



Objectives:

- Obtain standardized outcome measures for stroke, brain injury, and spinal cord injury and enter them into database
- Based on these big data, demonstrate clinical improvements in function with rehabilitation interventions, reduce readmissions, and show the potential cost-savings of rehabilitation therapies across the health system

Background:

- Randomized controlled trials and large-scale evidence-based medicine is exceedingly difficult in PM&R due to the nature of therapy provided, etc
- The Functional Independence Measure (FIM) tool has a well-defined ceiling and floor effect
- Standardized, objective measurements of functional improvement during acute inpatient rehabilitation are needed in the electronic health record (EHR).

Methods:

- IRB approval, then PT, OT, SLP and Neuropsych enter testing values into EHR on admission and discharge (Table 1)
- HERON data request – institutional search discovery tool to search data from the EHR (Figure 1)
- Custom SQL query written to clean the data
- Data stored in RedCap database
- Custom python scripting creates data visualizations, finds trends and tracks changes after intervention

Results:

- A 6-minute walk test increase >300 feet portended a 98.6% chance of **home** discharge,
 - However, 20% of patients with *any* decrease in this test from admission to discharge went to **SNF**
- 97.4% of patients with 10-meter walk test <15 sec at time of discharge went **home**
 - Versus 23% of patients with 10-meter walk test between 15 and 30 sec on admission went to **SNF**

Baseline Outcomes from a Novel Neurorehabilitation Patient-Centered Outcomes Research Database

*Benjamin Westerhaus, MD and Sarah Eickmeyer, MD
Department of Rehabilitation Medicine
at the University of Kansas Medical Center*

Big data may be the cure to the ills of the lack of **Randomized Controlled Trials** in Physical Medicine and Rehabilitation



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Tables & Figures

Outcome Measures			
PT	OT	SLP	Neuropsych
Berg Balance Scale	Action Research Arm Test	Orientation Log	Generalized Anxiety Disorder-7
Timed Up and Go	Fugl-Meyer Assessment	Cognitive Log	Geriatric Depression Scale-15
6 Minute Walk Test	Cognitive Performance Test	Western Aphasia Battery	Patient Health Questionnaire-9
10 Meter Walk Test	Stroke Impact Scale	RBANS	Montreal Cognitive Assessment
Activities-specific Balance Confidence Scale	Brain Injury Visual Assessment Battery for Adults	Scales of Cognitive and Communicative Ability for Neurorehab	Montreal Cognitive Assessment-BLIND
Functional Gait Assessment	QuickDASH		Saint Louis University Mental Status Exam

Table 1. Outcome measures selected by disciplines and tracked in EMR.

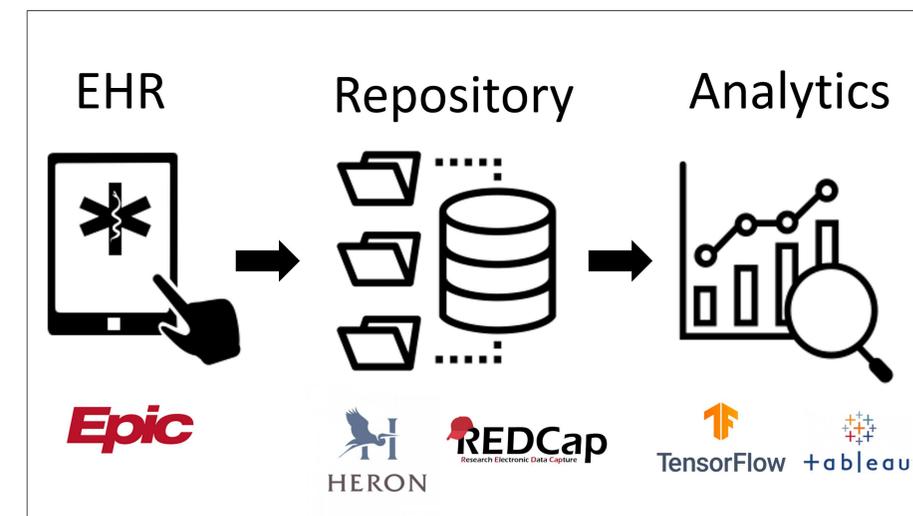


Figure 1. Data flow from EHR to Repository and then to Analytics engine.

Conclusion:

A functional outcomes database can be an excellent source of data to drive decision making and may aid in justifying acute inpatient rehabilitation