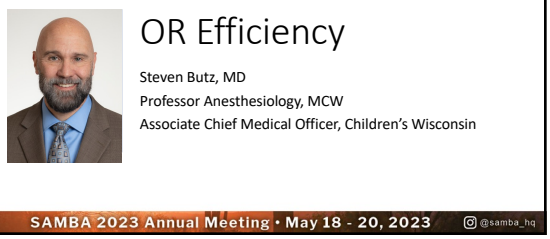
SOCIETY FOR AMBULATORY ANESTHESIA
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OR Efficiency
Steven Butz, MD
Professor Anesthesiology, MCW
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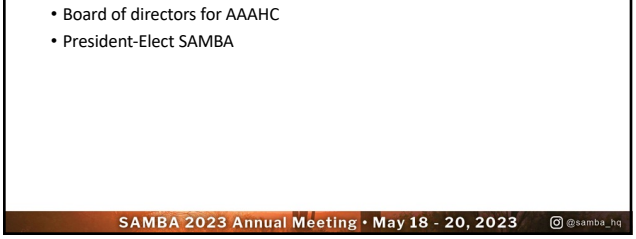
Conflicts of interest
• None for this lecture
• Board of directors for AAAHC
• President-Elect SAMBA
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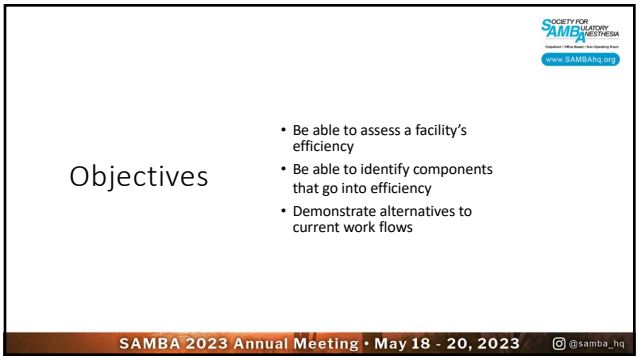
Objectives
• Be able to assess a facility's efficiency
• Be able to identify components that go into efficiency
• Demonstrate alternatives to current work flows
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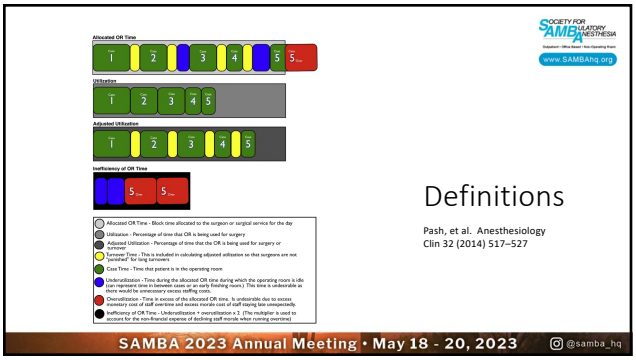
3


Definitions
Pash, et al. Anesthesiology
Clin 32 (2014) 517–527
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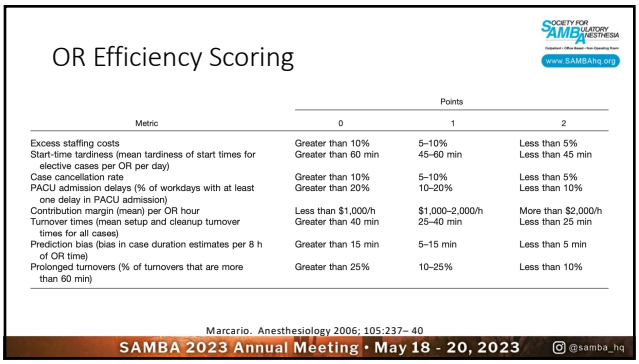
OR Efficiency Scoring
Points
Metric
0
1
2
Excess staffing costs
Greater than 10%
5–10%
Less than 5%
Start-time tardiness (mean tardiness of start times for elective cases per OR per day)
Greater than 60 min
45–60 min
Less than 45 min
Case cancellation rate
Greater than 10%
5–10%
Less than 5%
PACU admission delays (% of workdays with at least one delay in PACU admission)
Greater than 20%
10–20%
Less than 10%
Contribution margin (mean) per OR hour
Less than $1,000/h
$1,000–2,000/h
More than $2,000/h
Turnover times (mean setup and cleanup turnover times for all cases)
Greater than 40 min
25–40 min
Less than 25 min
Prediction bias (bias in case duration estimates per 8 h of OR time)
Greater than 15 min
5–15 min
Less than 5 min
Prolonged turnovers (% of turnovers that are more than 60 min)
Greater than 25%
10–25%
Less than 10%
Marcario. Anesthesiology 2006; 105:237– 40
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5


