No (Wo)man is an Island: Culture, Teams, and Communication

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Overview

- Do interpersonal skills and communication matter?

- How do we define a team?

- What is the role of leadership?

- How do we optimize the use of fluid teams?

- What can individual surgeons do to optimize interpersonal skills and team communication?

They say no man is an island, but today I felt alone.

THE THINGSWESAY.COM

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INTER-PERSONAL SKILLS AND TEAM COMMUNICATION MATTER

TJC Sentinel Events

- Sentinel events are reported to The Joint Commission voluntarily or via a complaint

- Root cause analysis is performed
  - Identify fundamental reasons for the failure
  - Points in the process where an intervention could be implemented
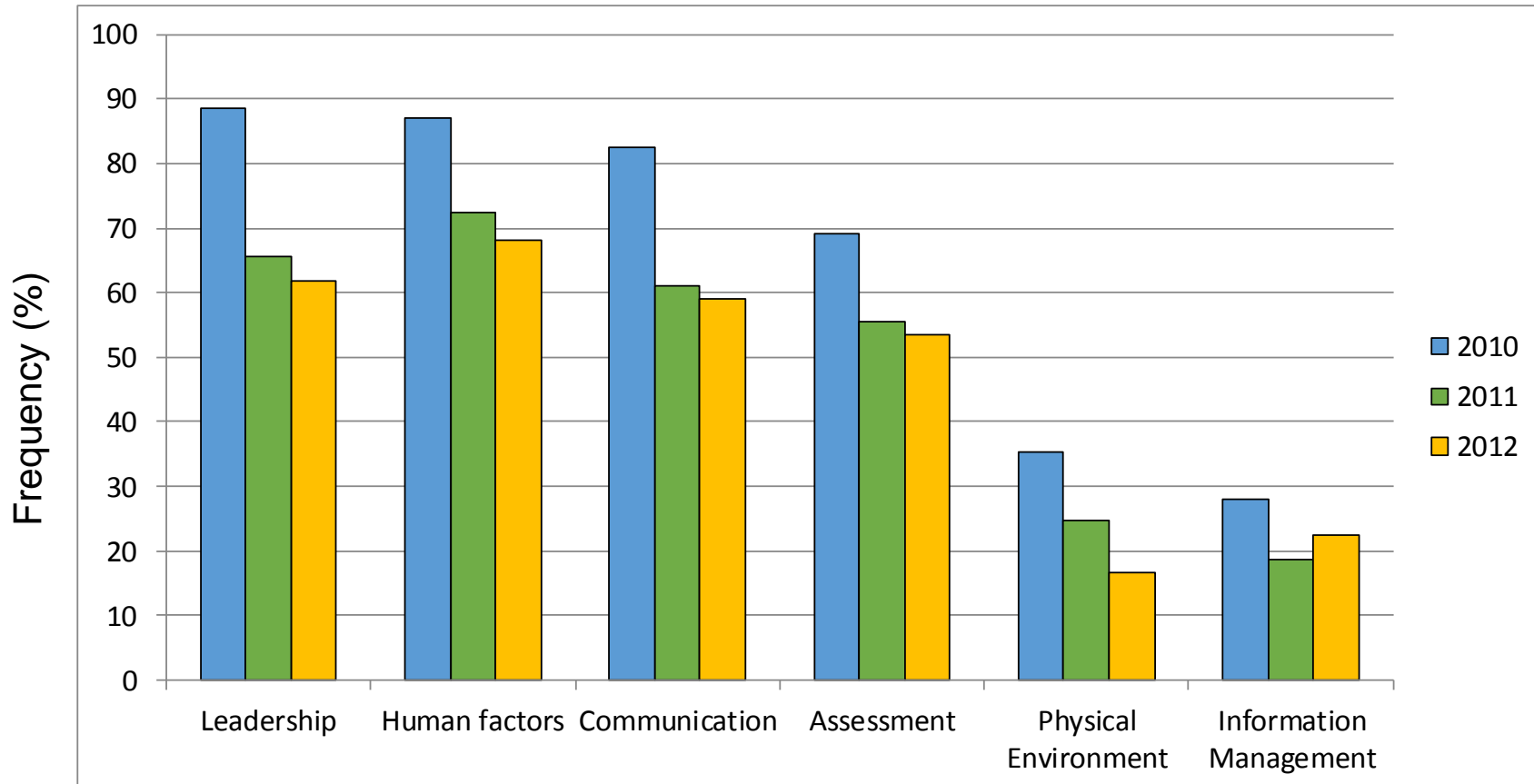 - Majority of events have multiple root causes

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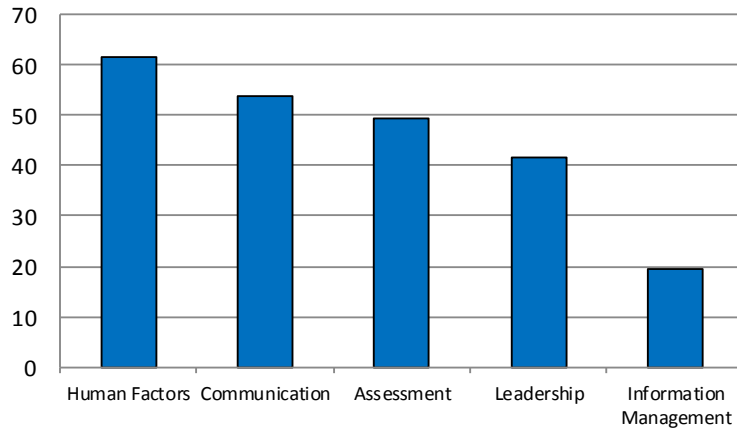# Most Frequently Identified Root Causes of Sentinel Events

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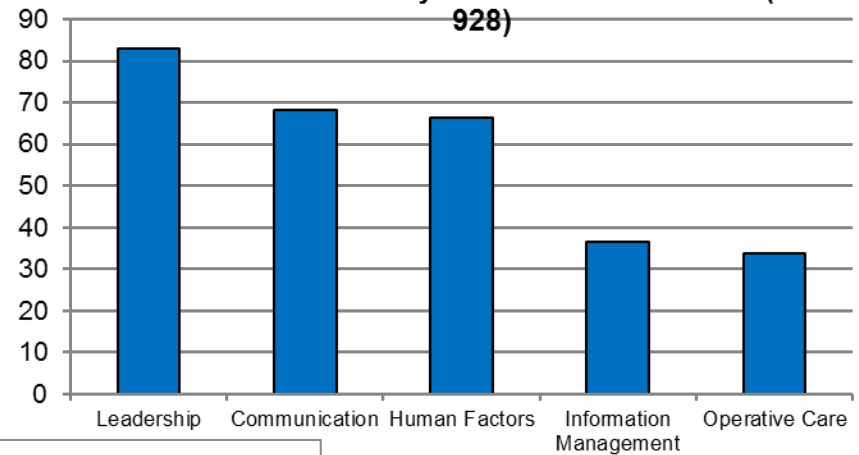WiSOR
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Surgical Root Causes (2004 – 2012)

