

# ReHAP

## Rehabilitation Healthcare Analytics Platform

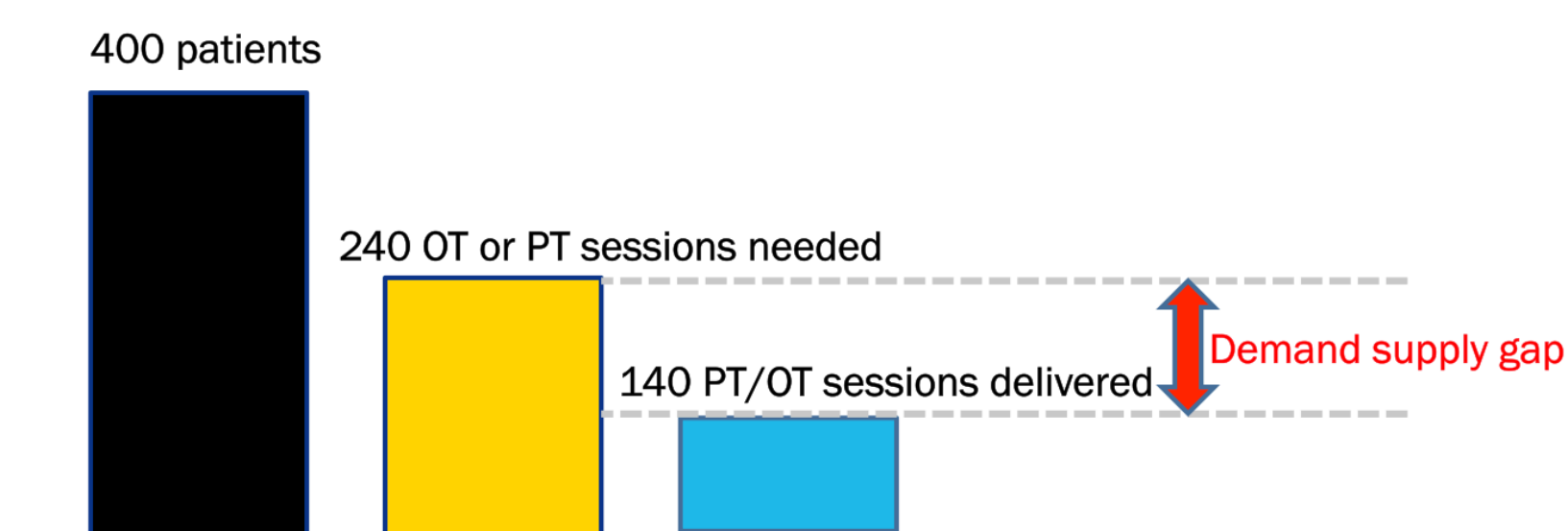
Computer Integrated Surgery II

Spring, 2015

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### 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