Efficiency Score:
Staffing Costs
Percent of time idle or over
• 0 points for > 10%
• 1 point for 5-10 %
• 2 points for < 5%
• Match to workers to do the work:
• Circulator
• Scrub
• Anesthesiologist
• Surgeon
• Avoid over- or under-use

6

## Efficiency Score: Start Time Tardiness

Mean tardiness of start times for elective cases per OR per day (8 hr):

- 0 points > 60 min
- 1 point 45-60 min
- 2 points < 45 min

- Keeps patients from waiting
- Balance between arrival time and time to prepare vs. predicted case time
- No credit given for cases that start early

7

## Efficiency Score: Cancellation Rate

Rates of:

- 0 points > 10%
- 1 point 5-10%
- 2 points < 5%

- Rates vary 4.6% to 13% depending on case type and location
  - Facility-based
  - Weather-based
  - Process- based
  - Patient-based (biggest)

8

## Efficiency Score: PACU Admission Delays

% of OR days with 1 case delay

- 0 points > 20%
- 1 point 10—20%
- 2 points < 20%

- This metric involves staffing resources to avoid delays in care in the PACU

9

## Efficiency Score: Contribution to Margin

Margin per hour

- 0 points < $1000
- 1 point $1000-$2000
- 2 points > $2000

- Margin per hour of OR time is income minus all costs (labor, supplies)
- All cases > $0 should be done
- Variability of contracts make is more difficult in US care model

10

## Efficiency Score: Turnover Times

Minutes

- 0 points > 40
- 1 point 25-40
- 2 points < 25

- Only time for clean-up and set-up, not delays
- Only is beneficial if staff and allocations are likewise reduced
- OR managers use it because it is comparable and surgeon satisfier

11

## Efficiency Score: Prediction Bias

End time at 8 hour shift

- 0 points >15 min
- 1 point 5-15 min
- 2 points < 5 min

- Judges your accuracy of case time
- Surgeons “underestimate”
- Historical data present 37%
- Facility may have 6000 DPCs

12

## Efficiency Score: Prolonged Turnover

% of turnovers > 60 min*
- 0 points >25%
- 1 point 10-25%
- 2 points < 10%

- Includes all reasons
- Process assessment
- Scheduling assessment

*Hospital-based

13

## Definitions

- **Important to have a common goal and idea of what time:**
  - Start time
  - Turnover time
  - Patient arrival

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14

## Definitions

- **Surgical Responsibilities:**
  - History and Physicals
  - Immediate pre-op assessment
  - Site marking
  - Consent
  - OR/Anesthesia set-up
  - Presence at case start

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15

## Definitions: Efficiency

- Time Used/Time Available
  - Assumes fully staffed for day
  - Ability to place more cases
  - Assumes all case pay equally
  - Cancellation rate
  - Overhead is basically fixed
  - "Lean" processing
  - Easier to compare as benchmark
- Expense/Time
  - Variable staffing
  - Ability to place more cases
  - Variable expense rate
  - Cancellation rate
  - Cases treated individually
  - Better for setting costs

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16

## Efficiency Benchmarks

Block Utilization:
- 70% is industry standard
- 65-80% is a good goal
- >85% is time to build/expand
- Variables is time available
  - 7am-3pm?
  - 7:30am-5:00 pm?
  - Most use 8-hour day

BENCHMARKING

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17


18

## Pre-op Evaluation and Testing

- Pre-Eval clinics reduce case cancellation (A1 level of recommendation!!!)
- Need to have consistent algorithms
- Options:
  - Phone vs Video vs In Person
  - RN vs PA/APN vs MD/DO
  - Electronic interface
- Testing only when indicated



19

## Pre-op: Scheduling of Cases

- Who schedules/verifies?
- Case length*
  - Average vs Surgeon request
  - "Optimism"
- Case order
  - Long vs short
  - Patient age
  - Case type
- When does assessment happen?

