Decreasing Outpatient Pre-procedure Wait Times in a Pediatric Interventional Radiology (IR) Department: A Software-Solution Enabled Quality Improvement Project

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No Disclosures
Accurate scheduling of IR procedures is very challenging. Why?

Patients interface with multiple providers in multiple areas of the hospital.

NPO status, lab availability, and procedure complexity are variable from patient to patient.

Inaccuracies in predicting these variables results in increased pre-procedure wait times.

These challenges are exacerbated in children. Why?

Complexity of preparation, consent, sedation, and recovery is increased.

Children are often unable to tolerate length pre-procedure wait times.

An unhappy child oftentimes (and understandably) leads to an unhappy parent.
The purpose of this project is to improve outpatient scheduling accuracy within a pediatric IR department by creating and implementing a scheduling software application informed by baseline data and contemporized by up to date information.

**Methods: Baseline Data Gathering Flowchart**

We decided on data points to collect from each of four fragmented physical spaces (Registration and Waiting, Pre-Procedural Holding, IR Suite, and PACU/Recovery) based on multiple days of patient and provider workflow observation.

Data points to collect from Space #1

Data points to collect from Space #2

Data points to collect from Space #3

Data points to collect from Space #4
Using Google Forms, Sheets, and Scripts, we created a data collection tool that could be accessed electronically by multiple individuals in the fragmented spaces to record baseline data about the patient experience in real-time.

Methods: Baseline Data Gathering

Data Collection Tool

Baseline data was successfully collected for 171 patient encounters over 7 weeks:
- 84 inpatients
- 87 outpatients

Data from at least 50% of the locales were collected for 100% of inpatient encounters and 70% of outpatient encounters.

Baseline Data

Average Outpatient Pre-procedure Wait Time

3 hours
Prior to our intervention, appointments were scheduled using pen and paper, with procedures written down in a datebook that was kept in the IR suite.

Each procedure was assigned an arbitrary block of time:
1 hour for subjectively short procedures
2 hours for subjectively long procedures

Patients were instructed to arrive at registration 1 hour prior to start of procedure, regardless of need for labs or pre-procedure workup.

This procedure will probably be short...

Let's assign it a 1 hour time block.

Intervention
Our New Method

The Microsoft Access Smart Scheduling App

What does it do?

Instead of the old method of arbitrarily suggesting an arrival and procedure time, our scheduling app suggests arrival and procedure times based on:

- Need for pre-procedure labs
- Procedure time data collected at baseline (stored in a database in the software)
- Constant updates to the database with new patient encounter data (upon completion of an encounter), which compounds upon existing data to provide up to date arrival and procedure time suggestions.
Intervention
Our New Method

The Microsoft Access Smart Scheduling App

Database informs the schedule

Constant updates to the database with new patient encounter data (upon completion of an encounter), which compounds upon existing data to provide up to date arrival and procedure time suggestions.

Patients are scheduled according to the informed scheduling data, which creates patient encounter data.

Patient encounter data is entered into the database.

How Did We Create It?

Step 1: Create a Backend of 3 databases
1. Procedures
2. Schedule
3. Encounters

Step 2: Create a frontend user interface that dynamically interacts with the backend
1. View Schedule
2. Schedule Appointment
3. Delete Appointment
4. Encounter Information
Intervention
Smart Scheduling App

The View Schedule section, which launches when the app is opened.

Intervention
Smart Scheduling App

The Schedule an Appointment section

Fields outlined in yellow are dynamically populated based on:
1. Database information and
2. The other fields, which are populated by the scheduler.
1. Fill out the Patient Information, which includes the procedure and pertinent clinical history.

2. Select an appointment date. A list of other existing appointments on that date will be displayed.

3. Select when you want to schedule the patient in relation to existing procedures. The app will recommend a Hospital Arrival Time and Procedure Start Time, which can be added to the schedule with the click of a button.

At the end of the appointment, the Procedure Data Form is filled out. The data from this form is immediately added to the app’s backend of databases to help inform the next appointment recommendation.
Intervention
Our New Method

The Microsoft Access Smart Scheduling App

Step 3: Educate
1. Education sessions immediately prior to launch
2. Daily opportunities for questions/coaching
3. Weekly feedback sessions

Results

The Old Method
Average Outpatient Pre-procedure Wait Time
3 hours

Following successful implementation of our app
Average Outpatient Pre-procedure Wait Time
2 hours
As more patient encounters occur, the scheduling application’s database becomes more populated with information to use for making smarter scheduling recommendations.

As usage continues, we expect to see a further decrease in pre-procedure wait times.

Thank You!

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