Op/Post-op Complication Events Reviewed by The Joint Commission (N = 719) (Resulting in death or permanent loss of function)

Wrong-patient, wrong-site, Wrong-procedure Events Reviewed by The Joint Commission (N = 928)

Unintended Retention of Foreign Object Events Reviewed by The Joint Commission (N = 773)

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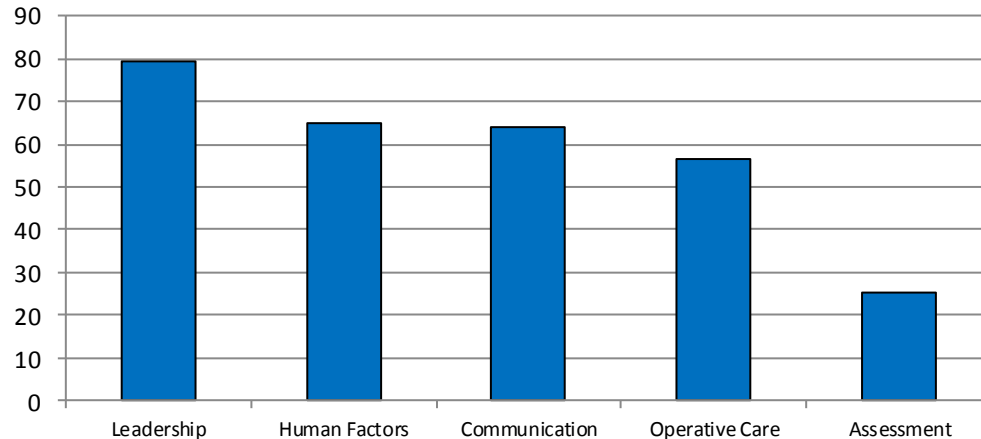
Peri-operative Communication

- Communication failure is common

  - Study 1 = mean of 9 per case (range 3-18)

  - Study 2 = mean of 28 per case

  - 1 failure every 8 – 10 minutes of operative time

- Documented impact on safety and efficiency

- Failure most often related to purpose (46%), audience (34%), system of care (27%)

