# IQUEUE FOR OPERATING ROOMS

## Oregon Health and Science University's Journey to Optimize & Expand Surgical Volume

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- no relevant financial or nonfinancial relationships to disclose -

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# SESSION OBJECTIVES

- explore challenges of relying on traditional OR performance reports for key operational decision-making
- describe the value of adopting a culture of data transparency in perioperative analytics
- discover how OHSU's adoption of predictive and prescriptive analytics tools optimized efficiency and resource allocation

# OHSU INSTITUIONAL BACKGROUND

- *U.S. News & World Report* rankings:
  - #1 hospital in Oregon (2023-24)
  - Nationally ranked in 3 adult specialties and 5 children's specialties (2022-23)
- Gross Patient Charges: $6.7 billion (FY 2023)
- Surgical gross revenues: $1.1 billion (FY2023)
- ~35,000+ annual surgeries performed at 4 surgical sites across 53 operating rooms
- 576 licensed beds
- 1 of 2 designated Level 1 Trauma Centers in Oregon, playing a pivotal role in the inception of the Oregon Trauma System.
- Oregon's *only* academic health center
- Two partner hospitals: Hillsboro Medical Center & Adventist Hospital Portland

# AGENDA

1. introduction
2. universal challenges
3. institutional background: challenges & motivations
4. implementation overview: iQueue and pre/post-COVID
5. the leadership perspective
6. next steps

Q & A

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# OPERATING ROOM ISSUES

Pre Pandemic & Pre iQueue

access

accountability

visibility

# OPERATING ROOM ISSUES

Pre Pandemic & Pre iQueue

## access

- 15+ providers with no block
- out of control add on list
- anesthesia inefficiencies – need to consolidate rooms
- in-patients waiting for surgery – large number of backlog elective cases
- various release deadlines / no proactive block release
- advertising open time is time consuming and manual process

# OPERATING ROOM ISSUES

Pre Pandemic & Pre iQueue


## accountability

### one – dimension metric

accuracy and utility of raw block utilization statistics was easily refuted – resulted in little reallocation and action from perioperative leadership

### budget disconnection

hospital budget and block utilization were disconnected – difficult to determine wo is response and accountable for utilization

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# OPERATING ROOM ISSUES

Pre Pandemic & Pre iQueue

## visibility

**limited visibility to ‘open time’**

manual process

slow

**untrustworthy data manually extracted from EHR**

no visibility into their own data

no visibility into or other’s data

no visibility into metric definitions

time consuming to produce

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# OPERATING ROOM ISSUES

Pre Pandemic & Pre iQueue

## weekend incentive blocks

goal: free up block during primetime (Mon-Fri)

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outcomes: increased volume
did not help capacity
did not help block

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what we learned: surgeons did not take week day off
extra workload

High Capacity Incentive Plan

1. Attending Surgeon(s) will be eligible for $1,500 incentive payment per block.
    a. Weekend day is a Saturday or Sunday.
    b. Weekend blocks are 8hr blocks (0730-1530)
        i. 4 hrs or more = $1,500
        ii. less than 4 hrs= $750
    c. Majority (>50%) of scheduled case minutes must be inpatient status cases (not same day discharge).
    d. Block releases Monday prior at 4pm.
    e. Block can be recurring (secured weekly/monthly) or ad hoc (accessed through iQ).
    f. Weekend OR blocks may or may not represent an "extra shift" of physician work, but this effort should be determined with the Department Chair.
    g. Payment will be per attending (ie co attending surgeons will each receive incentive). No additional payment for fellow, PA, etc.
2. Weekend Blocks/Cases Not Eligible for Incentive Pay:
    1. Blocks with majority of case minutes booked as same day discharge.
    2. Add on cases/rooms or trauma (EGS, Ortho Trauma), short release rooms.

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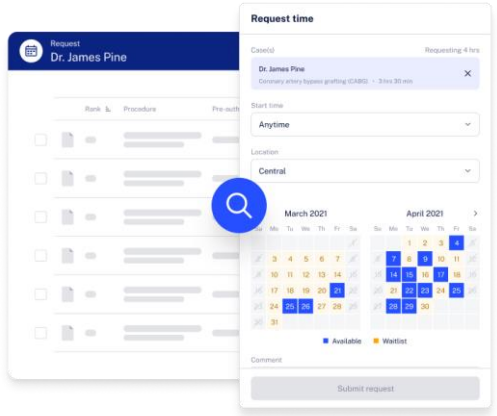
# IQUEUE - WHAT IS IT?

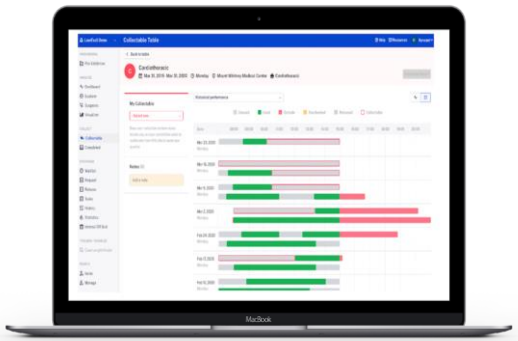
## EXCHANGE




create OR access through a "marketplace for open time" and alerts to identify OR opportunities

*request OR time*
*release OR time*
*transfer OR time*
*get alerts when OR time is avail*
*reminder to release OR time*

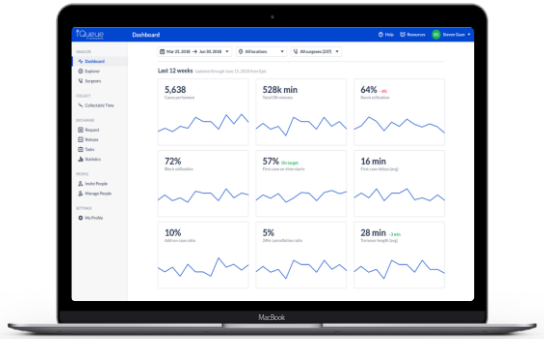
## COLLECT & ALLOCATE



allocate new blocks through data driven process, surface truly reusable or "Collectable Time"

*review collective time by service, day of week & location,*
*visualize day by day utilization,*
*visualize overbooking*

## ANALYZE




*'single source of truth'* for analytics and "push" relevant metrics to users

*block utilization, primetime utilization*
*case volume, turn over time*
*1st case start,*
*case length data and accuracy*
*same day cancellation*
*robotic utilization*

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# OHSU IQUEUE IMPLEMENTATION

OHSU i-Queue go live: October 22, 2018

implementation was quick:

- data feed
- block build
- training

scope - modules:

- exchange
- collect
- analyze

practice surgery scheduler competition:

- most released and most transfer

culture shift – moved to 7 calendar day block release

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# OHSU IQUEUE RESULTS – 1 YEAR

## Pre Pandemic & Post iQueue

### access

implemented *Exchange* into policy as the single process to request open time & release Block

### accountability

collectable time added to block policy for block rightsizing

### visibility

single source of truth for KPIs

automated reports

full visibility into open time

full visibility for all users

# YES, WE MEAN ALL USERS HAVE ACCESS TO EVERYONE'S DATA.

# OHSU IQUEUE RESULTS – 1 YEAR

**1,121**
blocks released

**3,450**
approved open time requests

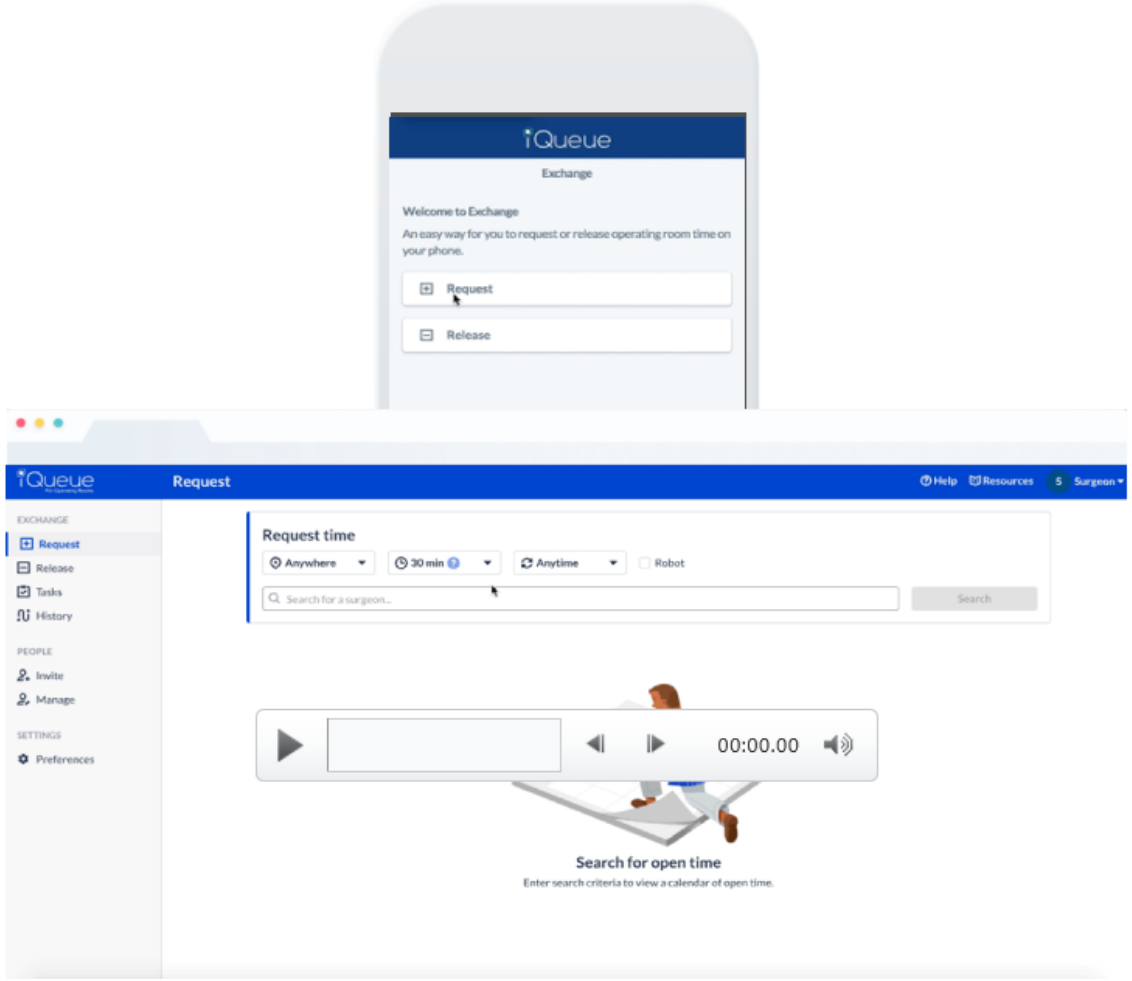
**26 days**
average block transfer proactivity

**14 days**
average release proactivity

**+5%**
year over year block utilization*

**+1%**
year over year prime time utilization*

**+5%**
year over year staffed room utilization *




*Data results based on 10/22/18 – 6/30/19, * = avg. since launch*

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# RETURN ON INVESTMENT

Realized & Potential Financial Benefits

## collect:

Total Collectable Blocks per Quarter = **171 blocks**
Average block length = **480 minutes**
$ per OR minute = **$150**
Average Utilization = **75%**

**171 * 480 * 150 * 0.75 = $9,234,000 quarterly financial opportunity**

**~ $36,936,000 yearly financial opportunity**

## exchange:

Released Minutes [capacity unlocked] = **321,000 mins**
Release Fill Rate [capacity filled]= **38%**
$ per OR minute = **$150**
[a]**Realized ROI: 321,000 * 38%* 150 = $18,297,000**

**OR**

Realized ROI = 10% of requested min * $150
[b]**Realized ROI = (10% * 530,000 mins) * $150 = $7,950,000**

**total ROI opportunity: $36,936,000**

**total realized ROI: [a] $18,297,000 / [b] $7,950,000**

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# RETURN ON INVESTMENT

## Realized Incremental Revenue

Total ORs (main operating rooms) = **25 ORs**
**1 more case per OR per month**
Incremental Cases = **300**
Minutes per case = **200** (actual avg. case duration)
$ per OR minute: **$150**
Incremental revenue = **~$9,000,000**