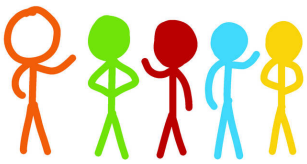
* Reeves, et al. A&A. December 2021 • Volume 133 • Number 6



20

## Pre-op: Arrival Time

- How long does it take to admit?
  - Average
  - Interpreter
  - Special needs
  - Ortho/crutch training
  - ASA score
  - COVID testing issues
- Transportation issues
- Anticipation of schedule performance





21

## Pre-op: Order Set

- Should standardize patient admission
- May include:
  - Pre-medication
  - DVT prophylaxis
  - Pregnancy testing
  - Glucose testing
  - Admission
- Surgical sets for X-ray, Antibiotics



22

## Intra-Op: "Start Time"

- For staff
- For "wheels at the door"
- Staggered
- First case vs consecutive cases
  - Not associated with delayed end
  - Under-ultilized time at end of day has greater impact on efficiency than anything else.*

* Reeves, et al. A&A. December 2021 • Volume 133 • Number 6



23

## Intra-Op: Turnover Time


- Need a definition
- Idealize parallel processing
  - Mapping of duties is useful
  - May differ by case type
- Induction rooms
  - Satisfaction
  - Effectiveness*
- Block room reduced times and increased cases/day**
- Anesthesia Contribution

*Varughese, et al. Pediatric Anesthesia 22 (2012) 327–334

**Brown, et al. Int J Health Care Qual Assur 2014;27(8):697-706.



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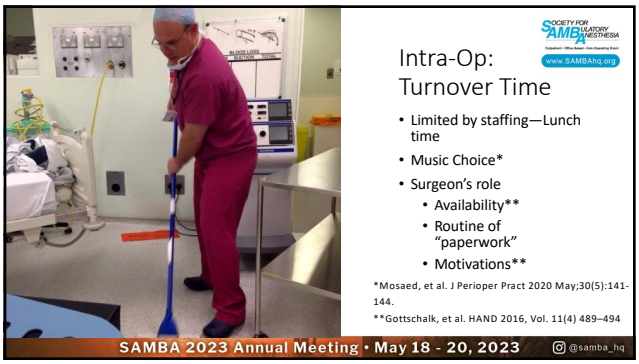


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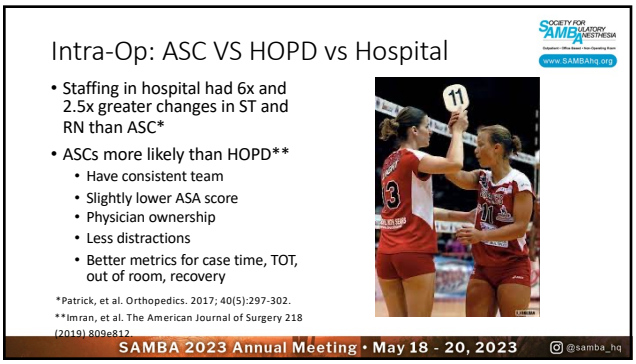


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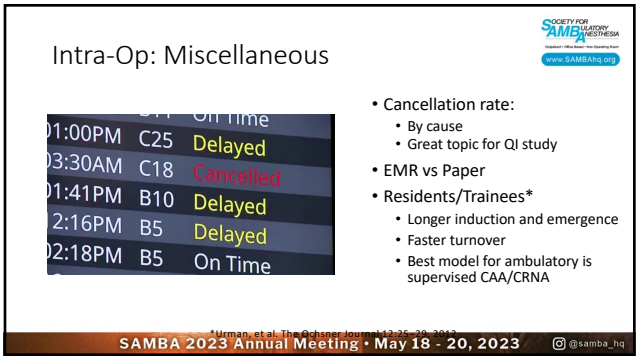


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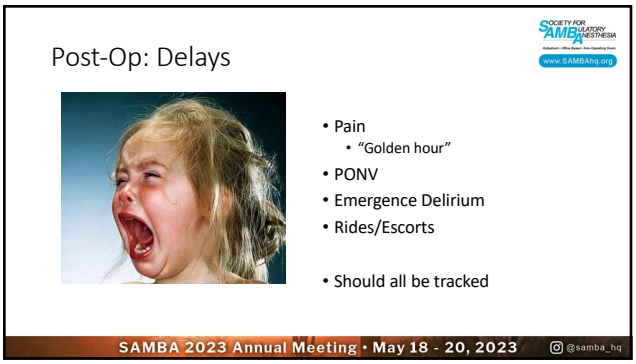


30

## Summary of Issues

- Over- and Under-Utilized times were most important to efficiency
  - Staff can be adjusted
  - Cases may be added or limited
  - Raw utilization is important, but accuracy is most important
- Promotes accuracy of end time as most important efficiency indicator

Reeves, et al. A&A. December 2021 • Volume 133 • Number 6



31

## So What Really Matters……?

- Operative time?
- Anesthesia efficiency?
- Team skill?
- Patient preparation?
- Facility lay out?
- Process development?

- All of it, but…..
  - Late starts are relatively few
  - Prolonged turn-over times are few
  - The biggest contribution is

**PREDICTABILITY!**

- Only thing that prevent overrun and under-utilization.



32

## THANK YOU!

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33



34