- Cross-disciplinary communication is more common than intra-disciplinary and the attending surgeon is most often involved.
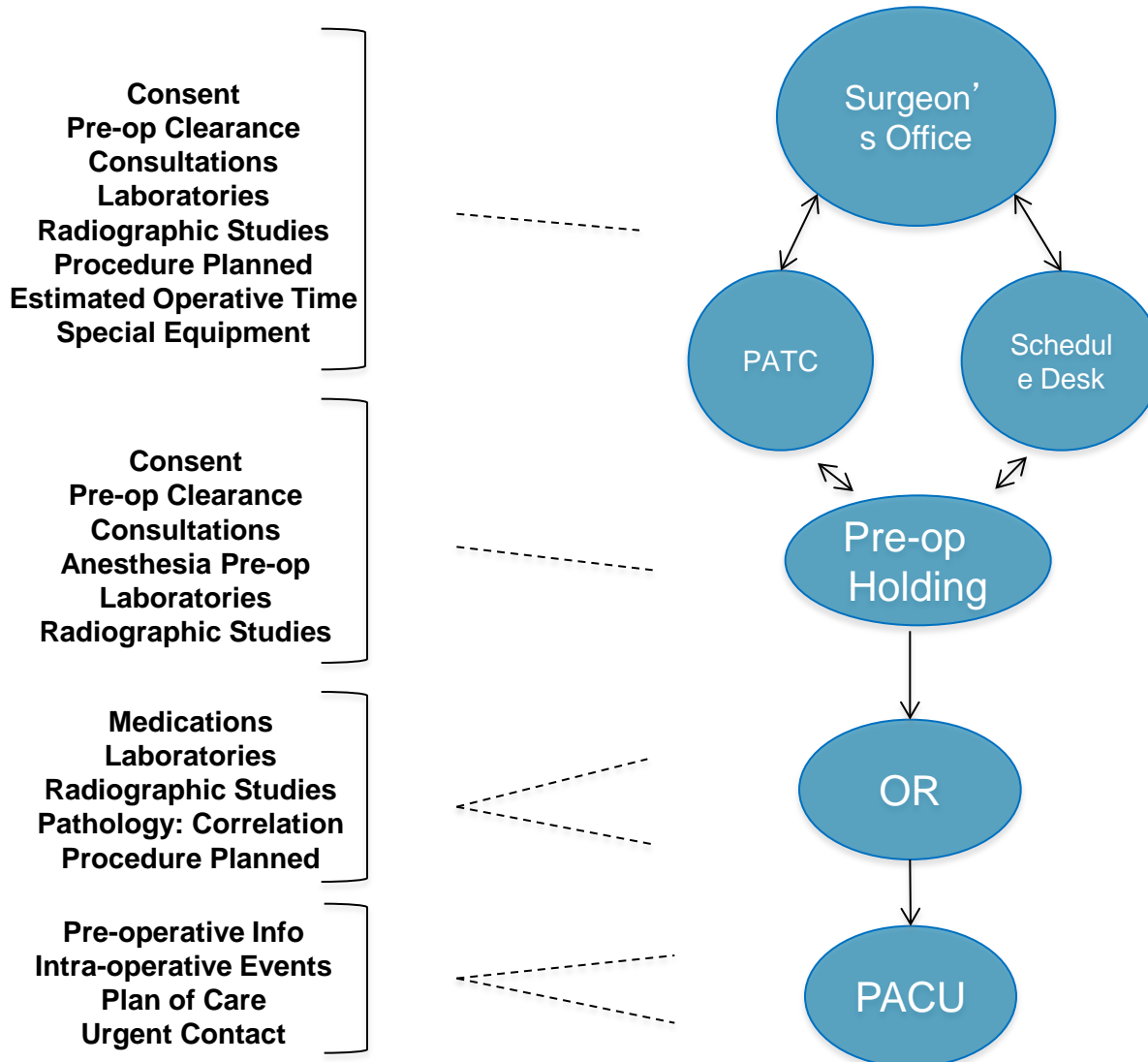
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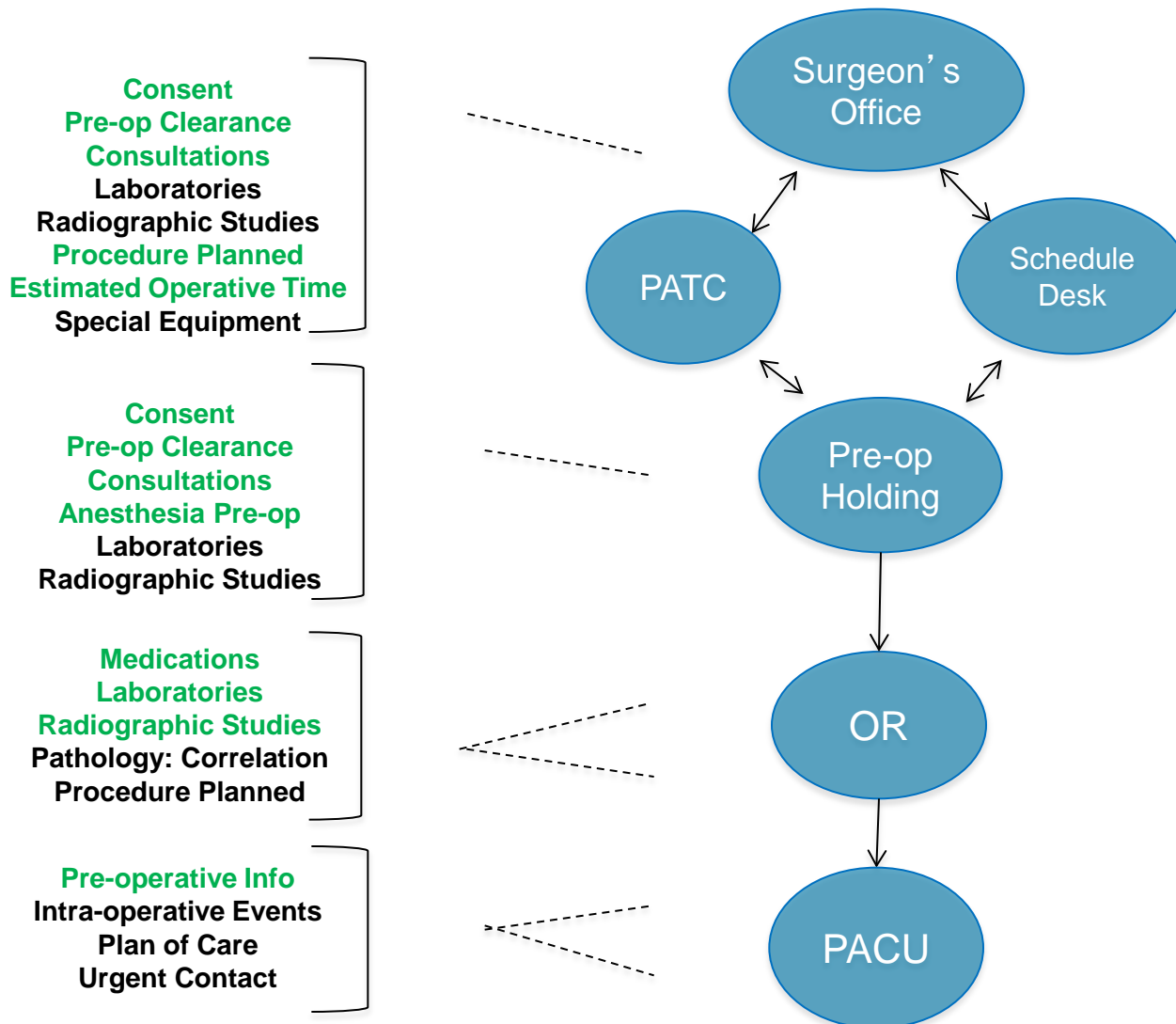WiSOR
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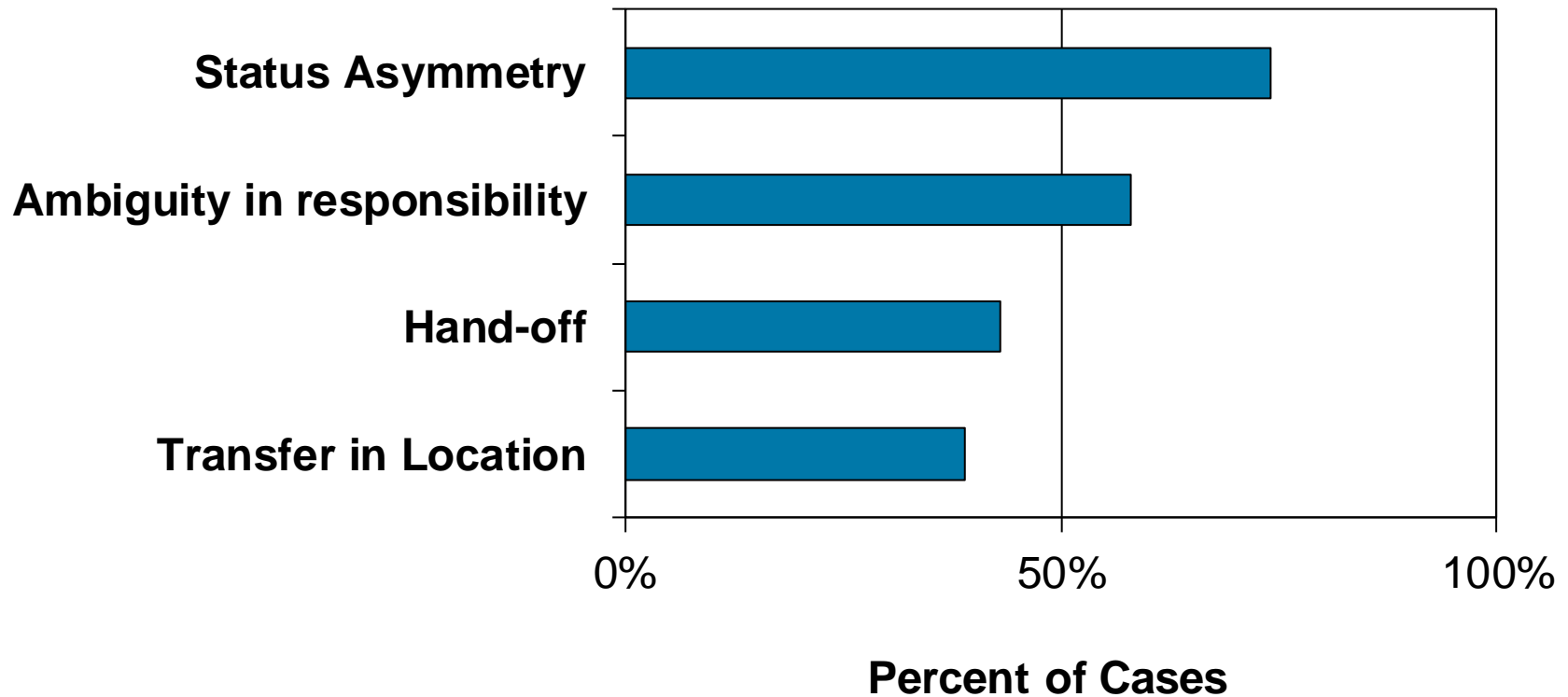
Forms of Information & Sites of Utilization