**OR**

Incremental cases done (assuming iQueue attribution of 50%) = **$4,500,000**

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# POST IQUEUE ENVIRONMENT

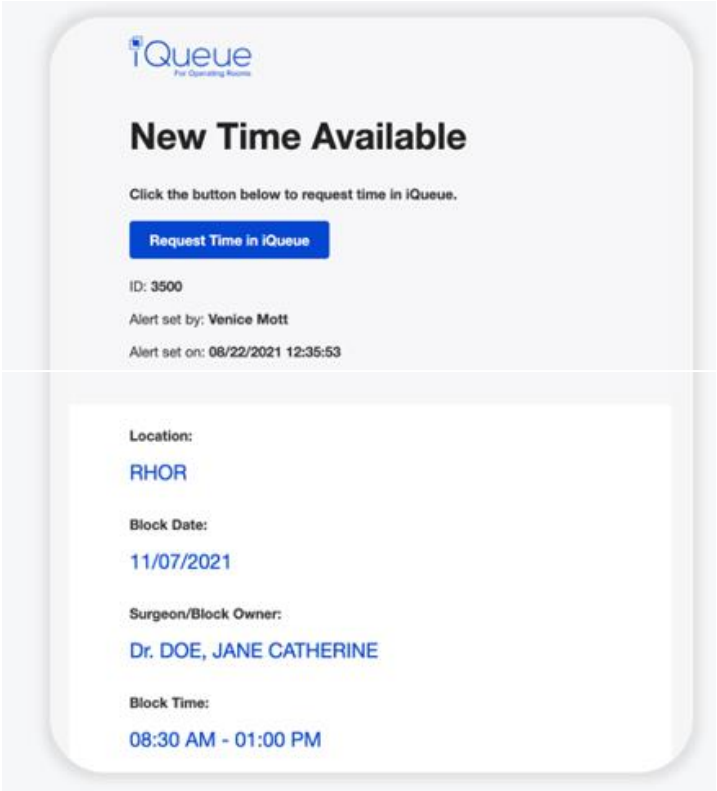
## visibility to ‘open time’

consistent and strong use of exchange market

role clarity - practice schedulers know when there is time for a case, better planning starts farther upstream


## automation

availability alters – waiting list maintained by a computer

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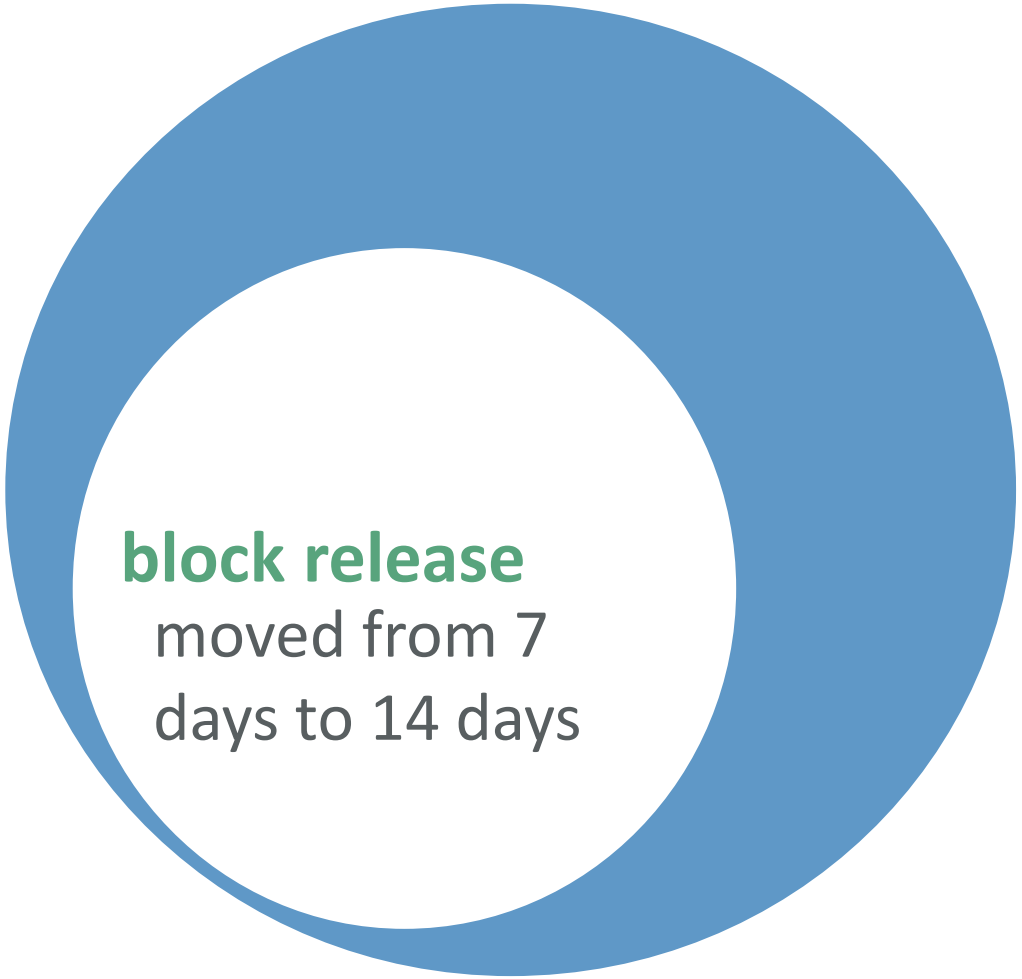
# POST IQUEUE ENVIRONMENT




9. Block Release
    a. Blocks release at 0830 on the day of designated block release
    b. All blocks automatically release at 10 business days.
    c. Exceptions:
        i. SOR:
            a. 6am block release: Ortho Trauma, Acute Care Sugery [aka Emergency General Surgery (EGS)], Short Release
            b. 23 hr block release: Adult Cardiac (see section e below)
            c. 48 hr block release: Family Planning
        ii. CHH:
            a. 48 hr block release: Ortho Fracture Block, Family Planning
        iii. DCH:
            a. 5 business day block release: Ortho (OHSU and Kaiser), Peds Cardiac (see section f below)
            b. 430am block release: Ortho Trauma
    d. Manual block release should be submitted through iQueue ahead of the automatic release to notify OR scheduling of vacation or conference time that will preclude filling block. This allows block to be open for other surgical services/surgeons.

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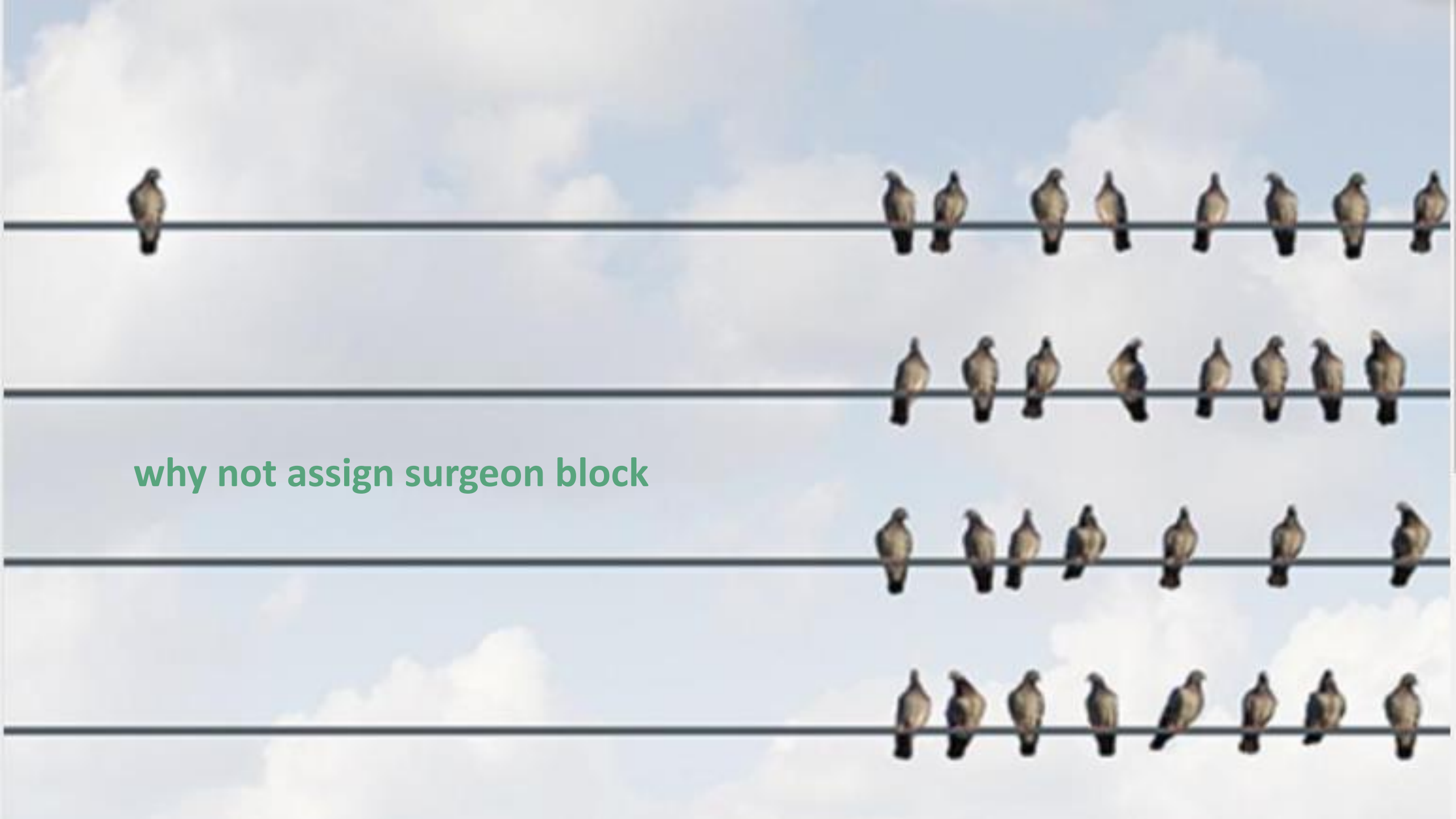
# POST IQUEUE ENVIRONMENT

## OHSU BLOCK POLICY

Surgical blocks are owned by the Perioperative Department and are actively managed by local Management Groups (MGs) with oversight from the Executive Management Group (EMG). Blocks are assigned to departments. The department is responsible for proper block stewardship.


why not assign surgeon block

# POST IQUEUE ENVIRONMENT

‘collectable time’ drives block changes

real time realization you are off track

14. Measurement of Block Management
    a. Surgical block allocations for the OR schedule are determined based on a combination of collectable time/blocks, collectable %, and Exchange transaction history.
    b. Due to the COVID 19 pandemic, utilization data has been excluded from Block, Prime Time and Staffed Room Utilization from March 16, 2020 through August 31, 2020.
    c. Collectable Time is considered under-utilized OR time and therefore can be reallocated to increase access for other services and surgeons. It is composed of the following 3 categories:
        i. **Entire Block Unused Minutes:** If a block was not manually released and not a single minute of it was used, then all the minutes in that block are count towards Collectable Time.
        ii. **Continuous Unused Time**: If a block is not manually released and if it is not filled fully, there will be empty pockets of time within the block. If any single continuous measurement of time is larger than:
            a. **SOR and DCH**: 3.5 hours (the Continuous Unused Time Threshold), then that pocket of time is regarded as collectable.
            b. **CHH**: 2.5 hours (the Continuous Unused Time Threshold), then that pocket of time is regarded as collectable.
        iii. **Released Time Above Acceptable Release Minutes**: The Acceptable Release Minutes is determined based off of the Manual Release Threshold. This is calculated as (Total Manual Release Minutes minus Acceptable Release Minutes). *Acceptable Release minutes: Manual releases that take up to 20% of total allocated time wont’ be counted toward collectable time.

15. Block Review and Removal
    a. Data review is completed at local MG level. Decision comes from committee on appropriate action. Implementation is specific to the decision (ex email, meeting, escalation). Measurement of effectiveness and consequence of implementation typically occurs for following 2-3 months.
    b. Possibilities interventions for removing/reallocating block:
        i. Increase block release
        ii. Alter block length (ex. from 10hrs to 8hrs)
        iii. Split existing block (ex. take 2 days out of 4 away)
        iv. Move existing block to a day/location that can be better utilized. Impacts other service lines.
        v. Remove block (partial or all).
    c. Blocks are subject to removal if greater than 20% total collectable time is observed. If review by MG does not produce sufficient evidence for retaining the block, a plan to reallocate or remove will be presented to service. If there is disagreement between MG and service on plan, escalation will occur to EMG for support and decision. Final decisions and changes will be communicated in writing to the department chair, administrator, division chief, and surgeon as applicable.

*Evidence includes: A reliable source of new surgical volume i.e. new provider, new program or extenuating circumstances.

