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# Exploring Electronic Health Records

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# Outline

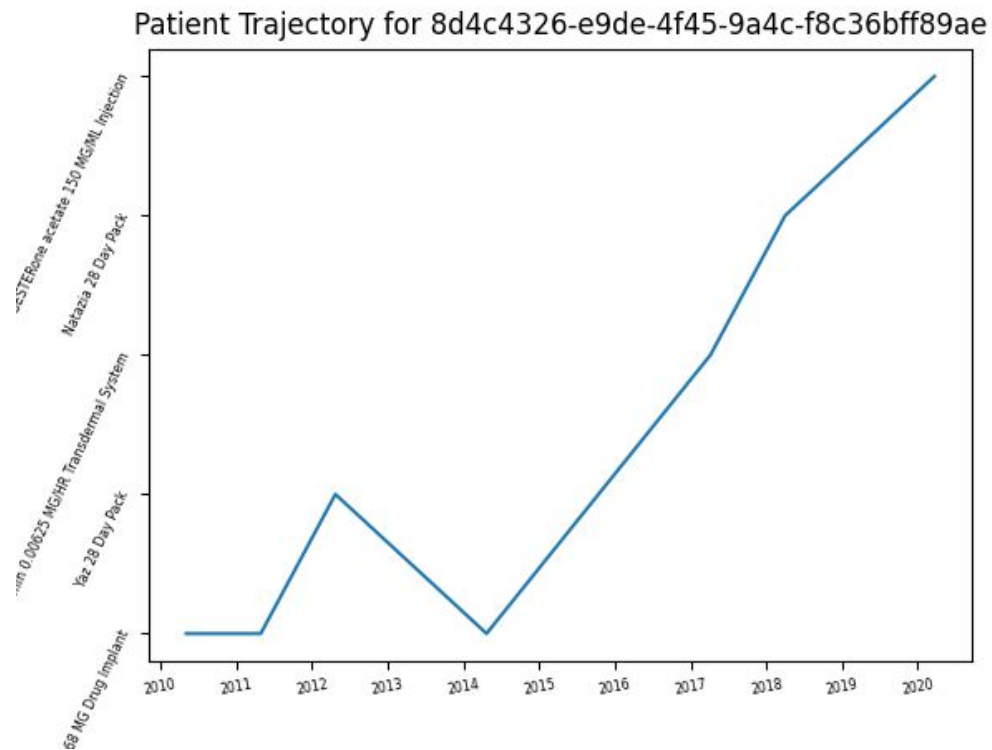
- **Background of EHR data**
- **Patient Trajectory**
- **Top Three Conditions**
- **Treatment Patterns**
- **Common Pattern Characteristics**
- **Conclusion slide**

## Background of EHR data

- Electronic health records (EHRs) have become a critical part of modern healthcare, allowing healthcare providers to easily access and share patient information to provide more efficient and effective care.
- However, using real patient data for research and analysis purposes can present ethical and legal challenges, and can also compromise patient privacy
  - Address these issues, Synthea was developed as a software mechanism for generating synthetic patients and their EHRs.
- we will explore the top three most common conditions, treatment patterns for these conditions, and other common pattern characteristics found in Synthea-generated synthetic EHR data
- We use medication.csv data to perform analysis.
- Patient wise pattern analysis has been done