Consent
Pre-op Clearance
Consultations
Laboratories
Radiographic Studies
Procedure Planned
Estimated Operative Time
Special Equipment

Consent
Pre-op Clearance
Consultations
Anesthesia Pre-op
Laboratories
Radiographic Studies

Medications
Laboratories
Radiographic Studies
Pathology: Correlation
Procedure Planned

Pre-operative Info
Intra-operative Events
Plan of Care
Urgent Contact

Surgeon's Office

PATC

Schedule Desk

Pre-op Holding

OR

PACU

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Observed Sites of Vulnerability to Information Loss

Consent
Pre-op Clearance
Consultations
Laboratories
Radiographic Studies
Procedure Planned
Estimated Operative Time
Special Equipment

Consent
Pre-op Clearance
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Anesthesia Pre-op
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Contributing Factors

Bar chart titled "Percent of Cases" with x-axis from 0% to 100%:
- Status Asymmetry: ~75%
- Ambiguity in responsibility: ~58%
- Hand-off: ~44%
- Transfer in Location: ~40%

Percent of Cases

A TEAM IS MORE THAN THE SUM OF ITS PARTS

What is a team?

- Individuals (a) who see themselves and who are seen by others as a social entity, (b) who are interdependent because of the tasks they perform as members of a group

Teams generally have…
  - Task interdependence
  - Distributed expertise and roles
  - Hierarchically Organized
  - Common goal

Groups vs. Teams

- In *groups* performance depends mostly on individual contributions. People might all have the same roles and skills.

- In *teams* skills are complimentary, roles are highly defined, members are mutually accountable to each other and need each other to succeed. They work toward a common goal and are interdependent.

Group vs. Team Performance

- In *groups* productivity may be only as good as the most productive individual.

- In *teams* productivity is an emergent property of teamwork and task work and therefore total productivity can be greater than individual parts.
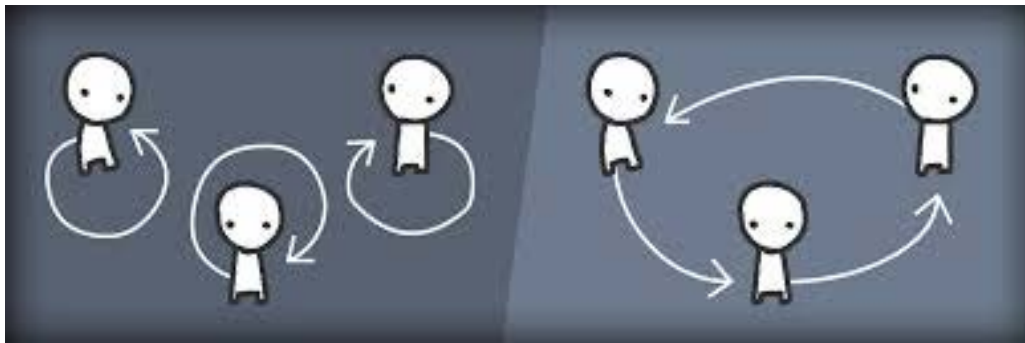
Taskwork vs. Teamwork

- Taskwork relates to member jobs

- Teamwork supports relationships and functional interactions
  - Communication, coordination, cooperation
  - Teamwork supports taskwork
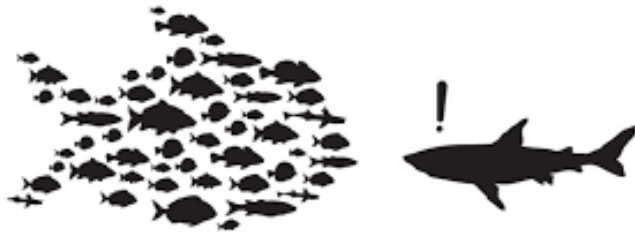
TEAMWORK

What is required for effective teams?

TEAM REQUIREMENTS

Attitude	Knowledge	Skills
"Feelings"	"Thinking"	"Doing"