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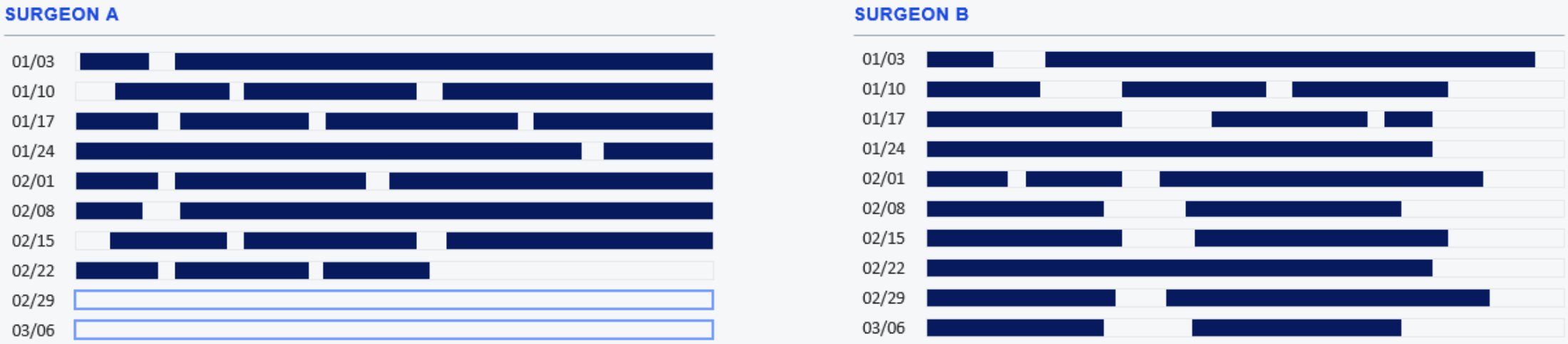
# WHAT IS COLLECTABLE TIME

## block utilization




- **Block utilization targets arbitrary and ("1 – block utilization") means nothing:** You can't take that amount away from surgeons
- **Not surgeon centric:** Penalizes surgeons for small and meaningless delays
- **Not comparable** across service lines
- **Not comprehensive:** Does not account for complications like block time release

# WHAT IS COLLECTABLE TIME

## collectable time


Collectable time considers only time that could have been used for additional cases, and allows leadership to apply rules around released time

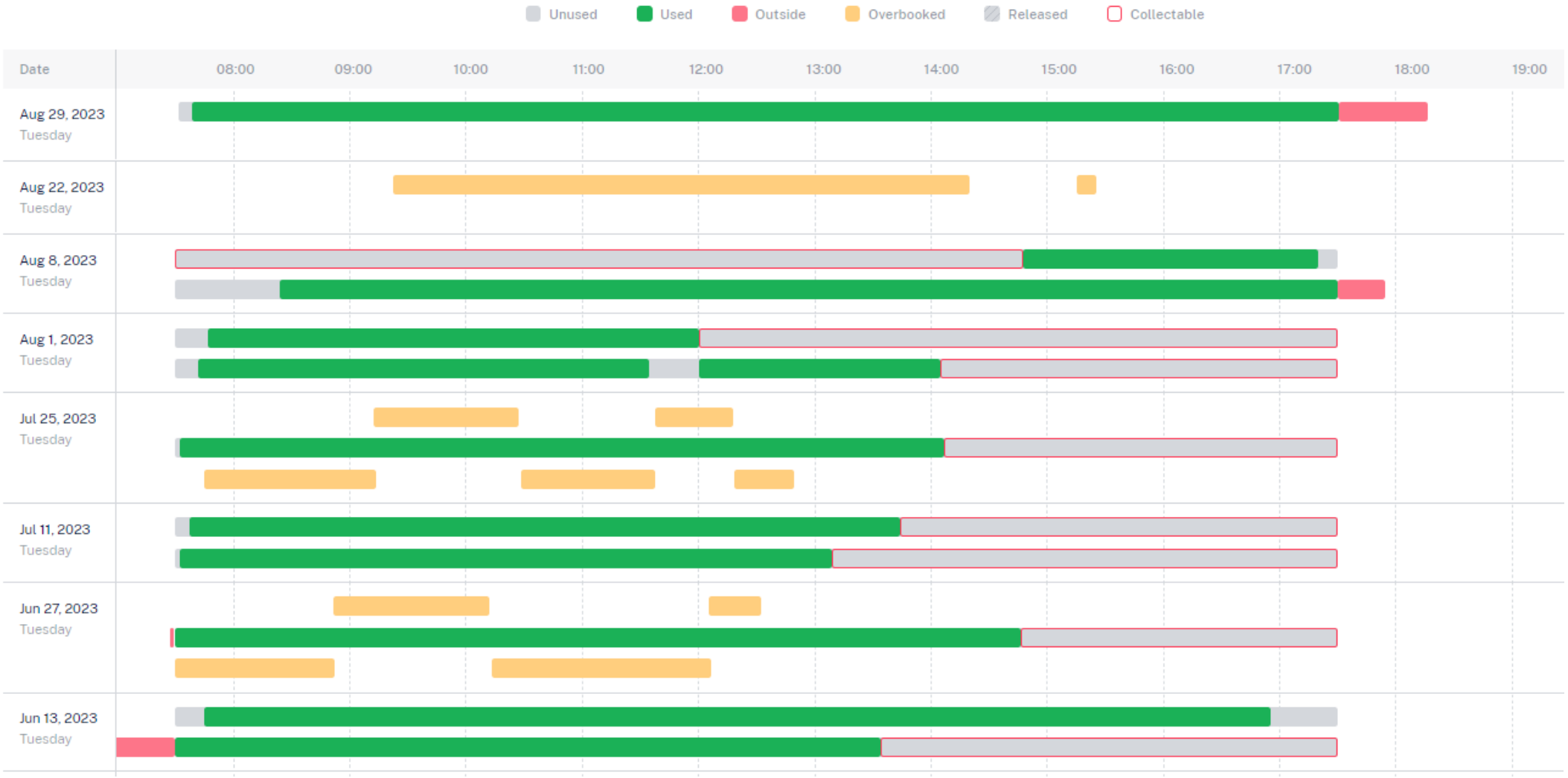
- Large contiguous portions of unused time
- Abandoned time
- Release percentage beyond a certain threshold

### A 12-WEEK EXAMPLE

**Legend**

- Used block time
- Released block time
- Non-collectable (ignore)
- ★ Collectable (consider)

# COLLECTABLE CASE STUDY



# COLLECTABLE CASE STUDY

**Completed Tables** (6)

| Date Range | Allocated Blocks / qtr | Excess Blocks / qtr | Collected Blocks / qtr | Completed Date |
|---|---|---|---|---|
| Dec 31, 2018 - Dec 31, 2019 | 197 | 14 (7%) | 11 (6 decisions) | Jan 24, 2020 by Kristen Lund |
| Dec 31, 2018 - Dec 31, 2019 | 201 | 33 (16%) | 9 (5 decisions) | Jan 21, 2020 by Kristen Lund |
| Aug 31, 2018 - Aug 31, 2019 | 26 | 8 (31%) | 6 (3 decisions) | Sep 13, 2019 by Kristen Lund |



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# POST IQUEUE ENVIRONMENT

**Level 1 – Immediate/Acute Life-and-Death Emergency: Patient's condition unstable**, needs to be in **OR now**. Patient is in immediate risk of loss of life or loss of limb, shock, or may not be responding to resuscitation measures.

**Level 2 –Urgent: Patient's condition unstable**, needs to be in **OR within 2 hours** of posting where a delay of greater than 2 hours may result in significant risk to life, limb, or organ.

**Level 3 –Priority-High: Patient's condition stable**, but requires attention to prevent deterioration, needs to be **in the OR within 6 hours** of posting where a delay of up to 6 hours will not result in risk to life, limb, or organ.

**Level 4 – Priority-Med.: Patient's condition stable**, should be in the **OR within 12 hours** of posting to reduce potential morbidity where delay of up to 12 hours will not result in risk to life, limb or organ.

**Level 5 – Priority-Low: Patient's condition stable,** should be in the **OR within 24 hours** of posting where delay of up to 24 hours will not result in risk to life, limb, or organ.

**Level 6 – Non-Urgent/Non-Priority: Patient's condition stable,** should be in the **OR within 72 hours** of posting, where delay of up to 72 hours will not result in risk to life, limb, or organ.

## prioritization

add-on level
classification adapted

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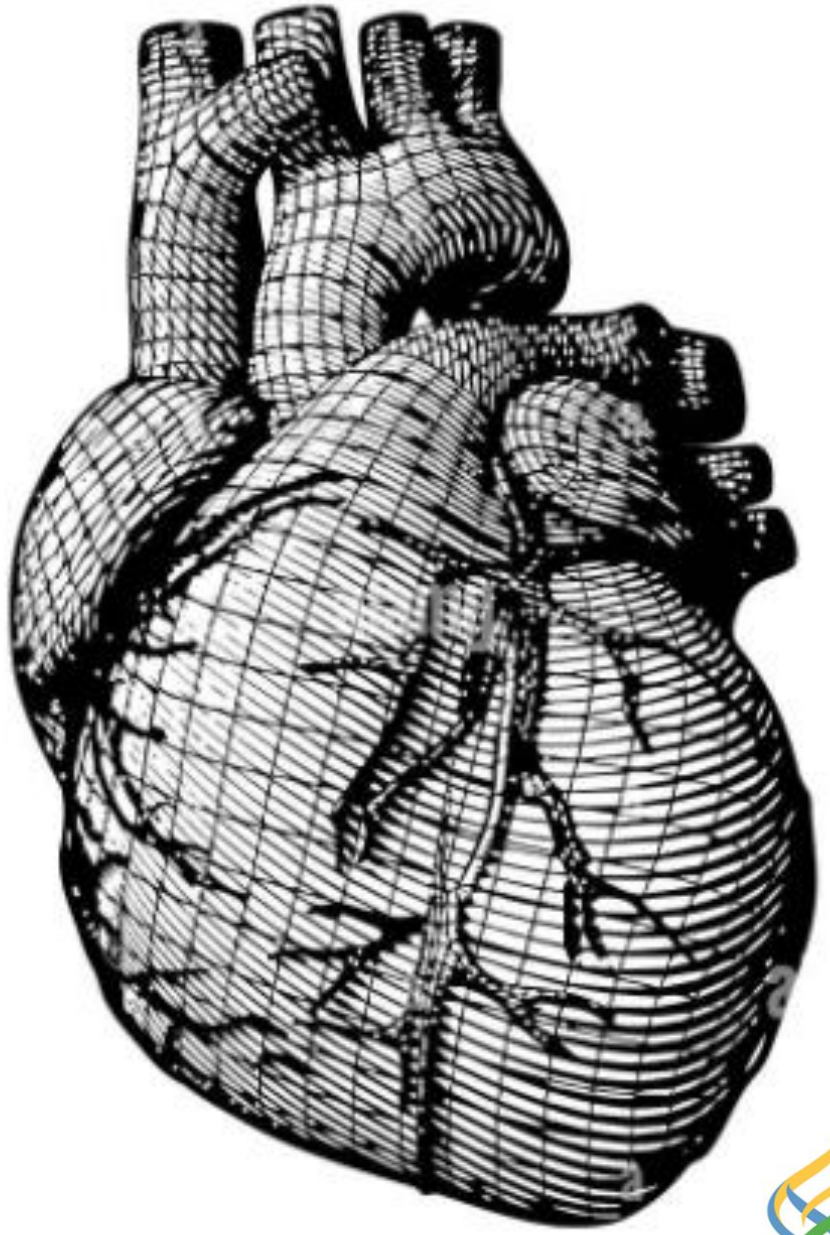
# cardiac block as shared trauma space

## access

cardiac - high collectable time
translated opportunity to open access for add ons

peer pressure = high surgeon engagement



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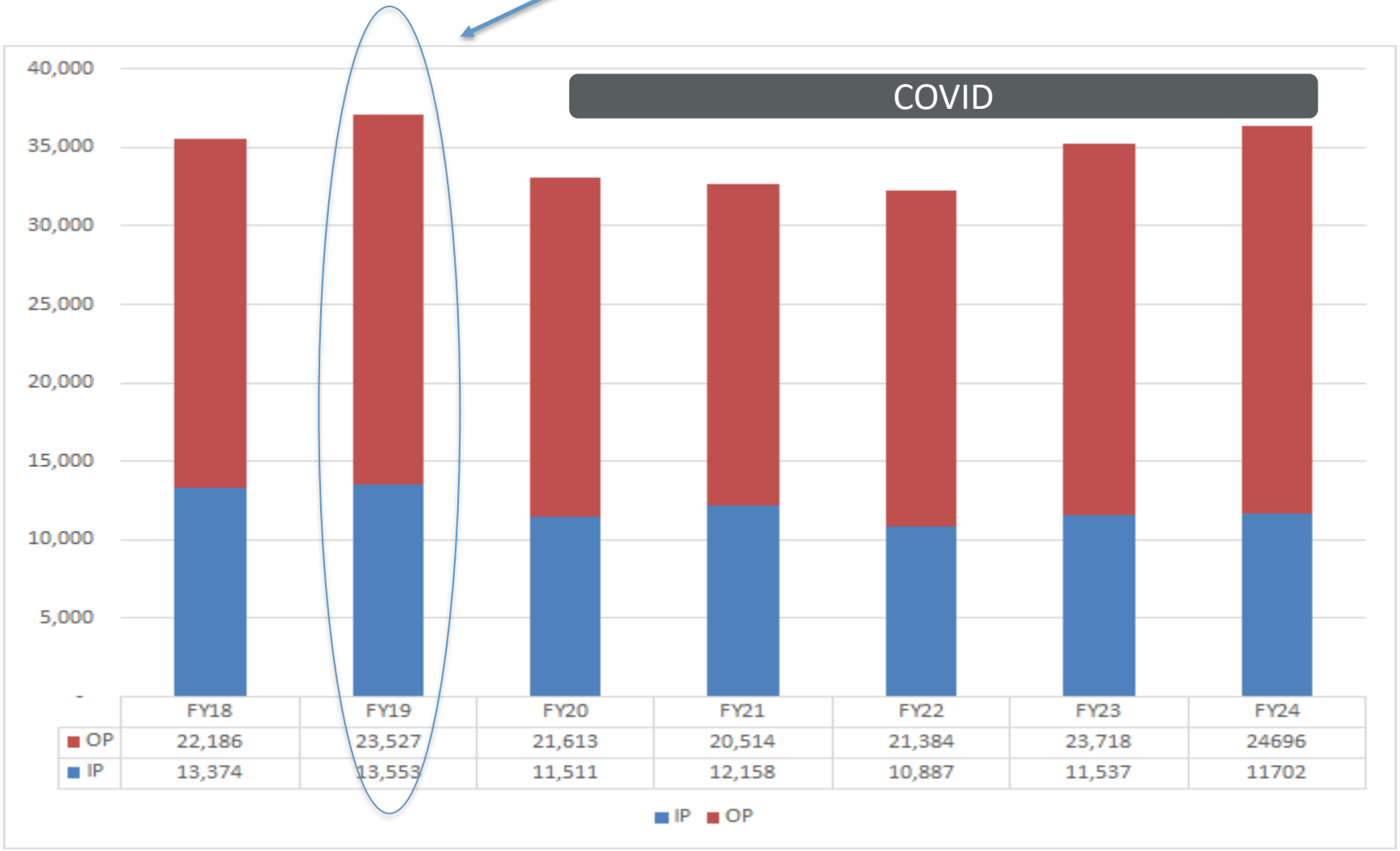
# TOTAL CASES

