# MVP - Potential Improvements

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Improvements at 2 levels:

- Data
- Deep Learning Models

## I. DATA

1. Feature Engineering: Consider whether there are additional features we can engineer from the data that might help the model. Sometimes, domain-specific feature engineering can significantly improve model performance.
2. More Data: Consider comorbidities like
   - emphysema
   - asthma
   - pneumonia
   - COPD
   - pulmonary edema
   - bronchitis
   - cystic fibrosis

## II. DEEP LEARNING MODELS

1. Reducing Model Complexity: Our model is quite deep and wide. We can try to reduce the number of LSTM layers and/or the number of neurons in each layer.
2. Regularization: We are already using dropout, which is a form of regularization. We can experiment with different dropout rates or try other regularization techniques like L1 or L2 regularization.
3. Batch Size: Experimenting with different batch sizes during training. Smaller batch sizes can sometimes help the model to generalize better.
4. Hyperparameter Tuning: Tuning hyperparameters such as the number of LSTM units, the activation function, the optimizer, and the dropout rate. We can consider using techniques like Grid Search.
5. Ensemble Models: We can try ensembling multiple models, which can often lead to better performance.