TEAM PERFORMANCE
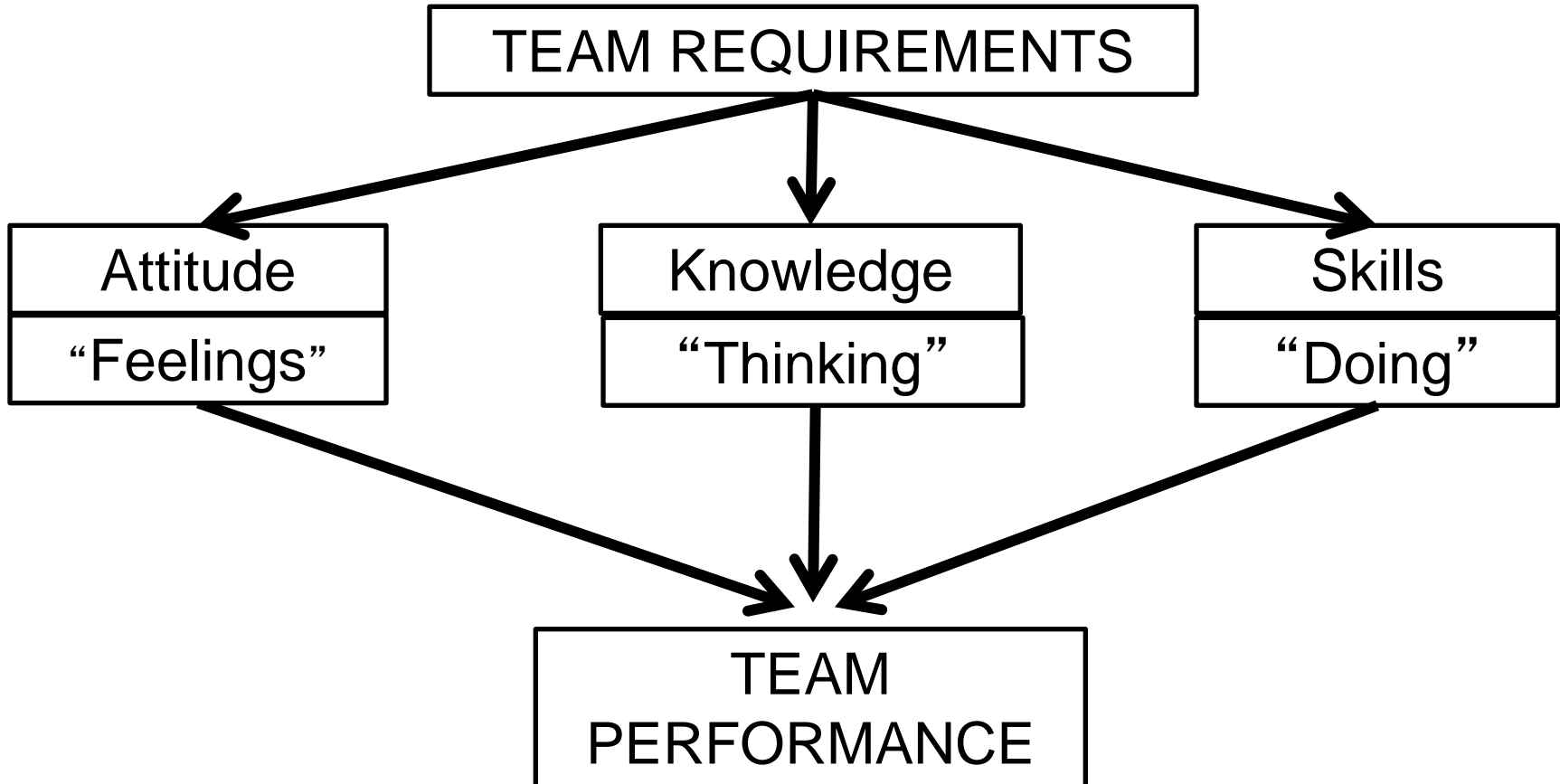
Attitude requirements

- Collective efficacy
- Shared vision
- Team cohesion
- Mutual trust
- Collective/team orientation
- Value of teamwork

Knowledge requirements

- Shared Task Models; Situation Assessment

- Teammate Characteristics; Familiarity

- Knowledge of Team Mission; Objectives; Norms; Resources

- Roles and expectations

- Individual-task proficiency

Skill requirements

- Mutual performance monitoring

- Supporting/Back-up behavior

- Team leadership

- Task-related assertiveness

- Conflict resolution

- Closed-loop communication

Building Good Teams

- Ensure team members know their role

- Ensure members know how their jobs intersect with other team members

- Set goals at the team-level as well as individual-level

- Provide timely individual and feedback on goals

Frontline Perspectives

- Discipline-specific differences in team identity:
  - Nursing/ surgical techs: Other techs and nurses
  - Anesthesia: Anyone assisting in provision of anesthesia care - Pre-op nursing; block team; intra-op anesthesia providers including those giving breaks; surgeon; PACU nursing and anesthesiologist
  - Surgeons: "Sub-teams" for pre-, peri- and post-operative periods - Likely reflect longitudinal role of surgeon
- Surgeon as key player in "setting the tone" during room set-up/ operative time-out

TRANSFORMATIONAL LEADERSHIP

Effective Teams and Leadership

- Are led by someone with good leadership skills, not just technical competence

- Have team members who believe the leaders cares about them

- Provide situation updates

- Foster teamwork, coordination and cooperation

- Leader self-corrects first

Leadership

- Recognized by professional societies as a critical skill for surgeons

- Style impacts team performance
  - Transactional (task-oriented)
  - Transformational (team-oriented)

- Based on limited data, most surgeon leadership behaviors are task-based

[Bass and Avolio, Mind Garden, 2004.]
[Parker, Am J Surg 2011.]

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Transactional vs. Transformational Leadership

Categories	Transactional	Transformational
Leader's source of power	Rank, position	Character, competence
Follower reaction	Compliance	Commitment
Time frame	Short term	Long term
Rewards	Pay, promotion, etc.	Pride, self-esteem, etc.
Supervision	Important	Less important
Performance Focus	Evaluation	Development
Where change occurs	Follower behavior	Follower attitude, values

Surgeon Behaviors

Behaviors	Transaction.	Mix	Transformation.
Communicating	25%	14%	27%
Decision making	4%	6%	7%
Directing	27%	30%	9%
Maintaining standards	4%	1%	8%
Managing resources	21%	5%	7%
Socializing	4%	4%	7%
Supporting others	0%	1%	20%
Training	11%	39%	17%

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Supporting others	0%	1%	20%
Training	11%	39%	17%

Communication Styles

Style	Transaction.	Mix	Transformation.
Argumentative	11%	6%	5%
Assured	11%	28%	14%
Expressive	4%	3%	0%
Precise	48%	53%	29%
Supportive	2%	10%	48%
Verbally aggressive	23%	0%	0%

Communication Styles

Style	Transaction.	Mix	Transformation.
Argumentative	11%	6%	5%
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Supportive	2%	10%	48%
Verbally aggressive	23%	0%	0%

Transactional Leadership

- Enters OR
- Starts time-out while everyone is preoccupied with other tasks
- Pressures everyone to move faster
  - "Quick, quick, quick" (snapping)
  - "We gotta get going. Gotta fly here."
- Gives specific directions about what he wants
  - "4 clips, 4 towels, regular drape, no Ioban, no chest press"

Transformational Leadership

- Enters OR
- Greets everyone individually
  - "Good morning…I'm delighted to see you."
- Communicates about case outside of time-out
  - "It's going to be quite a day…Very straightforward, very simple."
- Asks if ok to do time-out
  - "You guys ready for the blessing?"
- Starts time-out with introductions
- Asks if everyone ok with plan

Impact on Team Performance

Team Behavior/Hr	Transaction.	Mix	Transformation.
Cooperation	5.4	10.7	10
Exhaustion	0.38	0	0
Information Sharing	33.1	31.1	36.7
Voice	3.1	13.0	15.6

OPTIMIZING INTER-PERSONAL SKILLS AND TEAM COMMUNICATION

Teamwork Training
(McCulloch, Rathbone, & Catchpole, 2011)

Conclusion: "The evidence for technical or clinical benefit from teamwork training in medicine is weak. There is some evidence of benefit from studies with more intensive training programmes [such as simulation], but better quality research and cost-benefit analysis are needed."

Training Guide: Using Simulation in TeamSTEPPS Training
http://www.ahrq.gov/teamsteppstools/simulation/index.html

Pre-operative Briefings

Development and Pilot Evaluation of a Preoperative Briefing Protocol for Cardiovascular Surgery

Sarah E Henrickson, MA, Rishi K Wadhera, BS, Andrew W ElBardissi, MD, MPH,
Douglas A Wiegmann, PhD, Thoralf M Sundt III, MD

BACKGROUND: Preprocedural briefings have been adopted in many high consequence environments, but have not been widely accepted in medicine. We sought to develop, implement, and evaluate a preoperative briefing for cardiovascular surgery.