IP – 1.3% (179 cases)
OP – 6.0% (1,341 cases)




| | FY18 | FY19 | FY20 | FY21 | FY22 | FY23 | FY24 |
|---|---|---|---|---|---|---|---|
| OP | 22,186 | 23,527 | 21,613 | 20,514 | 21,384 | 23,718 | 24696 |
| IP | 13,374 | 13,553 | 11,511 | 12,158 | 10,887 | 11,537 | 11702 |

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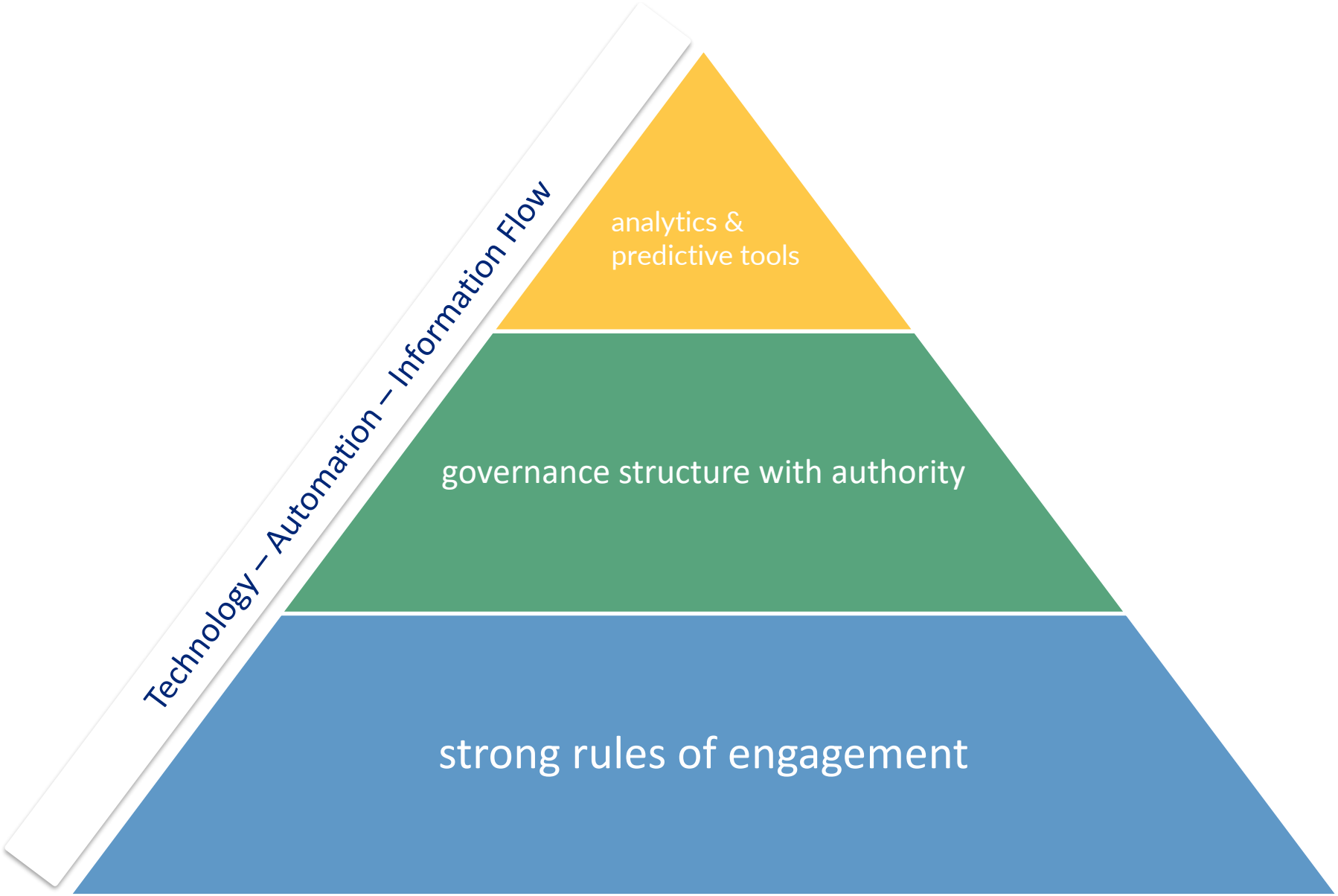
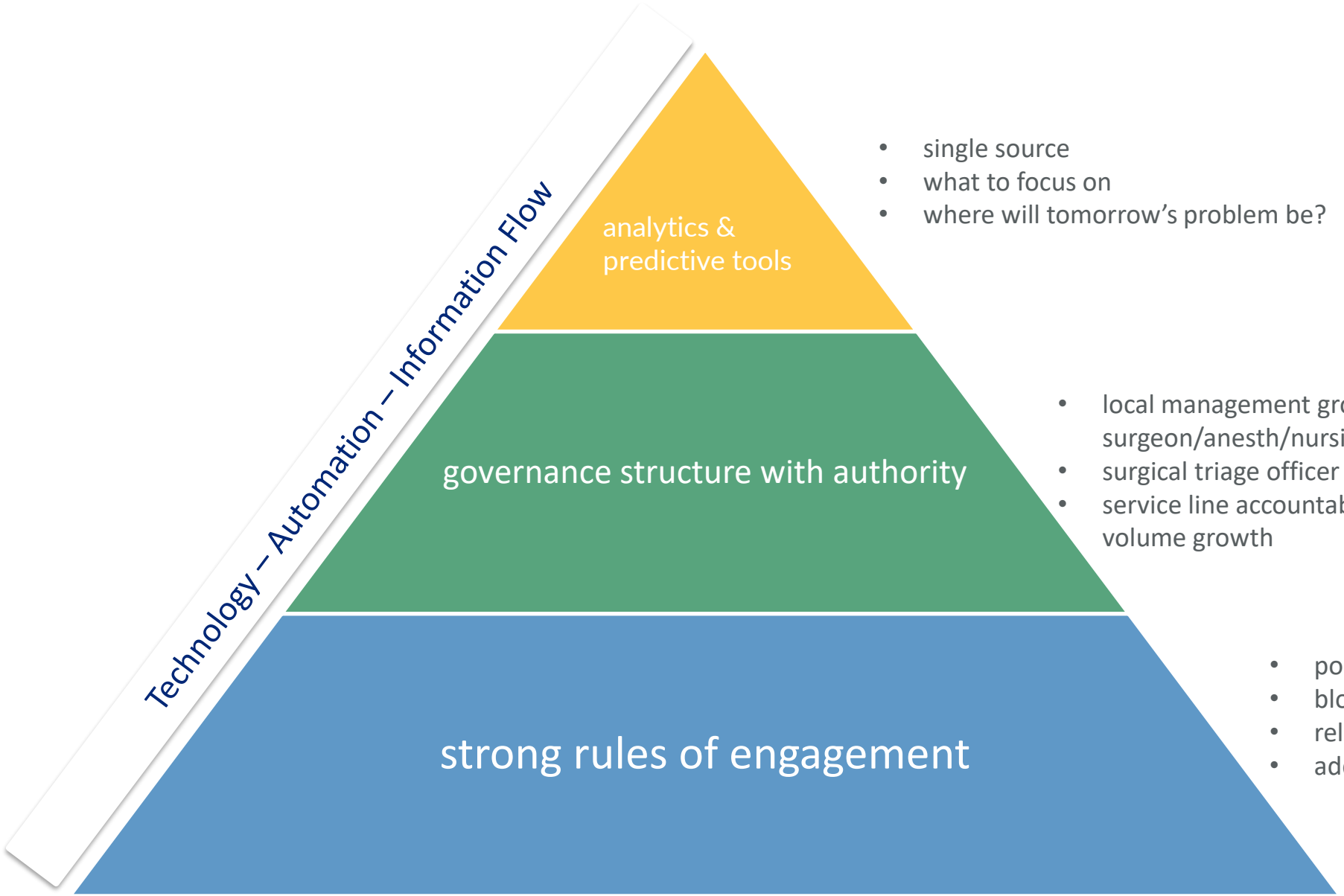
# OHSU PERIOPERATIVE OPERATIONS STRUCTURE



# OHSU PERIOPERATIVE OPERATIONS STRUCTURE




- single source
- what to focus on
- where will tomorrow's problem be?

- local management groups reporting to executive team surgeon/anesth/nursing leadership membership
- surgical triage officer role
- service line accountability – alignment with surgical volume growth

- posted block/scheduling policy
- block utilization standards
- release time standardization
- add-on urgency definition

