = **Success**

Technology
(Connectivity, etc.)

People
(Expertise)

Process
(Care / Operations)

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Neuroinfectious Diseases
Inherited/Developmental
Neurorehabilitation
Neuropsychiatric



Outcomes

Volume

Revenue

Questions & Answers



Don't forget to fill out your evaluations to collect your credit.