STUDY DESIGN: The briefing was developed by using a combined questionnaire and semistructured focus group approach involving five subspecialties of surgical staff (n = 55). The results were used to design and implement a preoperative briefing protocol. The briefing was evaluated by monitoring surgical flow disruptions, circulating nurse trips to the core, time spent in the core, and cost-waste reports before and after implementation of the briefing across 16 cardiac surgery cases.

RESULTS: Focus group data indicated consensus among surgical staff concerning briefing benefits, duration, location, content, and potential barriers. Disagreement arose concerning timing of the brief and the roles of key participants. After implementation of the briefing, there was a reduction in total surgical flow disruptions per case (5.4 preimplementation versus 2.8 postimplementation, p = 0.004) and reductions in per case average of procedural knowledge disruptions (4.1 versus 2.17, p = 0.004) and miscommunication events (2.5 versus 1.17, p = 0.03). There was no significant reduction in disruptions because of equipment preparation or disruptions from patient-related issues. On average, briefed teams experienced fewer trips to the core (10 versus 4.7, p = 0.004) and spent less time in the core (397.4 seconds versus 172.3 seconds, p = 0.006), and there was a trend toward decreased waste (30% versus 17%, p = 0.15).

CONCLUSIONS: These findings demonstrate the feasibility of creating a specialty-specific preoperative briefing to decrease surgical flow disruptions and improve patient safety in the operating room. (J Am Coll Surg 2009;208:1115–1123. © 2009 by the American College of Surgeons)

Effective communication and teamwork have been recognized as critical drivers of quality and safety in many "high consequence" industries. High consequence industries are those in which critical procedures are conducted in environments of high complexity and failure is potentially catastrophic.[1] Effective communication is particularly critical when processes are "tightly coupled" such that failures in one subsystem are directly reflected or even amplified in others, as may be the case in surgery. In health care specif-

ically, there is increasing recognition that breakdowns in communication or teamwork are causal factors in as many as 65% sentinel events, as per the Joint Commission.[2] Within the surgical domain, one analysis demonstrated incomplete, nonexistent, or erroneous communication to be a causal factor in 43% of errors.[3] Examined conversely, a study specifically of communication errors demonstrated that 36% of communication errors in the operating room resulted in team tension, resource waste, work-arounds, inefficiency, delays, patient inconvenience, and procedural errors.[4] The same study also showed that as many as 30% of operating room communications fail in one regard or another, either because of poor timing (46%), inaccurate or incomplete information (36%), issues remaining unresolved (24%), or failure to include key personnel (21%). In 33% of these failures there are effects that increase cognitive work load, interrupt routine, or increase tension.[4]

Preprocedure briefings are commonplace in many high consequence industries. Accordingly, it is not surprising

The goal of this project was to "...develop, implement, and evaluate a preoperative briefing for cardiovascular surgery."

"After implementation..., there was a reduction in total surgical flow disruptions per case including miscommunication events ...On average, briefed teams experienced fewer trips to the core and spent less time in the core ...and there was a trend toward decreased waste ."

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Standardization of Communication

"*Intraoperative communication was assessed before (n =18) and after (n =16) introduction of a structured communication protocol... Frequency of communication breakdowns per case decreased significantly after implementation.*"

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Team Familiarity

Development and Pilot Evaluation of a Preoperative Briefing Protocol for Cardiovascular Surgery

Sarah E Henrickson, MA, Rishi K Wadhera, BS, Andrew W ElBardissi, MD, MPH, Douglas A Wiegmann, PhD, Thoralf M. Sundt III, MD

Is the "sterile cockpit" concept applicable to cardiovascular surgery critical intervals or critical events? The impact of protocol-driven communication during cardiopulmonary bypass

Rishi K. Wadhera, BS,[a] Sarah Henrickson Parker, MS,[b] Harold M. Burkhart, MD,[a] Kevin L. Greason, MD,[a] James R. Neal, CCP,[a] Katherine M. Levenick, CCP,[a] Douglas A. Wiegmann, PhD,[c] and Thoralf M. Sundt III, MD[a]

Identifying methods to improve heart surgery: an operative approach and strategy for implementation on an organizational level

Andrew W. ElBardissi [a,*], Douglas A. Wiegmann [b], Sarah Henrickson [c], Rishi Wadhera [c], Thoralf M. Sundt III [c]

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[b] Department of Industrial and Systems Engineering, University of Wisconsin-Madison, Madison, WI, United States
[c] Division of Cardiovascular Surgery, Mayo Clinic, Rochester, MN, United States

Abstract

Background: Previous research has found teamwork failures to be strongly associated with the occurrence of surgical error. There have been few efforts to prospectively collect data regarding teamwork failures and technical errors in order to create interventions that would maximize teamwork effectiveness thereby minimizing technical error. Methods: Thirty-one cardiac surgical cases were prospectively observed by a trained human factors observer. Events were characterized according to human factors theory and included teamwork failures and technical errors. Surgical team structure was also evaluated in an effort to identify if it had an impact on surgical team performance. Results: A strong correlation ($r = 0.67$, $p < 0.001$) was recognized between the occurrence of technical error ($n = 155$) and teamwork failures ($n = 178$). Teamwork failures consisted of surgeon–technical team failures ($n = 90$, 51%), procedural information failures ($n = 36$, 20%), surgeon–anesthesiologist failures ($n = 27$, 15%), surgeon–perfusionist failures ($n = 18$, 10%), and failures due to handoffs ($n = 7$, 4%). Teams made up of members that were familiar with the operating surgeon had significantly fewer total event failures (8.6 ± 1.6 vs 22 ± 3.1, $p < 0.0001$) and teamwork failures (5.6 ± 1.8 vs 15.4 ± 1.9, $p < 0.0001$) in comparison to those teams where the majority of members were unfamiliar with the operating surgeon. Conclusions: These results indicate that the process of cardiac surgery would benefit from interventions to improve teamwork and communication. Such interventions could include preoperative briefings, revised approach to structuring of operative teams to favor members that have gained familiarity with the operating surgeon, standardized communication practices, and postoperative debriefings.
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Keywords: Patient safety; Error; Human factors; Teamwork; Communication

1. Introduction

As the complexity of the practice of cardiac surgery increases due to increasing comorbidities of patients and the introduction of advanced technologies, the achievement and maintenance of surgical excellence has become more challenging. In fact while there has been significant reduction in the morbidity and mortality after cardiac surgery since its inception over 50 years ago, there continues

human factors that is built upon these core concepts which focuses on integrating human capabilities and limitations into the design of work systems. Cardiac surgical care, therefore, could be improved by introducing effective error management approaches including efforts to reduce the frequency of errors, increase their capture, and enhance the ability to compensate for them when they occur.