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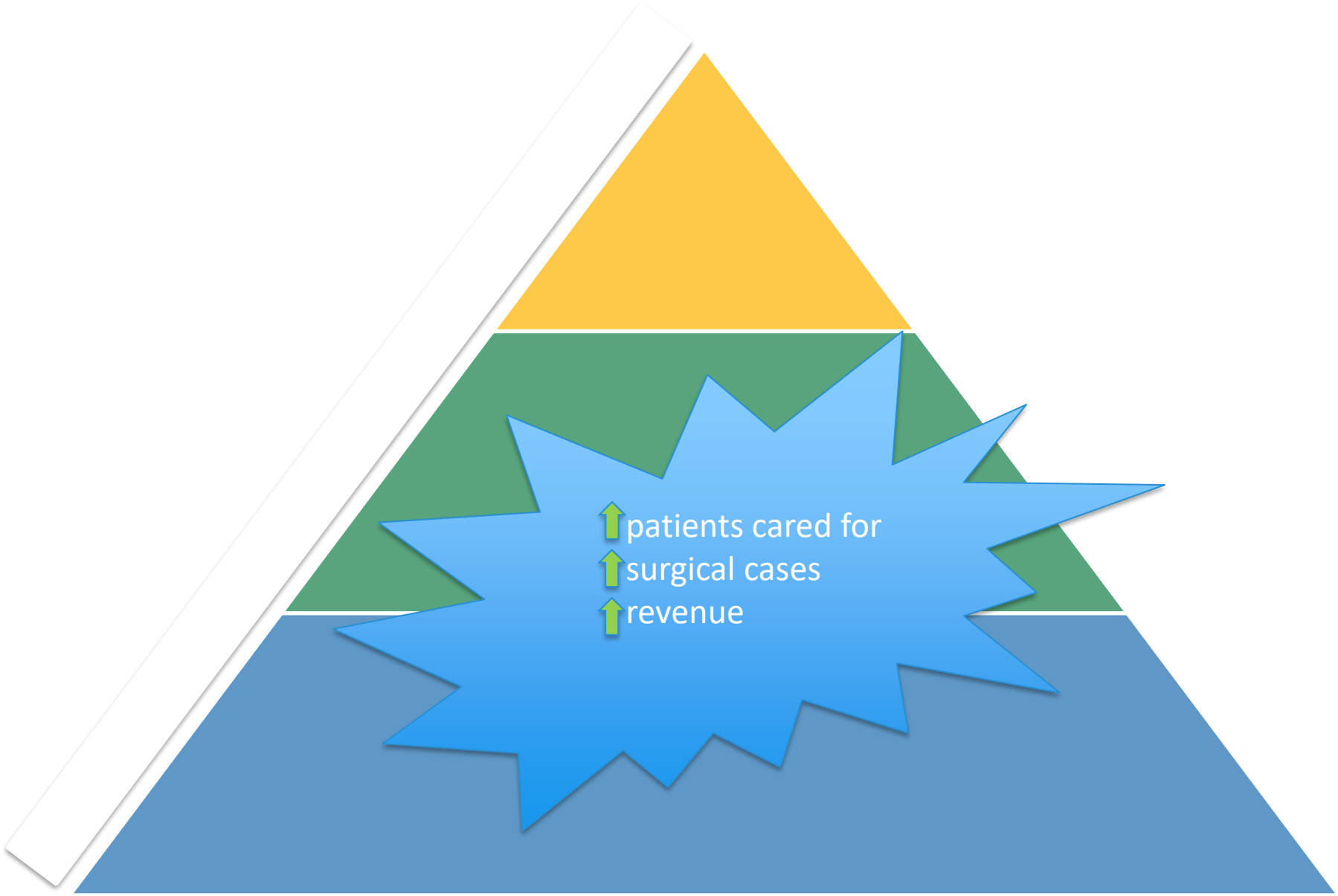
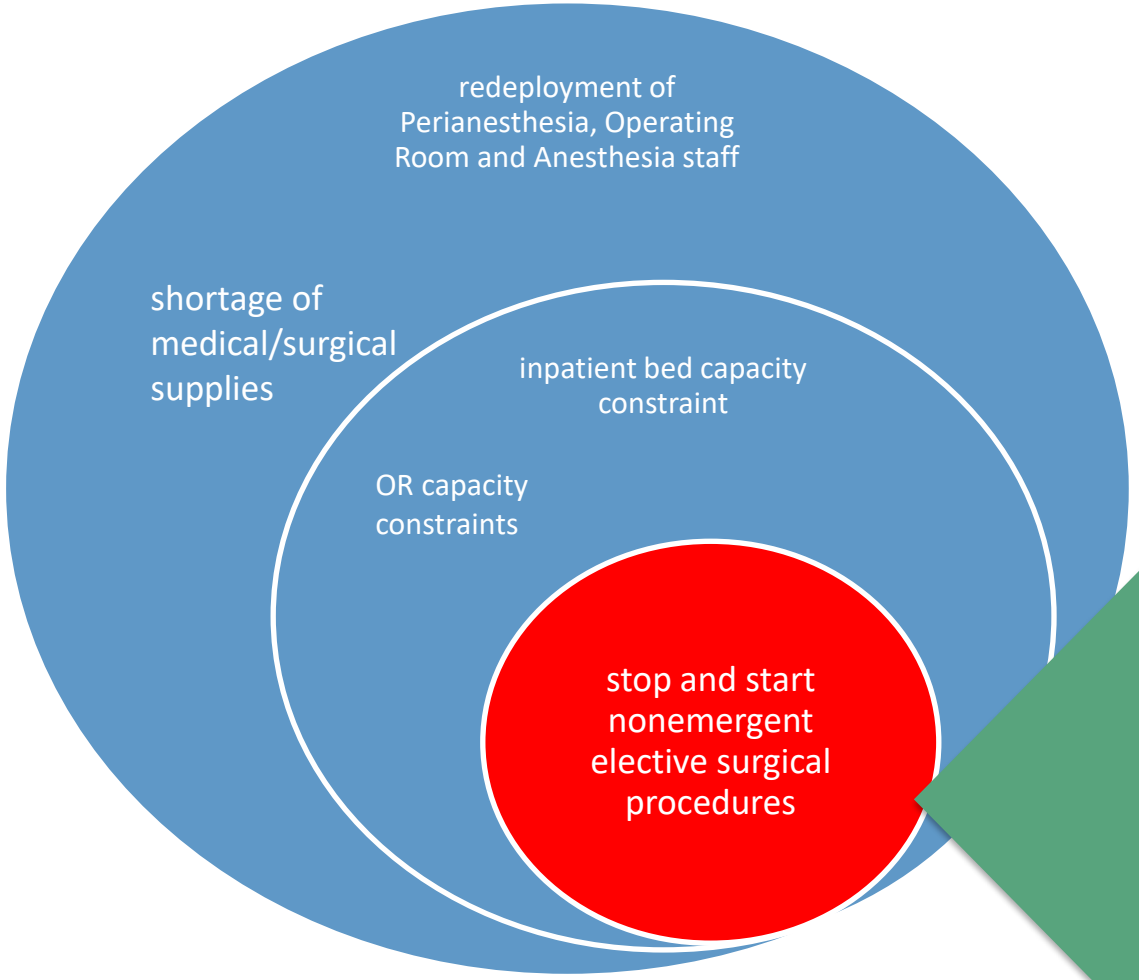
# OHSU PERIOPERATIVE OPERATIONS STRUCTURE



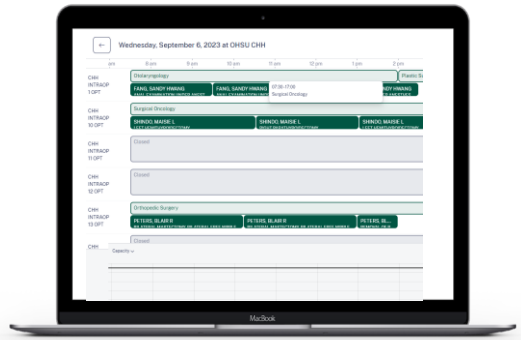

Stay
home.
Save
lives.
covid19.ca.gov

# IQUEUE DURING COVID-19

access




**iQueue capacity module tool**



**back end ability to open and close available time**

**iQueue capacity module tool**

all OR resources used by not overbooked

dynamic, custom messages to drive booking behaviors that are beneficial to the system

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# IQUEUE DURING COVID-19

## accountability

### one source

leveraged real-time exchange

advanced reporting and analytics to increase the operating room capacity

universal hold on data from initial pandemic response

### connections outside Periop

full visibility to operating room utilization, resources and into open time

increased partnership Mission Control (bed placement)

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# IQUEUE DURING COVID-19

## Periop and MSPU: Tiered Response – Operational Reference Guide

| | Green Tier | Yellow Tier Block/ Green Tier Admissions (modified) | Yellow Tier (modified) | Red Tier (contingency) | Dark Red Tier (CRISIS) |
|---|---|---|---|---|---|
| Block Schedule | SOR Green Block [here] | SOR Yellow Block [here] | SOR Yellow Block [here] | SOR Red Block [here] | ✓ Additional reduction in all areas to re-deploy workforce<br>✓ Case-by case decision based on IP capacity |
| Admission Cap | 25/day, 6 of 25 can be ICU bound + MPSU<br>75 (3 day rolling average) | 25/day + MPSU<br>6 of the 25 can be ICU bound. | 20/day + MPSU<br>6 of the 20 can be ICU bound. | SOR 15/day<br>4 of the 15 can be ICU bound<br>MSPU 1 ICU in addition<br>No more than 2 pts per day to any ICU | 15/Day<br>4 ICU total (including up to 1 from MSPU)<br>No more than 2 patients to any ICU |
| MSPU | Normal operations<br>2 ICU bound procedure per day. | | Normal operations.<br>1 ICU bound procedure per day. | BMT through IR is not included.<br>Normal day patients access. | Extreme high risk for same day cancellation<br><br>BMT through IR is not included.<br>Normal day patients access. |
| iQ – types of pts allowed to be booked through iQ | • admitting pts.,<br>• same day discharge,<br>• Already in house,<br>• 6A to OCU | • admitting pts.,<br>• same day discharge,<br>• Already in house,<br>• 6A to OCU | • same day discharge,<br>• Already in house,<br>• 6A to OCU | • same day discharge,<br>• Already in house,<br>• 6A to OCU | |
| STO (OR only, not MSPU) | Must approve all cases booked into short release time. | | Must approve all case booked into short release time.<br>Must approve all cases booked into open/released time that need admission.<br><br>Link to STO Communication decision tree [here] | | TBD |

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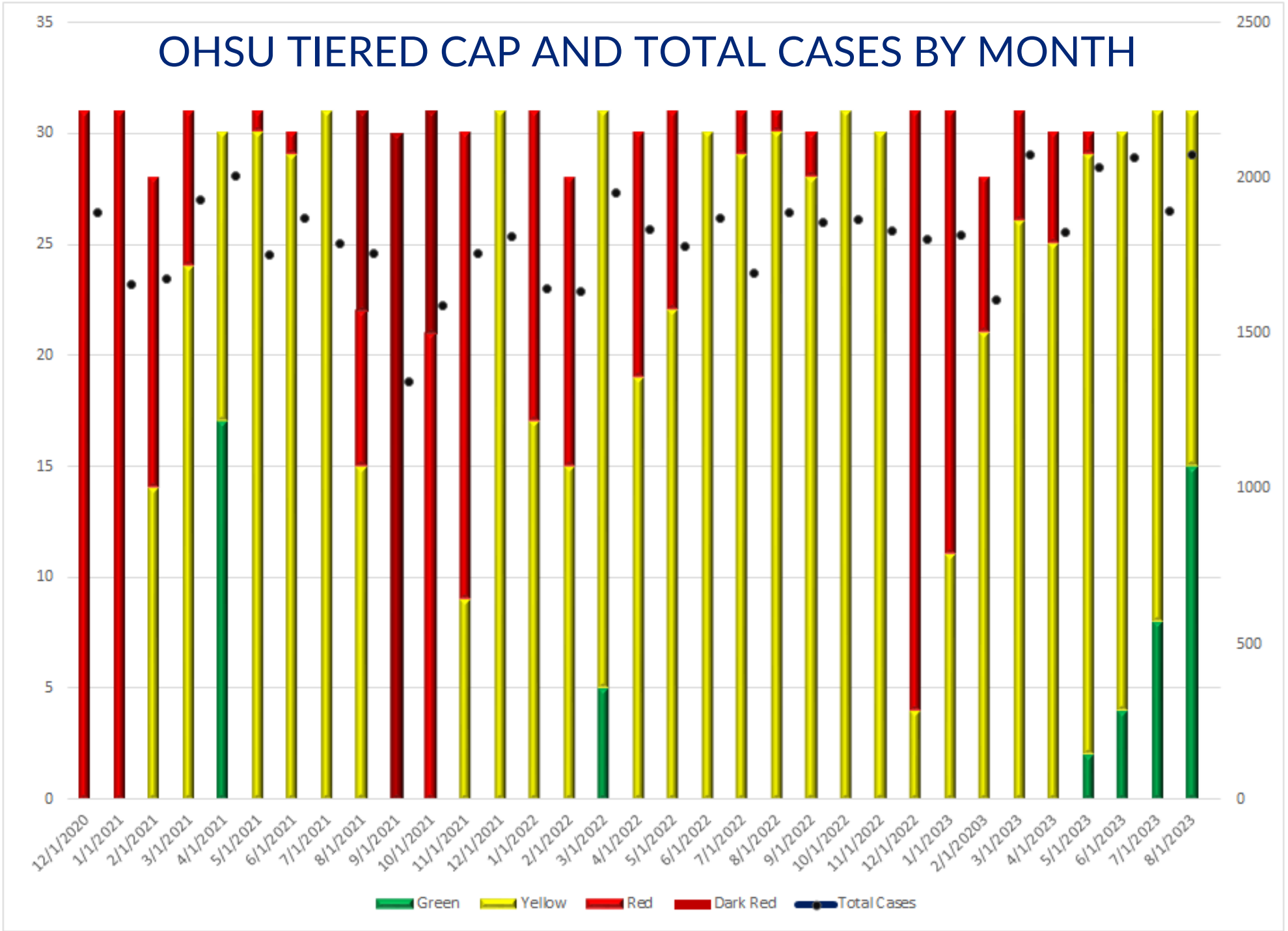
# OHSU TIERED CAP AND TOTAL CASES BY MONTH

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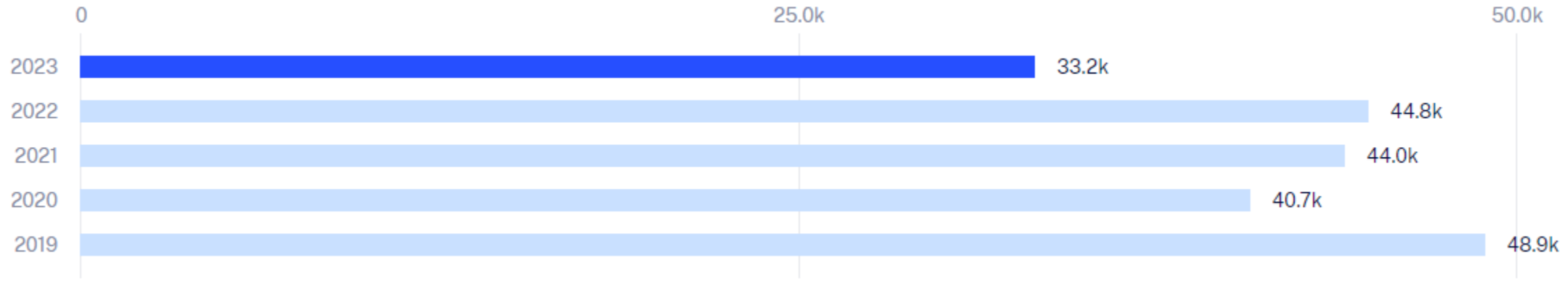
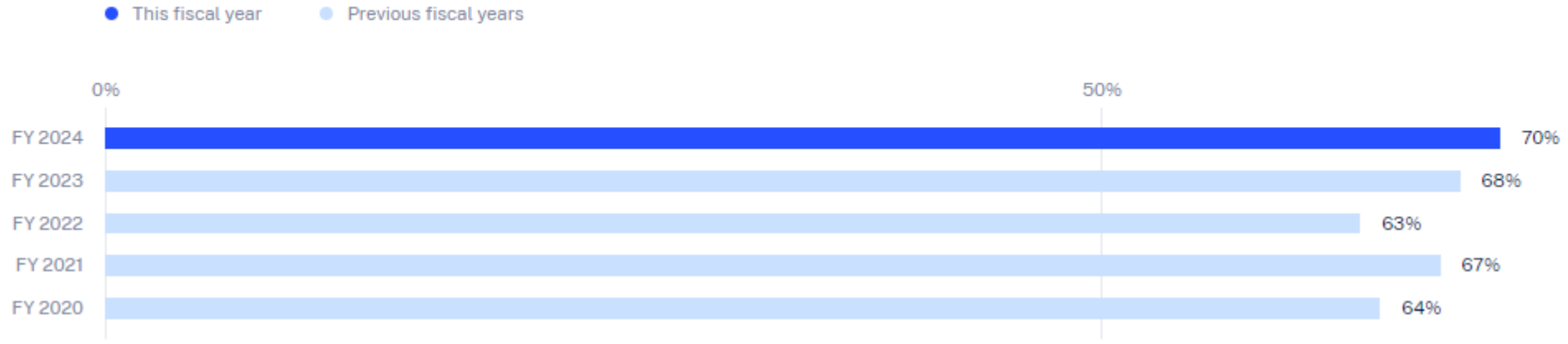
# CASE VOLUME YEAR OVER YEAR




