Sepsis Management Tracking Antibiotics Design Specifications

Requirements (End-user needs):

- Antibiotic location should be accurately and reliably tracked.
- Allow sepsis team members to quickly identify the location of a specific antibiotic in case of an emergency.
- The system should provide a record of all interactions with the antibiotic to enable efficient tracking and monitoring.

System Design:

Inputs:

- Barcode scanner
- Database for storing data
- Label printer for creating barcode stickers (pharmacy has this)
- Location data
- ESP32 microprocessor
- BLE tag

System:

1. When an antibiotic is passed in the pharmacy, a unique barcode sticker is generated and attached to the outside of the antibiotic packaging.
2. As the antibiotics are sent through the pneumatic tube system from the pharmacy to the PICU, they pass by an ESP32 receiver in the pharmacy which uses Bluetooth signal strength to estimate proximity and record when the antibiotics have been sent.
3. When the antibiotics arrive at the PICU tube station, another ESP32 receiver at that station once again estimates proximity to record that the antibiotics have arrived and alert the relevant sepsis team member.
4. If the time elapsed since the antibiotics have been sent through the pneumatic tube is greater than 4 minutes, a notification will be sent to the pharmacy to have a runner sent down to the pharmacy to deliver the antibiotics instead.
5. When a sepsis team member receives the antibiotic, they scan the barcode with a scanner app to record the timestamp and location associated with the interaction.
6. The system stores this data in a database for future reference.
7. When the antibiotic is moved to a new location or handed over to another team member, the process repeats.

Outputs:

- Location data for each interaction with the antibiotic
- Timestamp data for each interaction with the antibiotic
- Tracking information for the antibiotic

System Functional Specifications:

1. Must be HIPAA compliant
2. Must be able to generate and print unique barcode stickers for each antibiotic that enters the system.
3. Must be able to record the location and timestamp of each interaction with the antibiotic.
4. Must be able to export data to a centralized database.
5. Must be easy to use, with clear instructions for sepsis team members.