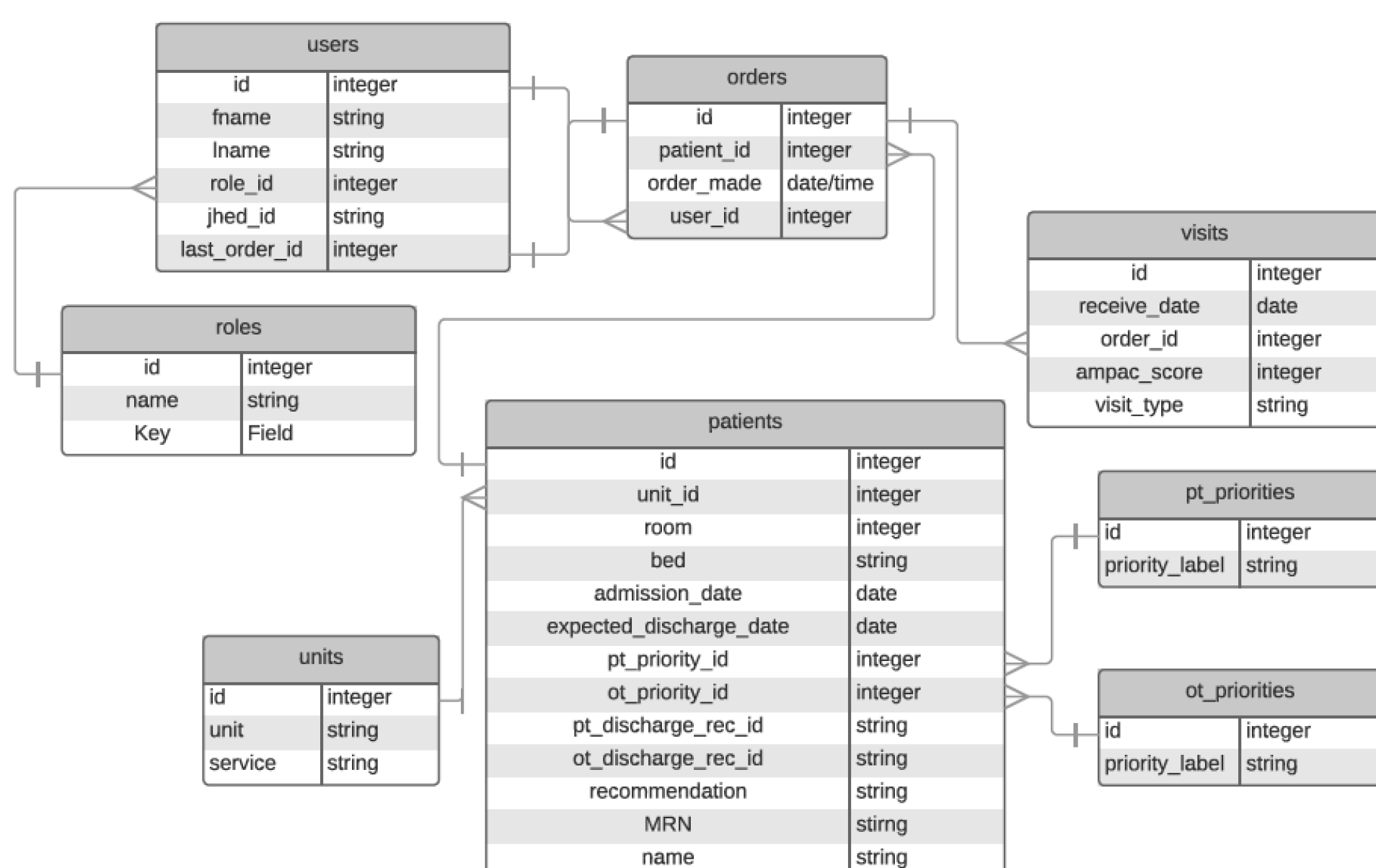
Therapy Supply/Demand Gap

### 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 increase 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.

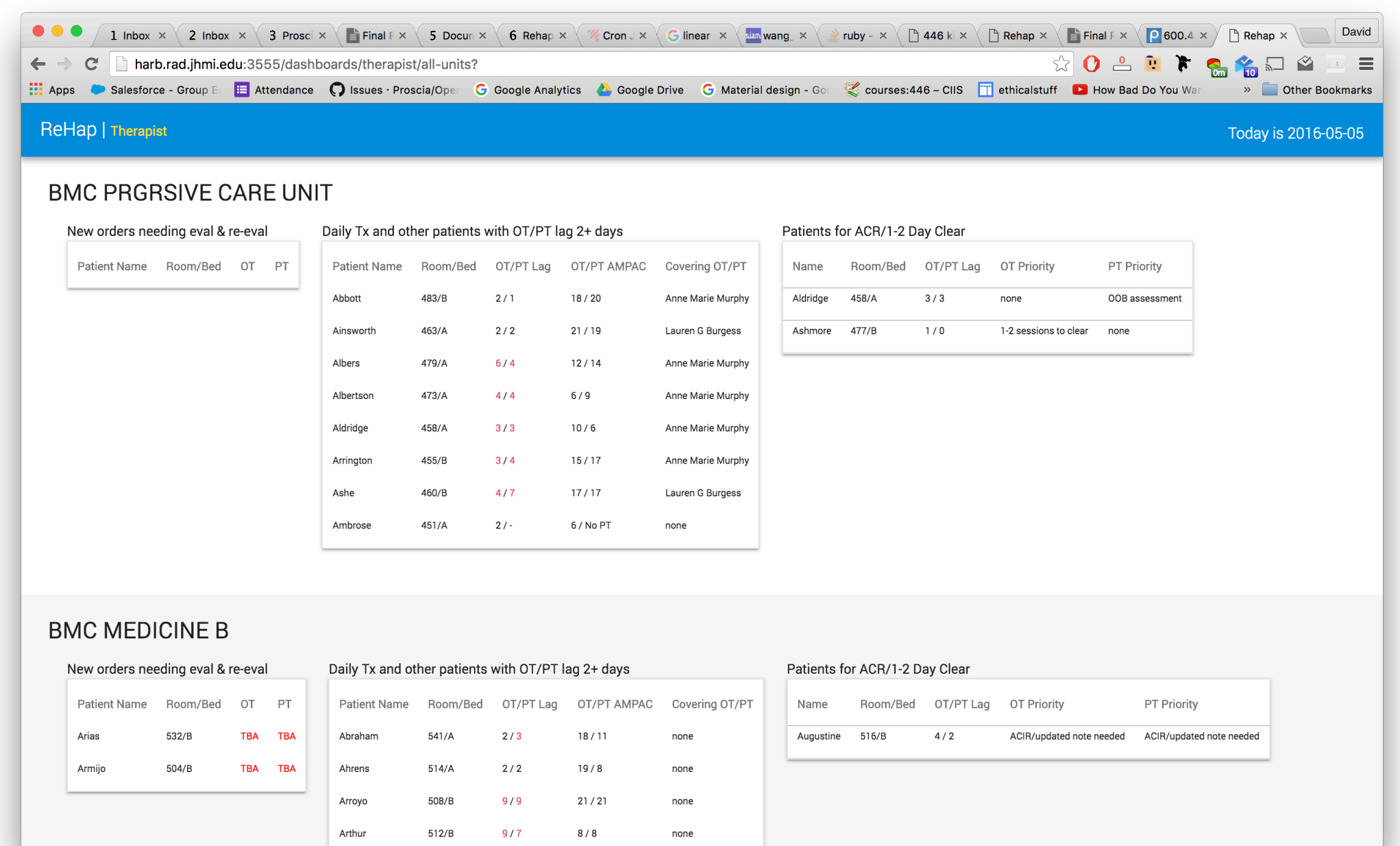
### The Solution

- Web app to pull, organize, analyze, electronic medical records, then display to therapy teams and managers
- Software implements novel algorithm to categorize and prioritize patients according to Location, Performance (AMPAC), Visit Lag Time
- Real-time data pipeline:
  - EMR → Database Schema → App Display



### Publications

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



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 with 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 built my first web-app end-to-end

### Credits

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

### Support by and Acknowledgements

- Thank you to the **therapy teams at Johns Hopkins Bayview** allowing me to shadow you and for your support on this project.
- Thank you to the **Johns Hopkins Technology Innovation Center**.
- Major thanks to **Michael Cohen** for taking valuable time to help a budding Rails developer
- Very special "Thank You" to **Ruben Pagkatipunan** with whom is a pleasure working.