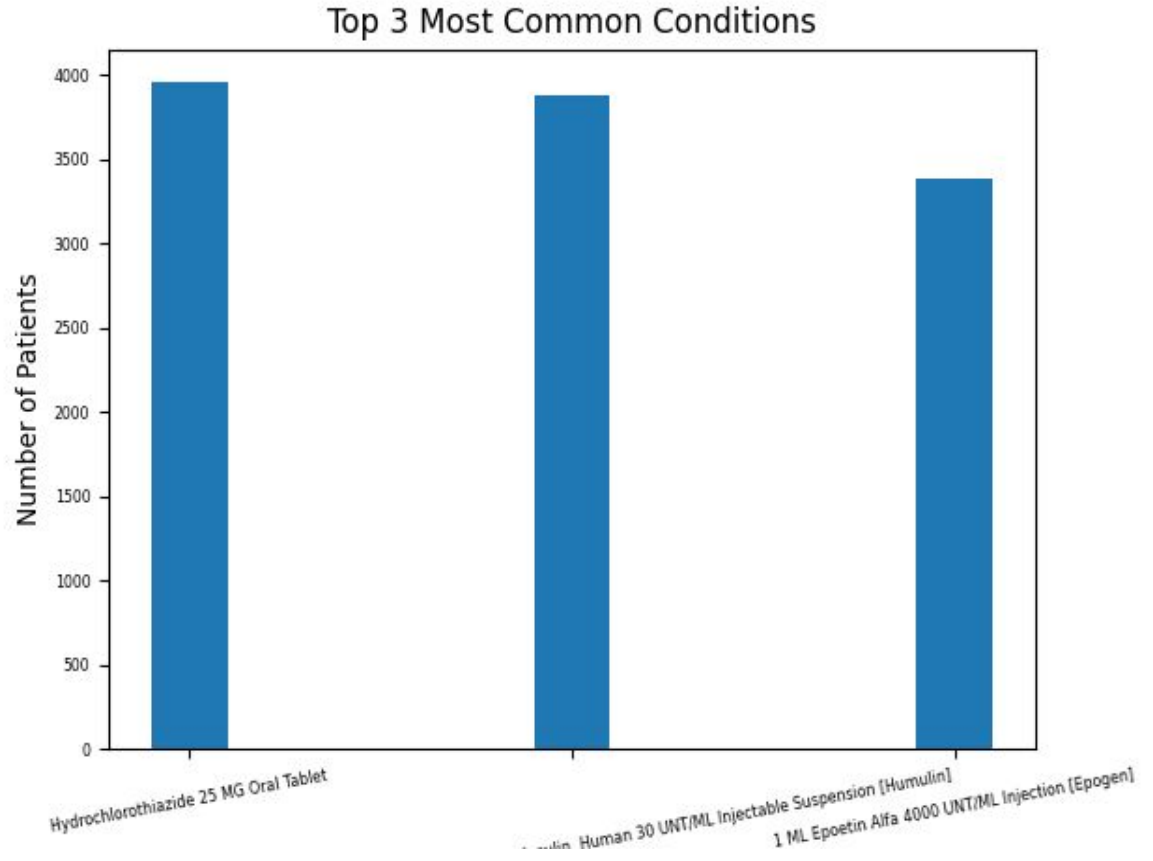
# Patient Trajectory

We show a visualization of a single patient trajectory as she transitions through the medical care system over time



## Top Three Conditions

We Identify and present the top three most common conditions in the synthetic EHR data. Use a bar chart or other appropriate visualization to show the frequency of these conditions and discuss the implications of these findings for healthcare providers

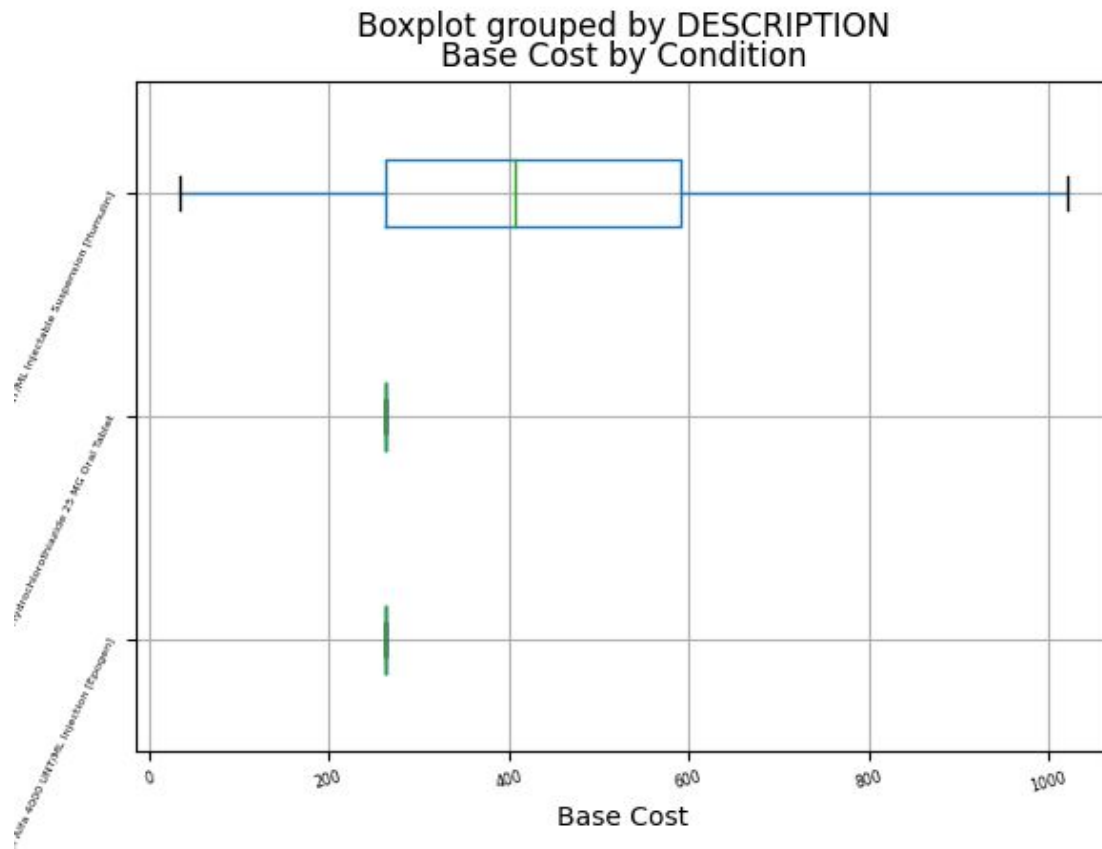


## Treatment Patterns

Explore similarities in how the three most common conditions are treated.

