

# Community Acquired Pneumonia Clinical Stability Indicator

Georgia Institute of Technology  
CS 6440 - Intro to Health Informatics  
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Mentor  
Dr. Lorenzo Di Francesco

Team No Pressure  
Kishan Bhoopalam - PM  
Michael Fahey - QA  
Byron Ruth - Developer  
Raj Vansia - Developer

Video: <https://youtu.be/6X0kRP-fmus>

# Team Members and Contributions

## Kishan Bhoopalam

- Project Management
- Created data generation model for CDS

## Byron Ruth

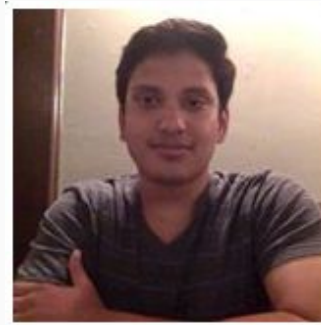
- Backend Developer
- Created FHIR integrations

## Raj Vansia

- Front-end developer
- Created data-binding model to UI

## Mike Fahey

- Quality Assurance
- Maintained documentation



Kishan Bhoopalam



Byron Ruth



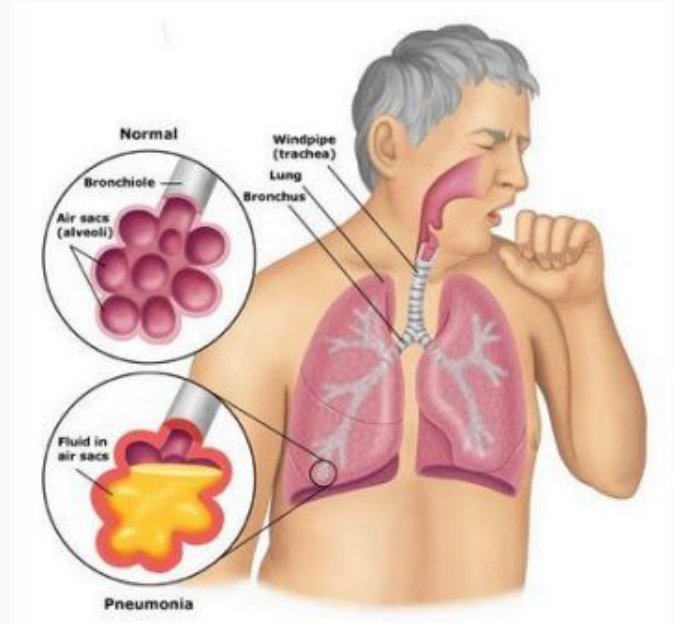
Raj Vansia



Mike Fahey

# Project Goals and Objectives

- Objective of this project was to build a clinical decision support system
- System assists physicians in determining if a patient with clinically acquired pneumonia has shown enough improvement in their health vitals to be dismissed from the hospital
- A patient may be deemed “clinically stable” if they have normal mentation, normal vital signs and the ability to maintain oral intake for a 24 hour period
- Our system measures various health metrics in 24 hour time frames to determine if patient is clinically stable
- Early discharge of patients may reduce costs to both the health system and patient



# Project Successes

- Overcame initial challenges with data acquisition
- Created rules-based model to completely address the needs of the project
- UI designed based on considerable feedback from mentor and is built to a physician's need
- System successfully demonstrated FHIR functionality and can extract patient data from a FHIR server
- "FHIR applications for physicians really help them in their clinical workflow utilizing alerts to help them not forget and drop the ball. This is an important project because it will take the EHR to the next level where we're getting the computer to do analytical work for us that we otherwise wouldn't take on." - Dr. Di Francesco.



# Project Status and Project Deployment

- Completed development and user testing
- Functional application that fulfills project requirements
- Project source code and documentation hosted on GitHub
- Pulls four images from Docker Hub and launches four containers.
  - Frontend
  - Backend
  - FHIR server
  - Postgres
- Frontend accessible in web browser

