## Step 1: Problem Identification and Scope [Week 2]

In this step, your primary goal is to define the problem you want to solve, understanding the current state, and envisioning the ideal state once the AI solution is implemented. Consider the following:

* **Problem Definition**
  + We wish to solve the issue of congestion and long wait periods in the Emergency Department of hospitals due to cough and lung issues.
  + Urgent care wait times can exceed 24 hours before seeing a doctor due to congestion in the health care system. Due to this congestion, doctors and nurses are overworked and may overlook certain conditions or health issues. Patients are also being exposed to different illnesses and viruses as they are being exposed for long durations of time.
  + Urgent care wait times are growing. Wait times can exceed 24 hours due to congestion in the health system. The ideal state would be to decrease this waiting time to 2 hours.
* **Target Audience**
  + Patients and healthcare professionals would greatly benefit from this AI solution as waiting and processing times would diminish greatly.
  + All hospitals and medical clinics.
* **Scope and Constraints**
  + Lung x-rays, symptoms and lung sounds.
  + The challenges we may face are lung sounds that may indicate a heart issue or x-rays that could indicate a greater health issue than what can be treated at Urgent care.
* **Success Criteria**
  + Document what success looks like for your project, including specific metrics or outcomes to measure.
  + Success would be to identify lung issues (bronchitis, pneumonia, whooping cough, croup cough, asthma attack, influenza, common cold) and be able to treat these. If issues are more important and require further investigation, the doctor may do so or refer these cases to other departments. By having AI be able to identify these issues, we will be able to greatly diminish wait times in the E.Rs and therefore diminish exposure of other patients. Success would be 90-95% accuracy.
  + Emphasize the importance of using those metrics (accuracy, precision, recall, etc.) to evaluate your model.