We showcase examples using boxplots or other appropriate visualizations to compare the base cost of treatments for each condition.

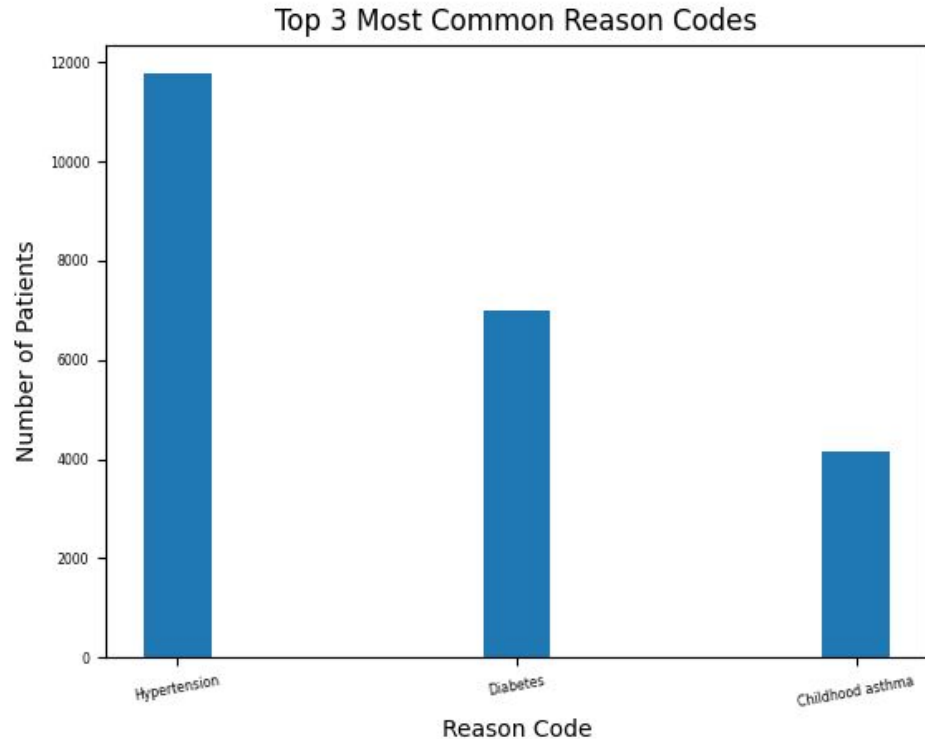
Discuss the implications of these findings for healthcare providers and how they can use this information to improve patient care.



## Common Pattern Characteristics

Discuss other common pattern characteristics that can be found for the three groups of conditions.

Use a bar chart or other appropriate visualization to show the frequency of the top three most common reason codes and discuss how this information can be used to improve patient outcomes.



# Conclusion

- Our analysis of synthetic electronic health records has provided valuable insights into patient trajectories and treatment patterns for the top three most common conditions. By analyzing synthetic patient data, we were able to identify patterns and characteristics that can inform healthcare decision-making and improve patient outcomes.
- Our findings highlight the importance of analyzing patient data to improve healthcare outcomes, and underscore the value of using synthetic EHR data for healthcare research and analysis. Based on our analysis, we recommend that healthcare providers consider the most common conditions and their associated treatment patterns when making clinical decisions, and that they continue to monitor patient outcomes to improve care quality.



# Three Questions

1. Based on medical history, demographic data, and other factors, can machine learning predict hospital readmission for individuals with particular conditions? This may assist healthcare practitioners identify individuals who may require more support and care to avoid readmission and enhance outcomes.
2. Can we utilize machine learning to find trends in pharmaceutical side effects and adverse drug responses for diverse illnesses and populations and create individualized prescription regimens to reduce them? This may improve patient outcomes and lower healthcare expenditures associated with addressing these consequences.
3. Can we utilize machine learning to identify people at risk for mental health issues based on their medical history, demographic data, and other factors and devise individualized strategies to prevent or treat them? This may enhance patient outcomes and lower the social cost of mental illness.



**Thank You!**  
**Questions?**