

April 25, 2018

# Medical Imaging Scheduling Analysis

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*Field Trip to Mesa  
Scheduling Center.*

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## **Situation:**

- Since post Cerner EMR implementation there is a significant delay in scheduling and processing Imaging orders from providers. The root cause for this delay is multifactorial and more detailed analysis of bottle necks in the current processing chain have been studied in this analysis.
- Delays in scheduling and processing of imaging orders has resulted in leakage of business and has impacted the bottom line of the Imaging departments revenue stream.
- Additionally, inefficiencies in the current scheduling cycle value chain has not only resulted in significant financial impact but also adversely effected the satisfaction of ordering providers and ultimately our patients. More over deficiencies in the current system expose the risk towards delay of timely patient care.
- Approximately more than 2000 imaging orders are awaiting to be scheduled as of today, this is a delay of approximately 2-3 weeks to inform the patient to be scheduled for their imaging study.
- Downstream effects of such scheduling & processing delays resulted in reduction of our outpatient imaging order volume. A prima facie example is the current Imaging order volume for Musculoskeletal subspecialty (MSK) from Orthopedic surgeons, we have noticed a multifold decrease in daily MSK imaging studies interpreted in the reading rooms. As a result of reduced imaging volume, there is significant negative effect on the quality of training provided to our fellows and residents. Not to mention ultimately effecting the moral of Radiology staff and further amplifying risk of staff attrition.

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*DMI task force  
committee  
collaborates with  
and supports  
scheduling team.*

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## **Background:**

- Prior to go Cerner go live, imaging ordering process to scheduling was all electronic with streamlined patient data/order information flow. As a result, this process was not only efficient but also maintained the integrity of the data flow.
  - Since go live there is fragmentation of data flow as it flows through multiple systems (**appendage 1: scheduling work flow cycle schematic**). All incoming orders have to be manually faxed in to a data repository called ONBASE. The orders are then indexed with patient demographic details and checked for accuracy of the order. This function is done by file clerks and current bottle neck function includes delays secondary to trouble shooting/protocolling to maintain the accuracy of imaging orders.
  - Upon indexing automated phone calls are delivered to patients with the options to schedule or cancel via TELEVOX/web-based system. When patient requests his or her appointment to be scheduled, a scheduler further picks up the incoming call and processes the order to be placed in Win32/SCHEDULING BOOKS for a specific date, time & location, thus confirming the appointment. In the current operational step there is significant delay in holding times for patients secondary to understaffing of this critical function. As a result, there is a spike in dropped calls from patient's side contributing to leakage of business.
  - Upon confirming the appointment in scheduling books, a temporary registration process is created in MS4 and Cerner platforms, this order is further processed by Pre-authorization and Insurance verification teams.
  - In the current scheduling work flow design there is no function to take direct calls from providers or patients to schedule the study. As of now a paper order is needed to schedule and process the appointment. Unlike at Mesa scheduling center verbal orders are accepted for processing of appointments, this improves the capture rate significantly. At Mesa center scheduling quality control leads/personnel cross examine every order to make sure the written order is received prior to patient appointment. This additional step in work flow design has tremendous positive impact on ensuring that all steps of scheduling are followed rigorously prior to patients visit at the imaging center.
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*Comparative  
analysis was done to  
mimic Mesa  
scheduling center.*

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## **Assessment & Analysis:**

### **Rationale**

- We made an attempt to closely study Mesa scheduling center to understand and learn the strengths and efficiencies with the primary goal to replicate the strengths at Tucson. Compared to Tucson, the Mesa center is larger and schedules for multiple hospitals under Banner corp. Therefore, it was a good opportunity to mimic and replicate its successful work flow design processes.