Our work focuses on investigating team dynamics by applying human factor principles used in high consequence

"Teams made up of members that were familiar with the operating surgeon had significantly fewer... total teamwork failures in comparison to those teams where the majority of members were unfamiliar with the operating surgeon."

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TEAM FLUIDITY

Team Fluidity

- ## The OR is a high risk environment

- ## Many surgical AEs involve a breakdown in teamwork or communication
  - Interventions have been adapted from other disciplines
  - No consideration of differences in OR teams

- ## Exacerbated by use of surgical teams with changing (fluid) membership and intra-operative hand-offs
  - No real assessment of frontline providers' perceptions
  - No assessment of the confluence of unfamiliarity, hand-offs, communication

1. Regenbogen et al (2007) *Ann Surg* 2. Gawande et al (2003) *Surgery* 3. Rogers et al (2006) *Surgery*
4. Leap et al (1991) *N Engl J Med*   5. Brennan et al (1991) *N Engl J Med* 6. Gawande et al (1991) *Surgery*
7. Greenberg et al (2007) *JACS* 8. Greenberg et al (2008) *Ann Surg*

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Definitions

- Intra-Operative Hand-off
  - The exchange of personnel in which one person transfers control over, or responsibility for, the performance of specific tasks associated with the surgical care of a patient and then departs the OR

- Team Fluidity
  - Members are considered interchangeable based on roles
  - Team membership is unstable

Need for different skills at different stages

Flexible allocation of personnel

Ability for rapid upsizing or downsizing

Provide career development opportunity

Adapt to high turnover

Promote vigilant communication

Fluid Team = work toward a common goal but unstable membership

Avoid collusive behavior

Advantages

Barriers to Effective Team Functioning

Barriers to Effective Operative Performance

Loss of individual knowledge

Environmental distraction

Lack of shared mental model

Inadequate communication

Lack of cohesion

Inadequate preparation of technology/ instruments

Exchange of personnel with less technical skill and/or experience

Low individual commitment to group success

9. Bushe and Chu (2011) *Organizational Dynamics*

Methods

- Focus groups:
  - 6 to 8 providers
  - Separate for each discipline of interest (nursing, surgery, anesthesia)
  - Semi-structured format lasting approximately an hour
- Facilitated by systems engineer experienced with operating rooms and patient safety
- Analysis
  - Audio recorded, transcribed, and de-identified
  - Inductive qualitative analysis using constant comparative method

Results: The Ideal Hand-Off

- No consensus

- Some providers felt it should it be unobtrusive and confined to a single discipline

  "You never really notice when a good transition happens… the best transition would be one that's seamless and not even noticed." (Surgery)

- Others felt it should include a notification to the rest of the room

  "… a surgeon mentioned to me that they really, really appreciate when you leave, you say, '[this person] is relieving me now'…. Just to let them know." (Nursing)

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Results: The Ideal Hand-Off

- The hand-off may represent an opportunity to re-anchor the entire room

    "… if the circulator wasn't necessarily sure what's going on deep in the hole … the surgeon could overhear that and be like, 'oh no we're going to be doing this,' it kind of brings everyone back in the whole room." (Surgery)

Results: "Setting the Tone"

- Emerged empirically from the data
- Surgeons' behavior in the pre-operative period and during the time-out can "set the tone" for the rest of the case

"When a surgeon will verbally say, '[nurse's name], do you have everything that you need today?' Or '[tech's name] do you have everything that you need?' … It's nice when they acknowledge, I have a nurse and I have a tech and I need them to do my case… So I think that can definitely set the tone of a room." (Nursing)

"I've noticed a very stark difference when you go into the room. If there's somebody that you don't know, if you introduce yourself it changes the entire tone of the room … and the nurses are willing to … voluntarily be part of your team instead of being forced to be in that room that day." (Surgery)

Results: Managing Unfamiliarity

- In all disciplines, providers agreed that the presence of unfamiliar team members required increased verbal communication

"I think a lot more communication needs to happen." (Nursing)

"I try to be very clear about what it is that I want or I think is going on… and communicate that more in layman's terms" (Anesthesia)

AV Recording

- Screen inpatient OR schedule
- Inclusion criteria:
  - Open operation
  - Case estimated >3 hours
- Record case from room set-up to patient exit
  - GoPros x2
  - Sports glasses x1 (surgeon)

Communication Event Content

Legend:
- Directly Case-Related
- Other work-related
- Hand-Off
- Social/ Non-work related
- Project/ recording - Related
- Unknown

Pie chart values: 81.4%, 6.3%, 3.0%, 5.6%, 2.1%, 1.7%

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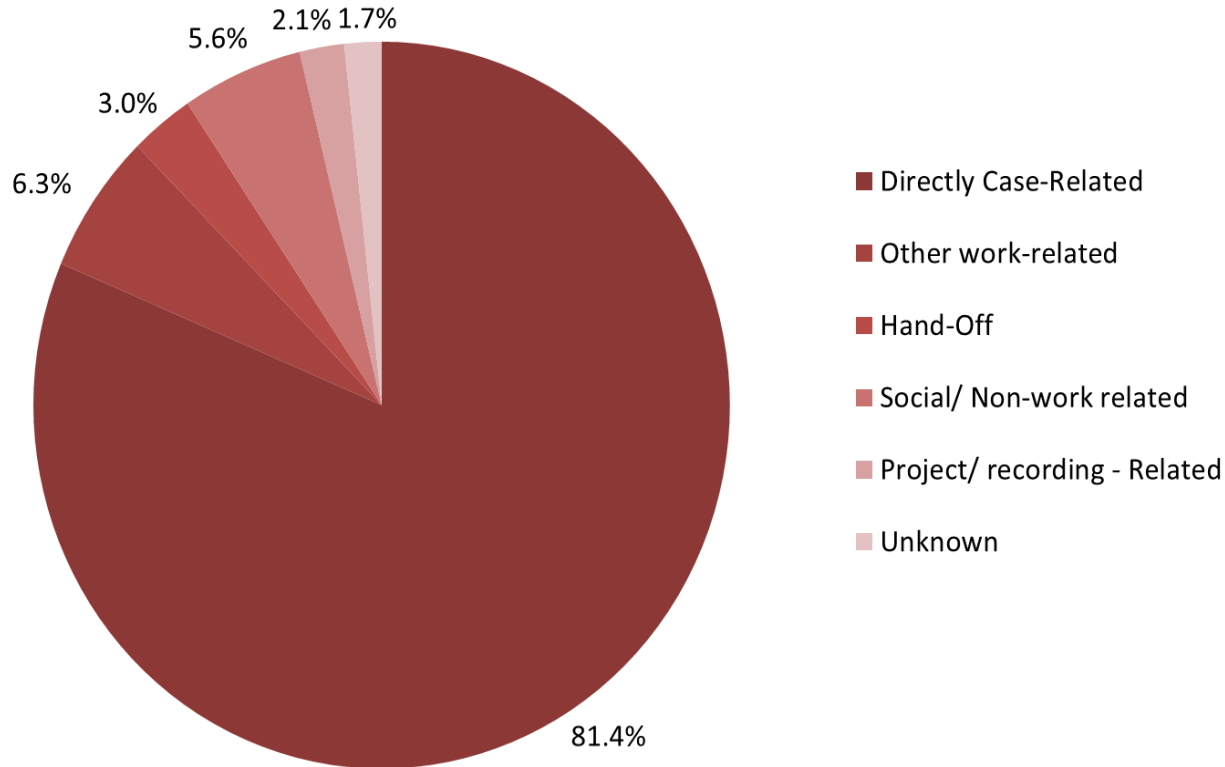
Familiarity and Communication Rates, All Dyads