# PRIME TIME UTILIZATION – MAIN AND ABM OR – FY OVER FY

| FY 2024 | FY 2023 | FY 2022 | FY 2021 | FY 2020 |
|---|---|---|---|---|
| 70% | 68% | 63% | 67% | 64% |

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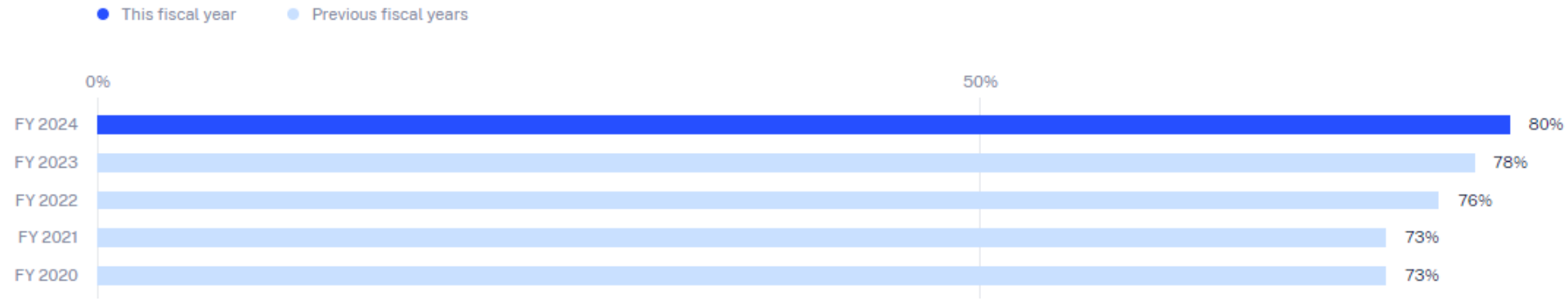
# BLOCK UTILIZATION – AMB OR – FY YEAR OVER FY YEAR

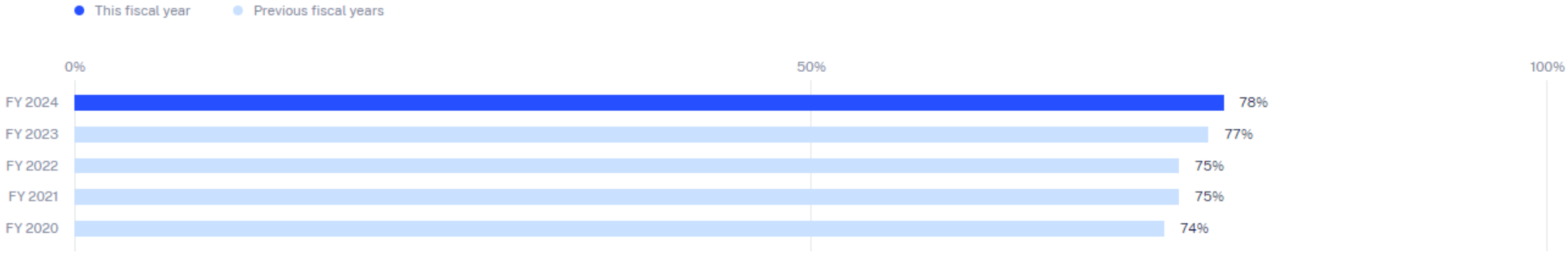
| FY 2024 | FY 2023 | FY 2022 | FY 2021 | FY 2020 |
|---|---|---|---|---|
| 80% | 78% | 76% | 73% | 73% |




# BLOCK UTILIZATION – MAIN OR – FY YEAR OVER FY YEAR

| FY 2024 | FY 2023 | FY 2022 | FY 2021 | FY 2020 |
|---|---|---|---|---|
| 78% | 77% | 75% | 75% | 74% |

View By: Block Utilization (%) • Descending



# Request and release timeliness

CY 22

**Requesting and releasing time weeks in advance with quick responses and low denials**

**12 day** ↑

Request proactivity

(11 days in 2022)

**18 day** ↑

Release proactivity

(11 days in 2022)

**21 day** ↑

Transfer proactivity

(15 days in 2022)

- On average, OR schedulers responded to requests in under 1 day
- Slight uptick with 14% of requests were denied

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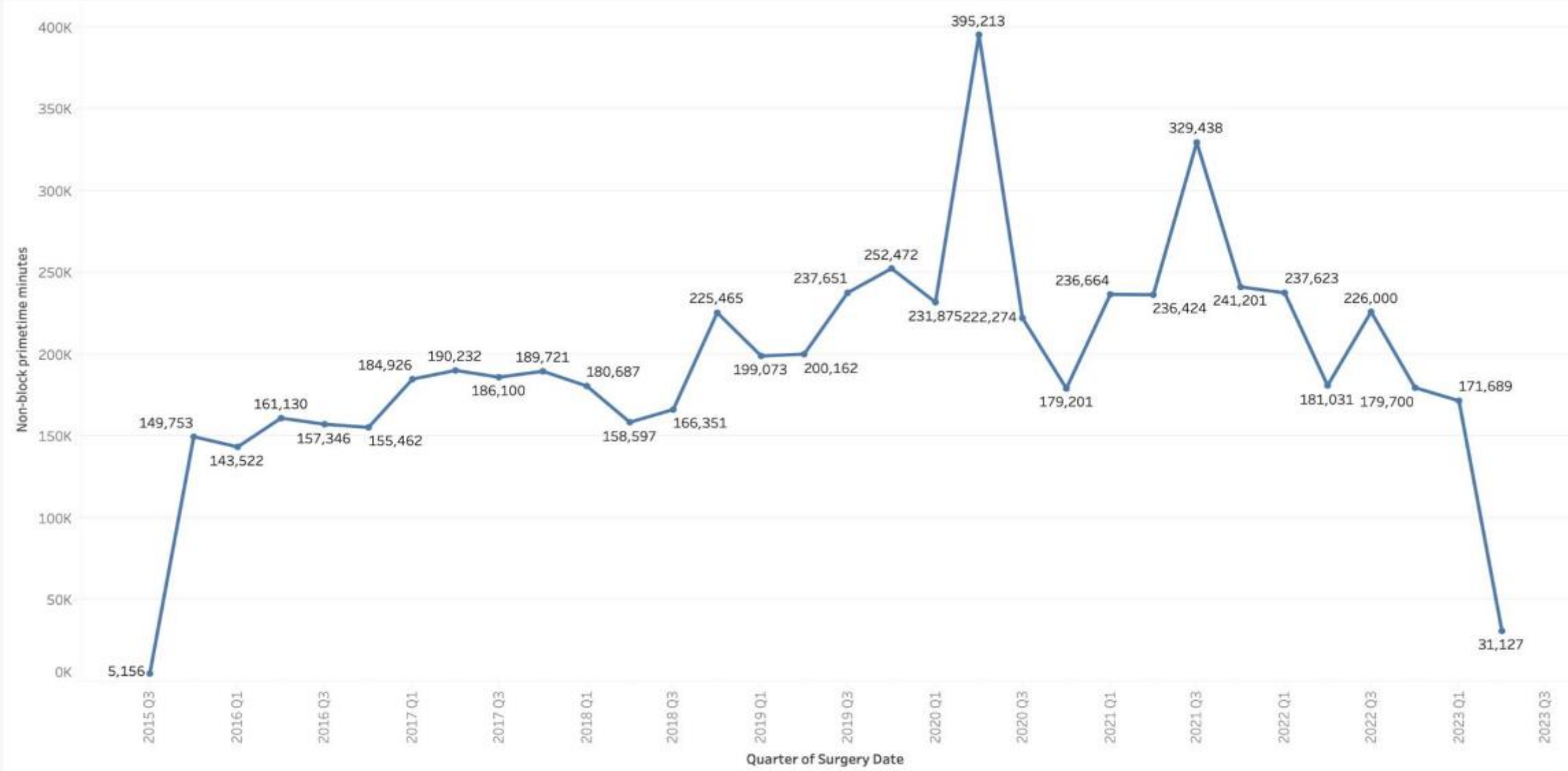
# ROI to date: Volume recovered in iQueue



# CULTURE: now that you have data, what are you going to do

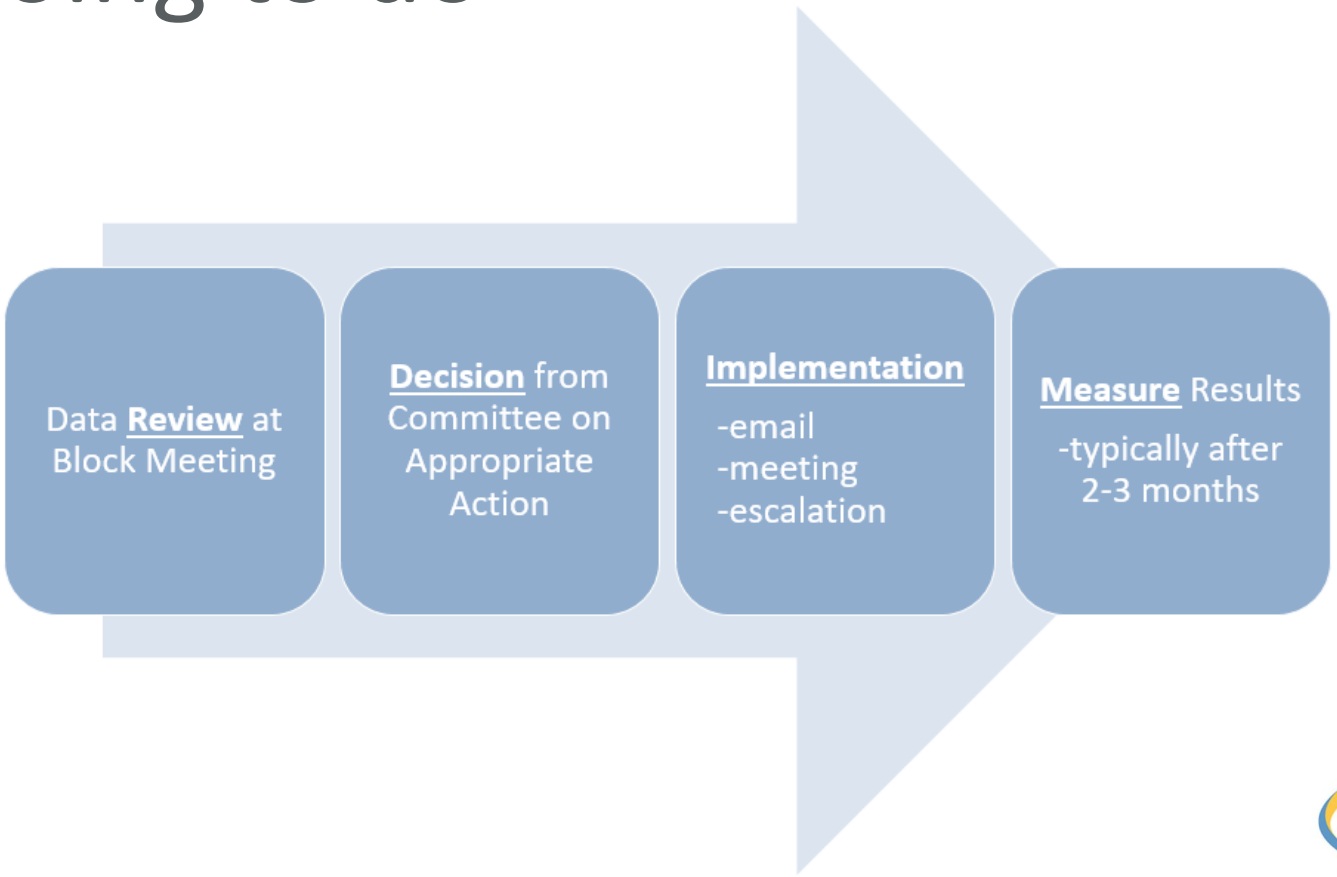
**how**

monthly local site management group (MG) meetings

quarterly report out to surgeon chief leaders

**why**

build trust through dynamic responses to changing needs

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# POST IQUEUE ENVIRONMENT

## Leadership Perspective


block is managed in predictable way

rules are clear

getting access to OR time has one process

we all see the same data

things off track are obvious

information for decisions is refined and dynamic

not person dependent

harder to not know

machine learning

less manual

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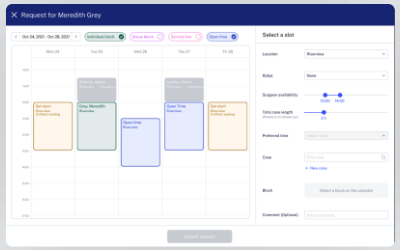
think of the person you go to for OR operations and volume and block