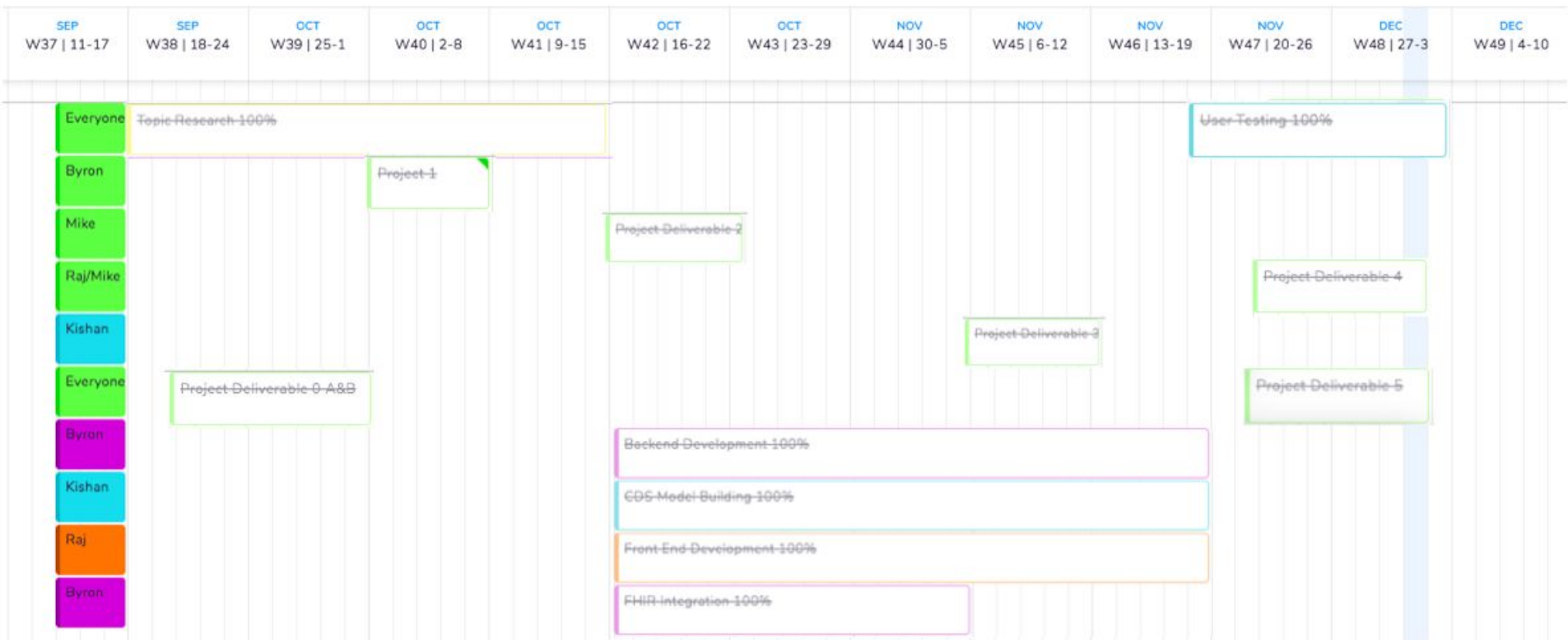


# Future Plans, Research and Opportunities

- Integrate with EHR to support EHR notifications
- Individual user accounts for customized patient list
- Live chart tracking with visuals
- Discharge warnings
- Using medications as a search criteria
- Creating second prompt - Text or SMS message to physician
- Closed loop physician has to do something with that make sure physician responds



# Gantt Chart



# Project Screenshot and Demonstration

## CAP Clinical Stability Predictor

Amy V Shaw DOB: 2007-03-20 MRN: 12081332 Clinically Not Stable					x
110/63 mmHg BP	81 HR	34 RR	38 c Temp	100% SpO2	
Length of Stay: 4 days					
Robert Smith DOB: 1998-05-20 MRN: 21903927 Clinically Stable					x
113/75 mmHg BP	72 HR	21 RR	38 c Temp	100% SpO2	
Length of Stay: 5 days					
Jon Doe DOB: 2001-01-13 MRN: 50239183 Clinically Not Stable					x
122/69 mmHg BP	102 HR	40 RR	39 c Temp	100% SpO2	
Length of Stay: 1 day					



# Thank you!

## References

- “Next Steps” image -  
<https://hermentorcenter.com/2012/02/29/more-about-teens-and-substance-abuse/next-steps-old-wooden-sign/>
- “Update” image -  
<http://blogs.adobe.com/presenter/2013/03/check-out-the-exciting-new-features-in-adobe-presenter-8-update.html>
- “CAP Patient” image -  
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- “Victory” image -  
<https://victoryforwomen.org/sites/default/files/victory.jpg>
- “Future” image -  
<http://studenthousingmatters.com/wp-content/uploads/2015/06/Future-Planning.jpg>