Poisson Regression

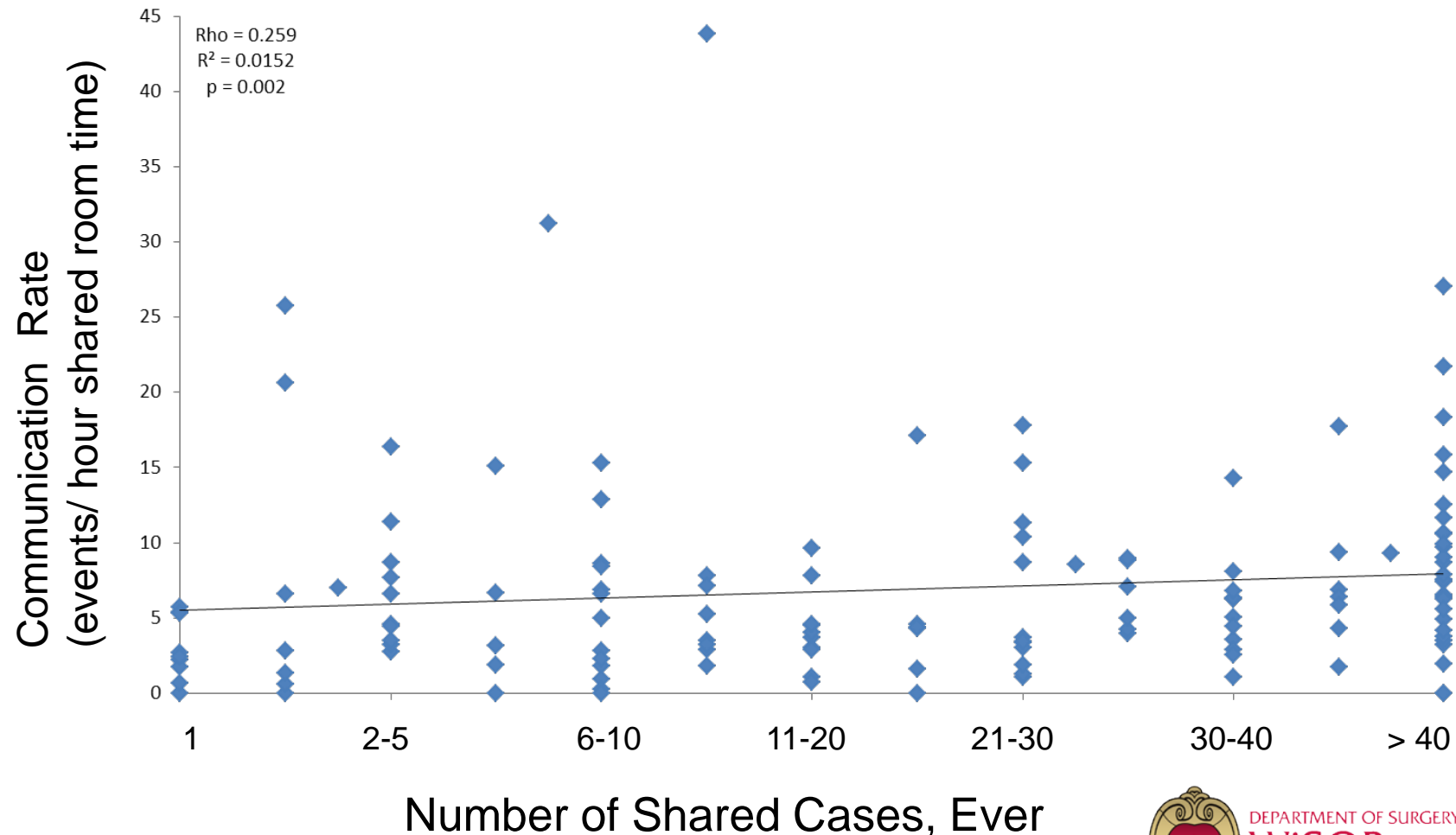| Table 3. Predictors of Dyad Communication Rate Using Poisson Regression.		
Predictor	**IRR** **(95% Confidence Interval)**	**Predicted Average Communication Rate (events/ h shared room time)**
Familiarity Score	1.02 (0.94, 1.09)	-
Across-Sex Dyad Status		
MM (N=42)	-	4.7
FF (N=29)	1.11 (0.81, 1.51)	5.2
MF (N=74)	1.37 (1.11, 1.84)	6.4
Cross-Discipline Dyad Status	-	
ID (N=28)	-	10.0
AN (N=35)	0.28 (0.18, 0.43)	2.8
AS (N=37)	0.52 (0.37, 0.74)	5.2
NS (N=37)	0.58 (0.44, 0.77)	5.8
IRR, Incident Rate Ratios; MM, Male-Male; FF, Female-Female; MF, Male-Female; ID, intra-disciplinary; AN, Anesthesiology-Nursing; AS, Anesthesiology-Surgery; NS, Nursing-Surgery		

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FINAL THOUGHTS

Simple Things to Consider

- Introduce yourself to new or unfamiliar personnel

- Consider writing names on the white board so you can identify your audience for verbal communication

- Ask team to call you by your first name

- Encourage your team to speak up if they have a concern

- Standardize "things" that don't really matter to decrease cognitive workload

- Seek feedback from your colleagues on your style – 360 degree evaluations

- Consider leadership training or coaching

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Conclusions

- Communication is a major contributor to poor patient outcomes in surgery

- The surgeon plays a critical role in "setting the tone" in the OR

- Interpersonal and leadership style is a critical determinant of team behavior in the OR

- There are simple things that you can do tomorrow to improve your interpersonal skills and team communication that can have major impact on patient safety, operative efficiency, and provider burn out

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Thank You

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