Project Title: Mayo Advanced Scheduling for Infusion

The Mayo Clinic Health System (MCHS) is a community-based health care provider that brings the resources and expertise of the Mayo Clinic to communities to the state's regions in which we live, study, and work, including our city – Mankato.

This project is about building prototyping a more advanced, more sophisticated scheduling system for the MCHS infusion center, whose role is to provide a warm, inviting environment for providing intravenous (IV) delivery of nutrition, fluids, or medications such as chemotherapy.

The project team will develop a standalone prototype for scheduling that uses AI to optimize scheduling based on factors that include:

- Patient Insurance
- Facility Billing Designation
- Medication Ordered and 340b Status
- Proximity to facilities
- Appointment availability

Currently, scheduling is primarily site-based with minimal consideration of these factors. The project will focus on the two infusion centers in Mankato, each of which has different billing designations. The goal of the project is to prove that a more advanced approach to scheduling can be built and will be useful. Later phases of the project will focus on integration with existing IT systems and expansion to include all of Mayo's Minnesota-based infusion centers.

The expected benefits include improved patient experience (a), increased revenue (b), reduced manual work by healthcare professionals (c), decreased volume of prior authorization denials, and better understanding of insurance-approved infusion centers (d), decreased average lag time from scheduling to appointment.

The project also aims to balance patient convenience with revenue considerations and standardize scheduling practices. Foundational work includes standardizing infusion templates, optimizing existing scheduling functionality, and assessing the potential of AI algorithms in enhancing the process.

Mayo leads for this project will be Jenna Herzog Herzog.Jenna@mayo.edu and Patrick Culhane Culhane.Patrick@mayo.edu.

Deliverables	Type of work	Activities	Resources	Tech Skills	Priority
Analyze current data and processes for prior authorization, patient insurance, and facility billing designation. Deliver a Summary of Findings document.	Analysis and background study of prior authorization, patient insurance, and facility billing designation, writing summary findings document	Partnering with enterprise Subject Matter Expert (SME), evaluate contributing factors leading to predictive prior authorization approvals, understand how prior authorization, patient insurance billing, and facility billing designation work.	Client data systems Client SME	Data and process analysis, Writing summary of findings	High
Analyze issues and possible optimizations related to billing designations, revenue, and ease of access. Deliver a Summary of Findings document.	Evaluation of billing designations outside of place of service for organizational optimal outcomes including 503b status.	Partnering with enterprise SME, establish optimal outcomes with respects to revenue and ease of access. Understand billing designations, place of service, and 503b status.	Client SME	Research and Analysis	High
Analyze relationship between infusion center proximity to patient's home address or zip code. Deliver a Summary of Findings document.	Analysis of relationship between infusion center location and patient's home location.	Partnering with enterprise SME, establish optimal outcomes with respects to patient's location and convenience.	Client SME	Research and Analysis	High
Artificial Intelligence (AI) Scheduler Project Plan/Design – deliver a document that describes the approach that will be taken to build and test an AI-based system to do patient scheduling in the infusion centers.	AI model construction and testing: planning and design; Use of techniques drawn from data science and data engineering, Documentation of plan/design	Write a document that includes a description of which data will be used, how it will be prepared, and how it will be segmented; also includes a plan for the type of AI modeling to be used, how the models will be built, how testing will be done, and how test results will be evaluated.	Data provided by client, support from faculty coach, faculty SME, and other SMEs, publicly available AI/ML tools	Data engineering, data preparation, artificial intelligence techniques including but not limited to machine learning, Python	High
Working AI Scheduler (source code, working digital notebooks, and demonstrable, standalone prototype), including documentation of test results	Software development and testing. Use of techniques drawn from data science and data engineering.	Design, implement, and test of system based on historical outcomes to prove valid determinations.	Client Revenue Cycle Staff and Client data systems, publicly available AI/ML tools	Data engineering, data preparation, artificial intelligence techniques including but not limited to machine learning, Python	Medium
Handover and Next Phase Plan document	Software project planning and documentation	Planning and documenting activities to support the next team's work on this application. Did the AI Scheduler not get built? No problem – what has to be done to make it so that the next team can build it? Did the AI Scheduler get built but it didn't work as well as hoped? If so, no problem – what are the steps to try to get better performance?			High