

# ReHAP

#### **Rehabilitation Healthcare Analytics Platform**

**Computer Integrated Surgery II** *Spring*, 2015 David West, under the auspices of Dr. Krishnaj Gourab, Michael Cohen, and Gorkem Sevinc

#### Introduction

- ReHAP Rehabilitation Healthcare Analytics Platform
- Web-based decision support system for acute therapy environments
- Leverages EMR data to optimize patient care and therapy team efficiency in the clinic
- Seeks to optimize costs and close demand gap for therapy

400 patient	S
	240 OT or PT sessions needed
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Patient Name	Room/Bed	ОТ	PT	Patient Name	Room/Bed	OT/PT Lag	OT/PT AMPAC	Covering OT/PT	Name	Room/Bed	OT/PT Lag	OT Priority	PT Priority	
				Abbott	483/B	2/1	18/20	Anne Marie Murphy	Aldridge	458/A	3/3	none	OOB assessment	
				Ainsworth	463/A	2/2	21/19	Lauren G Burgess	Ashmore	477/B	1/0	1-2 sessions to clear	none	
				Albers	479/A	6/4	12/14	Anne Marie Murphy						
				Albertson	473/A	4/4	6 / 9	Anne Marie Murphy						
				Aldridge	458/A	3/3	10/6	Anne Marie Murphy						
				Arrington	455/B	3/4	15/17	Anne Marie Murphy						
				Ashe	460/B	4/7	17/17	Lauren G Burgess						
				Ambrose	451/A	2/-	6 / No PT	none						
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Patient Name	Room/Bed	ОТ	PT	Patient Name	Room/Bed	OT/PT Lag	OT/PT AMPAC	Covering OT/PT	Name	Room/Bed	OT/PT Lag	OT Priority	PT Prio	rity
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		тва	тва	Ahrens	514/A	2/2	19/8	none						
Armijo	504/B													
Armijo	504/B		_	Arroyo	508/B	9/9	21 / 21	none						



Therapy Supply/Demand Gap

# The Problem

- Demand for rehabilitation therapy services (RTS) projected to grow by 26-30% in next 10 years.<sup>1,2</sup>
- Cost of RTS to increases by \$7.5B for patients in hospital, and \$32.3B outside of hospital over next 10 years.<sup>3</sup>
- Current decision making is manual inspection of open orders in EMR records in Excel, Epic, Cerner, etc.

# The Solution

- Web app to pull, organize, analyze, electronic medical ulletrecords, then display to therapy teams and managers
- Software implements novel algorithm to categorize and • prioritize patients according to Location, Performance (AMPAC), <u>Visit Lag Time</u>
- Real-time data pipeline: •
  - EMR  $\rightarrow$  Database Schema  $\rightarrow$  App Display

**ReHAP** in action: The front end interface

## **Outcomes and Results**

- MVP built and clinic-ready on snapshot of 125 patient records.
- Successfully implemented algorithm in Rails framework.
- ReHAP will be deployed at JHBMC, NYU hospitals, and other pilot hospitals in summer 2016.

### **Future Work**

- Live testing pending Enterprise Service Bus ESB approval
- Still awaiting Web Services API provision for ESB integration. Will allow ReHAP application to be real time.
- David will be continuing to work on ReHAP after graduation into the summer.

### Lessons Learned

- Plan for dependency delays, especially when dealing ulletwith large institutions and the transfer of sensitive information
- Recognize team resources early. Having a partner goes a long way, especially when writing code.
- I learned Ruby on Rails (started knowing nothing) and  $\bullet$ built my first web-app end-to-end



#### **Publications**

- Physical Therapists: Occupational Outlook Handbook: US Bureau of of Labor 1. Statistics
- Occupational Therapists: Occupational Outlook Handbook: US Bureau of of Labor 2. **Statistics**
- Lord, Robert K., Christopher R. Mayhew, Radha Korupolu, Earl C. Mantheiy, Michael 3. A. Friedman, Jeffrey B. Palmer, and Dale M. Needham. "ICU Early Physical Rehabilitation Programs." Critical Care Medicine 41.3 (2013): 717-24. Web.

#### Credits

- ReHAP Application was designed and built by David West.
- David leveraged MATLAB program built by Dr. Krishnaj • Gourab

### **Support by and Acknowledgements**

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