if they didn’t come back to work tomorrow, how prepared are you

# IQUEUE NOW

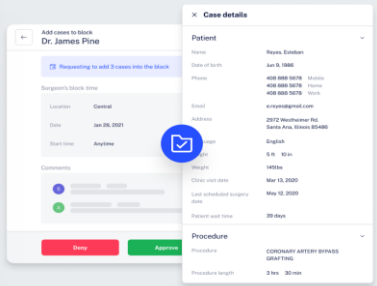
## EXCHANGE

Greater Access to Open Time



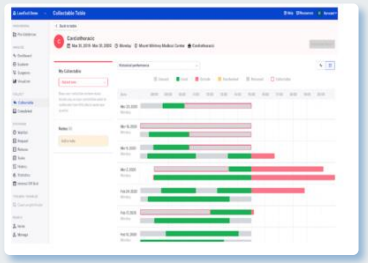
## CASE SCHEDULING

Optimized Scheduling



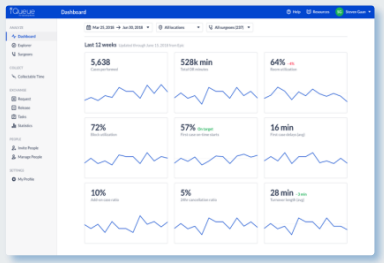
## BLOCK MANAGEMENT

Intelligent Block Allocation



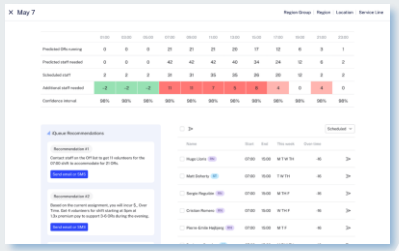
## ANALYZE

Advanced Reporting & Analytics



## STAFFING

Staffing Optimization



# THE DOWNSIDE


## requires commitment

new winners and new losers

## initial versions don't always meet your needs

testing, giving feedback

## how you set the system up matters

historic practices are up for review

## measuring ROI is complex

volume is not static – nothing is based on single intervention

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# POST IQUEUE ENVIRONMENT

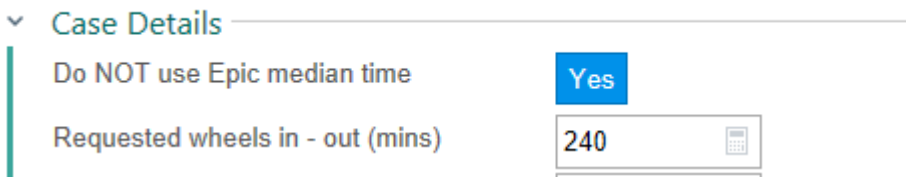
## Further Optimization

# median time

moved to Epic calculated median times August 1, 2023

all cases default to use Epic calculated time

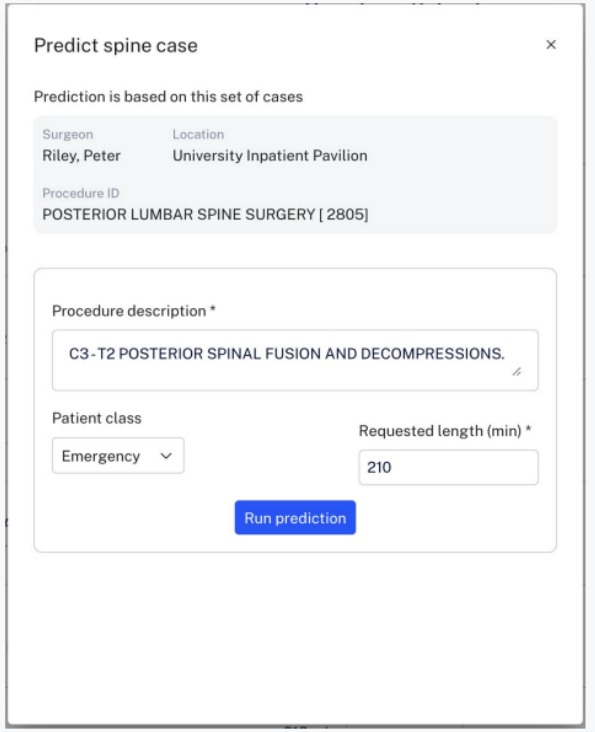
new button in case entry *"Do Not Use Median"*



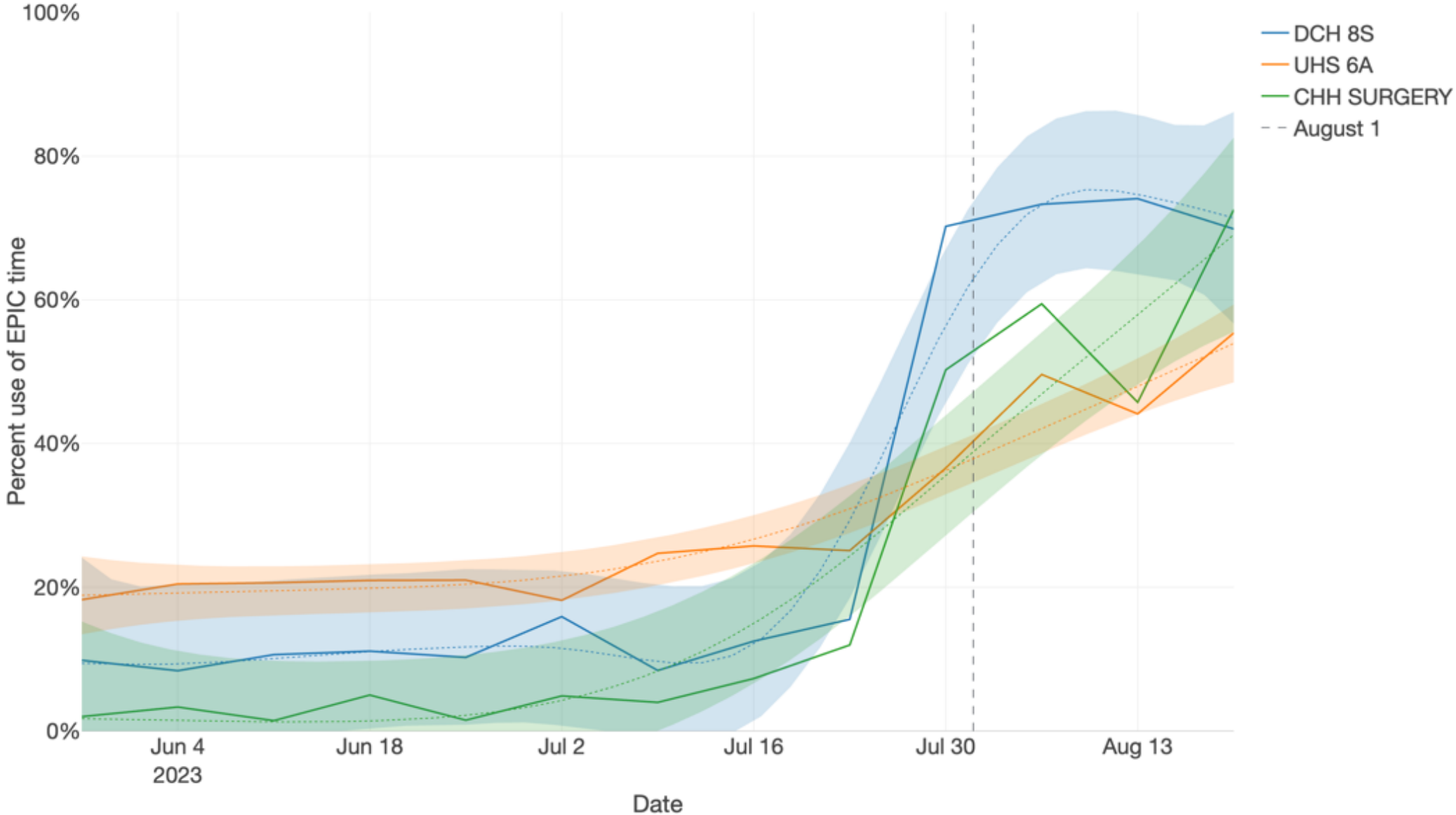

## Spine case estimation tool

**Testing and validating the spine case length estimation tool in iQueue**

- Currently testing model to ensure accuracy can be improved over current scheduling processes
- Leverages a machine learning model to help predict time needed for spine cases
- Can only be used for spine cases that a surgeon has previously performed



# How often are cases scheduled with the EPIC time?

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# POST IQUEUE ENVIRONMENT

## Further Optimization

## predictive analytics: rooms running

goals

strategic volume management,

right size staffing

**[OHSU SOR-Oregon Health] Please see below for the room utilization predictions for the next 14 days**

| | Current | | | | | | | | | | | | Predicted | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time of Day | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 |
| Surgery Date | | | | | | | | | | | | | | | | | | | | | | | | |
| Thu, Aug 04 | 0 | 0 | 0 | 15 | 14 | 11 | 10 | 8 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 12 | 14 | 14 | 7 | 5 | 2 | 1 |
| Fri, Aug 05 | 0 | 0 | 0 | 14 | 14 | 12 | 12 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 15 | 18 | 16 | 10 | 5 | 3 | 1 |
| Sat, Aug 06 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 6 | 6 | 4 | 2 | 2 | 1 | 1 |
| Sun, Aug 07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| Mon, Aug 08 | 0 | 0 | 0 | 15 | 15 | 15 | 13 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 19 | 19 | 19 | 18 | 6 | 6 | 3 | 2 |
| Tue, Aug 09 | 0 | 0 | 0 | 16 | 16 | 16 | 15 | 10 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 20 | 21 | 22 | 20 | 13 | 7 | 3 | 1 |
| Wed, Aug 10 | 0 | 0 | 0 | 13 | 13 | 12 | 12 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 19 | 18 | 20 | 18 | 13 | 7 | 3 | 2 |
| Thu, Aug 11 | 0 | 0 | 0 | 15 | 15 | 10 | 10 | 5 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 19 | 20 | 17 | 19 | 16 | 13 | 7 | 4 | 2 |
| Fri, Aug 12 | 0 | 0 | 0 | 13 | 13 | 12 | 10 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 19 | 20 | 20 | 19 | 18 | 14 | 8 | 3 | 1 |
| Sat, Aug 13 | 0 | 0 | 0 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 7 | 5 | 4 | 3 | 2 | 2 | 1 |
| Sun, Aug 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| Mon, Aug 15 | 0 | 0 | 0 | 12 | 12 | 11 | 8 | 7 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 16 | 19 | 19 | 18 | 19 | 13 | 7 | 3 | 1 |
| Tue, Aug 16 | 0 | 0 | 0 | 11 | 11 | 9 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 19 | 19 | 18 | 15 | 12 | 6 | 3 | 2 |
| Wed, Aug 17 | 0 | 0 | 0 | 11 | 11 | 10 | 9 | 7 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 19 | 20 | 19 | 19 | 19 | 13 | 8 | 5 | 2 |
| Thu, Aug 18 | 0 | 0 | 0 | 6 | 6 | 6 | 5 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 16 | 18 | 16 | 13 | 6 | 3 | 2 |

**Columns headers:** Time of Day in bi-hourly intervals. e.g. "7" represents the 2 hours starting at 7am.

**Values:** the max number of rooms we are predicting that you will be running during that bi-hourly interval.

Data pulled 8/4/2022

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# POST IQUEUE ENVIRONMENT

## Further Optimization

## predictive analytics: unused blocks

goal

strategic volume management

**[Oregon Health - OHSU DCH OR] Below are the abandon block predictions for the next 1-21 days.**

| Color | Meaning |
|---|---|
| | Model is more than 99% confident that at least the predicted number of blocks will go unfilled |
| | Model is more than 95% confident that at least the predicted number of blocks will go unfilled |
| | Model is more than 90% confident that at least the predicted number of blocks will go unfilled |

**Morning unused block predictions**

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | Aug 08 | Aug 09 | Aug 10 | Aug 11 | Aug 12 | |
| | 0 | 0 | 0 | 0 | 1 | |
| | Aug 15 | Aug 16 | Aug 17 | Aug 18 | Aug 19 | |
| | 1 | 0 | 0 | 0 | 1 | |
| | Aug 22 | Aug 23 | Aug 24 | | | |
| | 0 | 0 | 0 | | | |