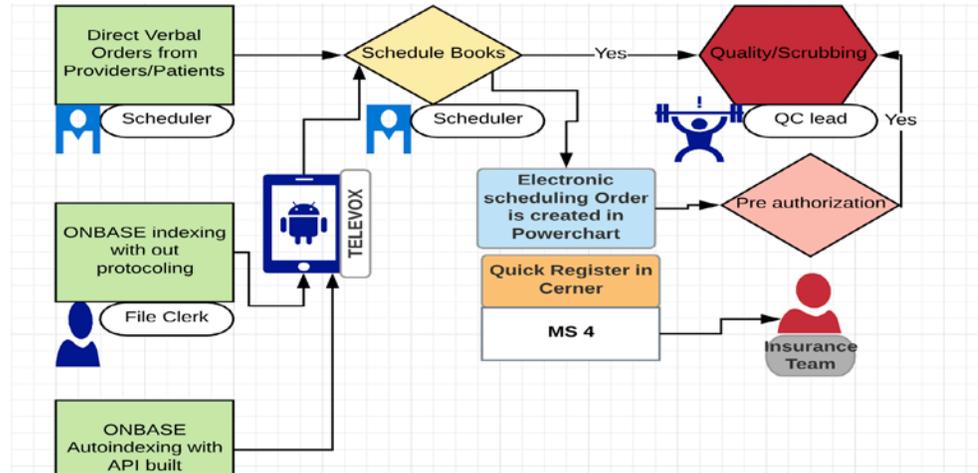
### **Key Areas of study focus:**

- *Work flow design comparison*
- *Understand Staffing models*
- *Usage of appropriate & meaningful staffing metrics.*

### ***Workflow design analysis: Additional value creation***

- Direct verbal orders input function: Intake of verbal orders from providers or patients directly to schedule a study in schedule books ensures that patient is given “just **in time**” appointment. As a result, there is high compliance to follow through & keep the scheduled appointment and not mention very high satisfaction rates from providers and patients. In order to ensure that the correct order is placed by the scheduler, the processed order is further scrubbed and checked with the electronic or paper-based order placed by the ordering provider. Any mismatch is quickly trouble-shot by the QC leads in a timely fashion prior to patients visit for the scan.
- Direct indexing by file clerks: Pushing the function of checking the order for accuracy downstream to the QC leads will ensure that the indexing of ONBASE orders happens efficiently and reduces the backlogs. File clerks should be indexing the order “as is” to avoid further delay.
- Autoindexing of ONBASE orders: Automation of auto indexing of ONBASE imaging order to some level can significantly improve the productivity and accuracy of the file clerks. This additional software function is provided with creation of API (application program interface) with HL-7. This project is slowly gaining momentum with collaboration with Imaging dept. informatic team and Banner IT. Preliminary work is being done to understand the scope, risk, resources and time frame to implement.

Work flow design enhancements to mimic Mesa scheduling model.



**Staffing analysis:**

- Direct comparison of staffing models between Mesa center and Tucson was performed. A unique staffing addition at Mesa center included a dedicated QC leads with primary function of scrubbing and checking the quality of the scheduled order. This is a key function to ensure all the scheduling/pre-authorization steps were performed appropriately prior to patient visit to imaging center.
- Additional call volume handled, staffing metrics and requirements for daily targets to be met by file clerks, schedulers and QC leads was gathered to compare and perform a gap analysis.

Site	Average Calls/Month	Average Handle Time seconds	Staff Schedulers FTE	Call volume/Scheduler/month
Mesa	22841	473	31	736.8
Tucson	9844.25	488.5	9.5	1036.21

\*Tucson scheduling staff is understaffed relative to the call volume handled by the schedulers.

**Gap analysis**

Staff type	New FTE Required @ Tucson
Schedulers	4
File Clerks	2
QC leads	2
Educator	1
Total FTE	9

*Staffing model and productivity: Projections to account for leakage and future growth.*

***Up Staffing projected Productivity Model:***

Staff	FTE	Target/hr /FTE	Work hr/month	Total volume/month	Current FTE
File Clerk	2	30	171	10260	0
Scheduler	10	6	171	10260	8
Scheduler*	5	2	171	1710	3
QC Leads	4	18	171	12312	2

Foot Notes: Scheduler\*: Rotational schedulers at clinic sites will be able to process fewer inbound calls compared to central scheduling staff. Other ancillary functions are performed at clinic sites. Targets/hour of productivity modelled similar to Mesa center.

***Total projected volume with new staffing model:***

New staffing model			
<i>Total projected Call order volume/day</i>	<i>Av volume 2017</i>	<i>Current Leakage* 8%</i>	<i>Projected growth 15-20%</i>
600-610	480/day	40/day	70-100/day

Foot Notes: The future staffing model will have the capacity to process call volume orders of approximately 600-610/day. This model accounts for current leakage of around 8% and future growth in patient call volume with new north clinics.

**Recommendations:**

**1: Implement 3 workflow design additions:**

- Accepting verbal orders for scheduling from providers or patients.
- Direct indexing of ONBASE orders without protocoling by the file clerks.
- Implementation of Auto indexing function for ONBASE orders using application program interface (API) with HL-7 integration.

**2: Add the role of dedicated QC lead scheduler function:**

- New functions plus prior responsibilities: Authorization verification, FIN present, Labs, Scheduled exam matches ordered exam, and valid order is available the day before patient arrives.

**3: Upstaffing for the following FTE's:**

- 2 Additional QC lead scheduler
- 4 Schedulers
- 2 File clerks
- 1 Win32- Educator