Data pulled 8/3/2022

# POST IQUEUE ENVIRONMENT

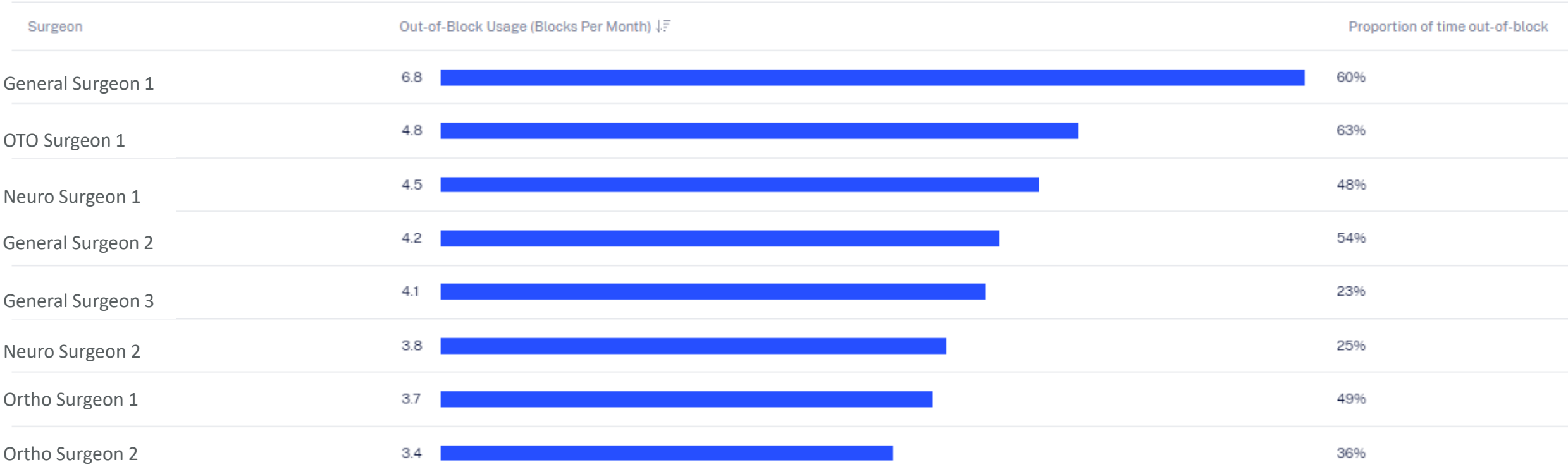
## Further Optimization

allocation analytics:
out of block usage

goal
data driven decision

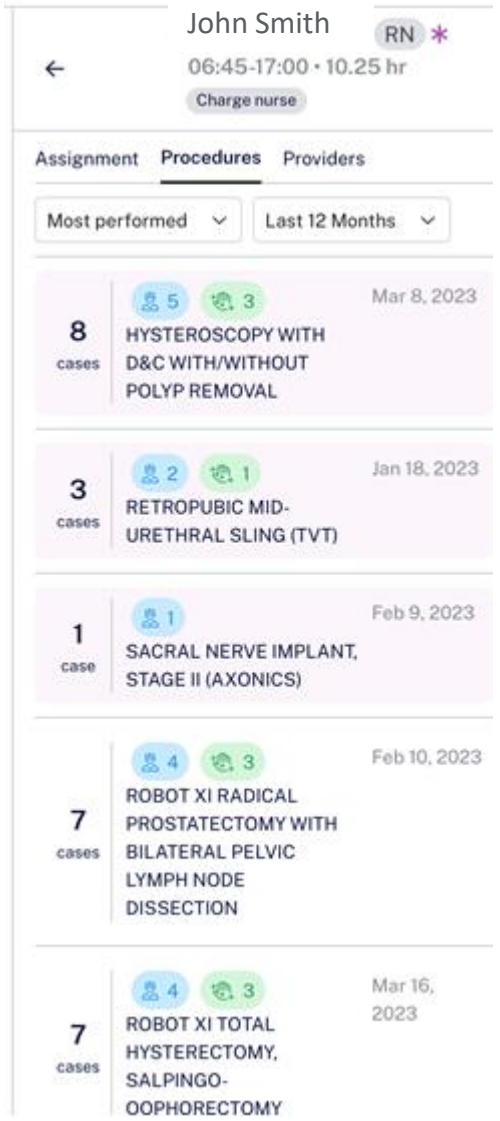
Total Out-of-Block Usage

121.9 blocks per month



# POST IQUEUE ENVIRONMENT

## Further Optimization

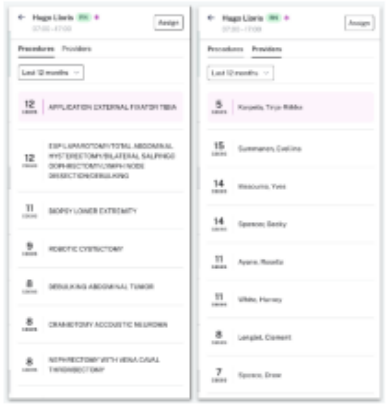


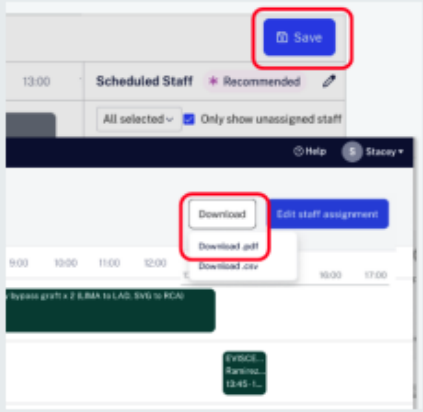

### Assign staff to ORs

Click Edit Staff Assignment to assign scheduled nurses and techs to ORs. Click on an OR to see which staff are recommended for assignment, based on their experience with the procedures and surgeons for the cases scheduled in that room.


### View staff experience

Click a staff member to review more details about their experience with procedures and surgeons for up to 12 months, of which relevant experience is shown first and highlighted.





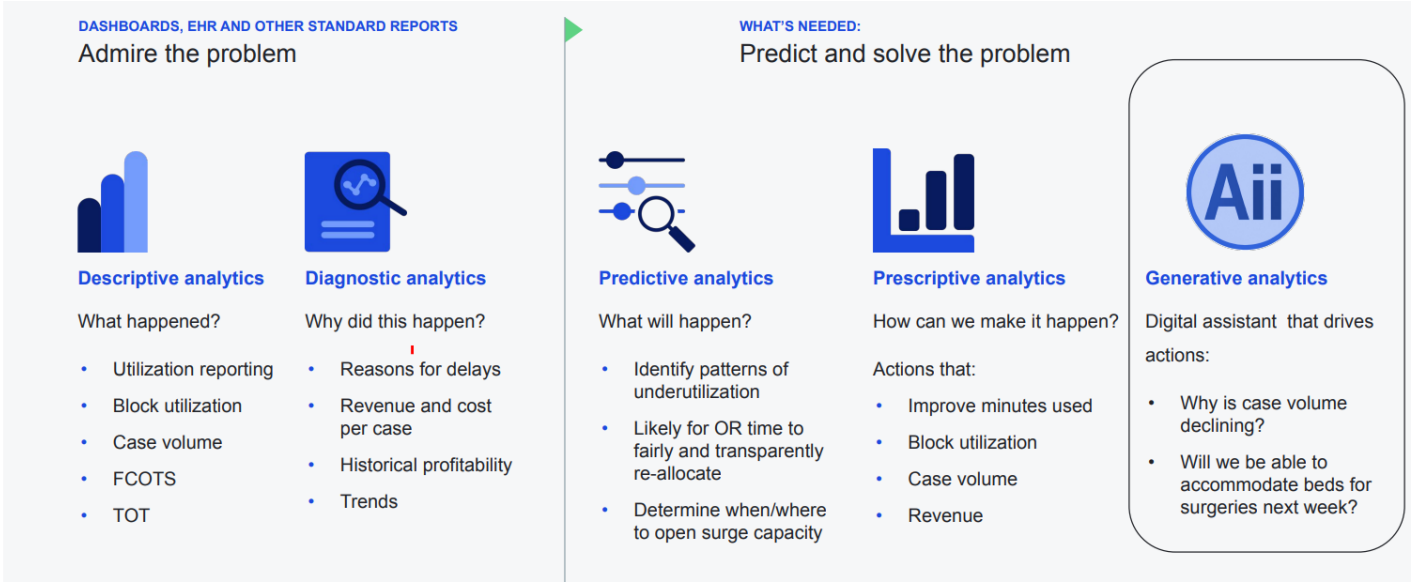

### Save and share

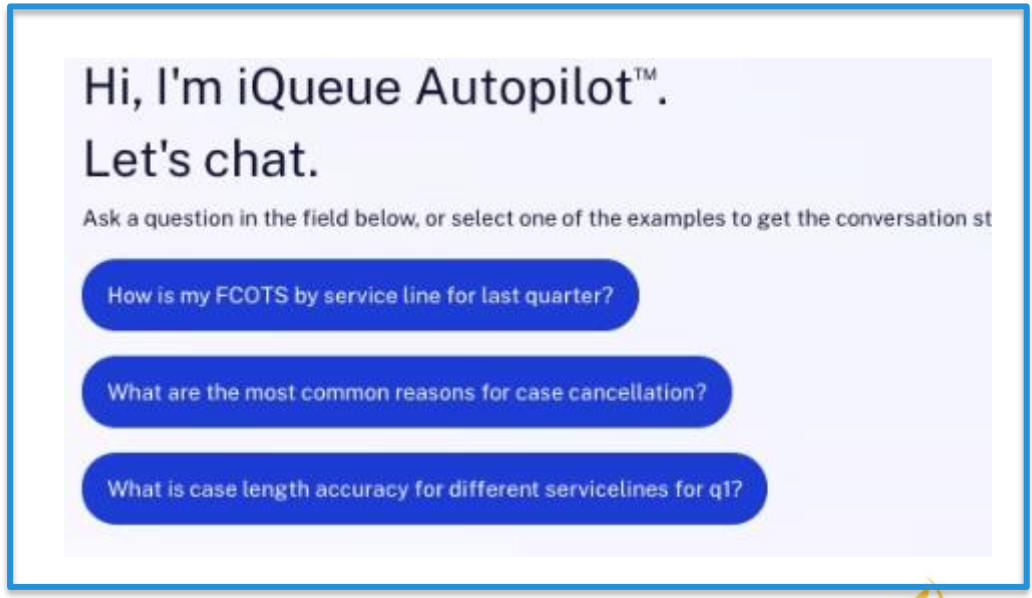
After completing assignments, save and share with managers and staff. Current assignments are also visible at any time within iQueue.

# POST IQUEUE ENVIRONMENT

## Further Optimization

# artificial intelligence




https://leantaas.com/iqueue_autopilot/

# KEY TAKE AWAYS

## change in metrics

traditional metrics are not the way of the future – they are just not good enough

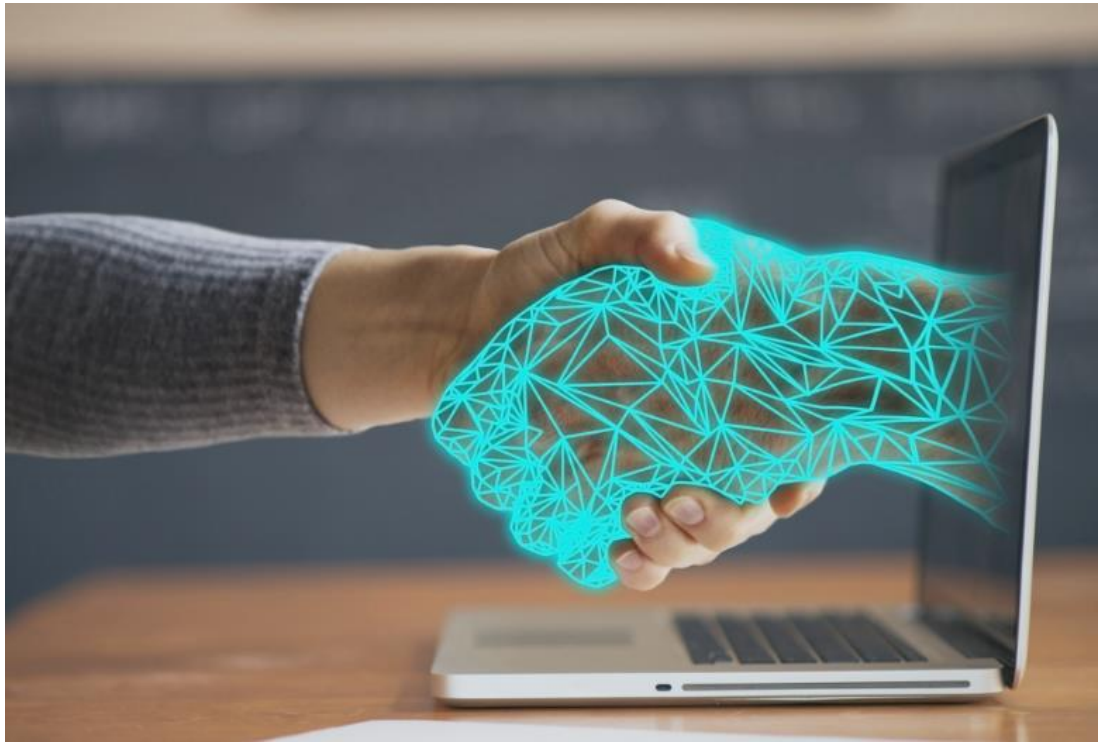
## work differently

smarter not harder, force multiplier

- leverage technology to drive outcomes

## don’t overlook culture

- takes grit, commit





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# Q&A

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