Three Objectives

1. Convey a few ideas about *teaming* from my recent book...

2. Recall some of my early research in healthcare and consider implications for healthcare teaming today

3. Report on some recent research (with Melissa Valentine) on teaming in healthcare
Teaming is a Verb

team • ing (v.)

Teaming is teamwork on the fly—coordinating and collaborating, across boundaries, without the luxury of stable team structures.

Teaming is especially needed when work is COMPLEX and UNPREDICTABLE.
A Lack of Teaming at “University Hospital”

Friday 12 PM

• Patient checked by surgeon several days after undergoing surgery removing abdominal tumors

• Patient’s white blood cell count had spiked, indicating a serious infection

• Patient also has difficulty breathing and has lost color in his face

• Surgeon orders a CT scan of his chest and abdomen to find the source of the infection
Executing a CT Scan Order: The Steps

- Technician inserts NG tube into patient’s nose, threading it into the abdomen
- Radiology technician X-rays patient to obtain image of the NG tube placement
- Radiologist reads the X-ray to confirm the tube has been inserted correctly
- Nurse administers contrast liquid through the NG tube
- Transporter brings patient to the CT room
- CT technician positions patient, activates the scanner, and confirms that the images are clear
- Radiologist sends results to the ordering physician
Physician orders test → Insert NG tube → Initial X-ray →
Transport patient → Administer contrast liquid → Read X-ray →
Do CT scan → Read results → Send results to physician
How Execution Unfolded: Friday

2:30pm: Technician inserts NG tube

4pm: Radiology technician brings portable X-ray machine to bedside

5pm: Family asks nurse when the X-ray will be read by the radiologist

6:30pm: Radiologist reads X-ray, confirms the NG tube position, and instructs nurse to administer contrast liquid

7:30pm: Contrast liquid has been in patient for one hour; he is ready for the CT

9:30pm: Nurse assures family that a CT can still be done even though it is late

10pm: Patient’s blood pressure drops and is transferred to ICU for observation
How Execution Unfolded: Saturday

12pm: Patient is stable and is transferred back to the medical floor

3pm: Nurse speaks with the surgeon, reminding him the NG tube has been in for 24 hours; surgeon orders the NG tube to be removed; nurse calls resident to ask for tube removal

5pm: NG tube removed by resident

Antibiotics started anyway

Tuesday: CT procedure repeated and infection source identified
what went wrong?

• Every individual performed his or her task competently, **but**...

• Each individual was part of a different department and did the task at a time convenient to the department, not the patient

• Each medical professional was part of a temporary virtual CT scan team, but without feeling like a part of a team

• Individuals are not sufficiently aware that they are performing **interdependent** work

what should happen?

• Individuals recognize themselves as members of a virtual CT team – or more accurately, as part of a virtual CT teaming process

• Different roles communicate with each other to optimize timing

• Teaming means coordinating each step and each hand-off

• Nothing happens to the patient until teaming – flow of inter-dependent action – is enabled

*Teaming becomes a habit...*
You Learn What They Let You Learn

<table>
<thead>
<tr>
<th>WORK UNIT</th>
<th>ERROR RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMORIAL 1</td>
<td>23.68*</td>
</tr>
<tr>
<td>UNIVERSITY 1</td>
<td>17.23</td>
</tr>
<tr>
<td>UNIVERSITY 3</td>
<td>13.19</td>
</tr>
<tr>
<td>MEMORIAL 2</td>
<td>11.02</td>
</tr>
<tr>
<td>MEMORIAL 4</td>
<td>8.6</td>
</tr>
<tr>
<td>MEMORIAL 5</td>
<td>10.31</td>
</tr>
<tr>
<td>UNIVERSITY 2</td>
<td>9.37</td>
</tr>
<tr>
<td>MEMORIAL 3</td>
<td>2.34</td>
</tr>
</tbody>
</table>

*preventable and potential adverse drug events (ADEs) per 1000 patient-days

Sorted by Survey Ratings of Unit Psychological Safety

THE POWER OF TEAMING
Reporting Climates

“She treats you as guilty if you make a mistake... I was called into her office and made to feel like a two year old.”

“She gives you the silent treatment.”

“You get put on trial...”

“People get blamed for mistakes... you don’t want to have made them.”

“Nurses are too hard on themselves... they are harder on themselves than I would ever be.”

(nurse manager)

“Mistakes [in this unit] are serious, because of the toxicity of the drugs—so you’re never afraid to tell the nurse manager.”

Reference, (32) 1-28
Context Matters

Efficiency

Safety & Quality

Innovation

Discovery

uncertainty

failure rates
The Blame Game

POTENTIAL CAUSES OF FAILURE

• Experimentation
• Uncertainty
• Complexity
• Lack of Competence
• Inattention
• Procedural Violation

QUESTION Which of these antecedents involve blameworthy acts?

QUESTION What percent of failures in your organization are caused by blameworthy acts?

QUESTION What percent of failures does your organization treat as caused by blameworthy acts?
## Reframing Failure

<table>
<thead>
<tr>
<th>Concept of Failure</th>
<th>Traditional Frame</th>
<th>Re-Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure is not acceptable</td>
<td>Failure is a natural by-product of experimentation</td>
<td></td>
</tr>
<tr>
<td>Beliefs about effective performance</td>
<td>Effective performers don’t fail</td>
<td>Effective performers learn from intelligent failures and share the lessons widely</td>
</tr>
<tr>
<td>Behavioral response</td>
<td>Self-protection</td>
<td>Curiosity</td>
</tr>
<tr>
<td>The manager’s job</td>
<td>Prevent failure</td>
<td>Promote learning</td>
</tr>
</tbody>
</table>
Brigham and Women’s airing medical mistakes

Hospital reports errors to staff in drive for improvement

By Liz Kowalczyk | GLOBE STAFF | APRIL 09, 2013
Psychological Safety

Psychological safety is a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, or mistakes.

IT’S ESSENTIAL TO TEAMING.

What gets in the way?
Be Aware of Interpersonal Risk

<table>
<thead>
<tr>
<th>NONE OF US WANT TO LOOK:</th>
<th>IT’S EASY TO MANAGE!</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGNORANT</td>
<td>DON’T ASK QUESTIONS</td>
</tr>
<tr>
<td>INCOMPETENT</td>
<td>DON’T ADMIT WEAKNESS OR MISTAKE</td>
</tr>
<tr>
<td>INTRUSIVE</td>
<td>DON’T OFFER IDEAS</td>
</tr>
<tr>
<td>NEGATIVE</td>
<td>DON’T CRITIQUE THE STATUS QUO</td>
</tr>
</tbody>
</table>

Hierarchy and Psychological Safety

N=1100 clinicians

Implementing a radical cardiac surgery innovation

for some, it’s too much change

“If you see an [MIS case] on the list, it’s like, ‘oh, do we really have to do this... just give me a fresh blade and I’ll slash my wrists right now.” (OR Nurse, Chelsea Hospital)

for others, it’s a breath of fresh air

“I was so grateful I was picked [for the team]. Every time we are going to do an [MIS case] I’m excited. I feel like I’ve been enlightened.” (OR Nurse, Janus Hospital)
Inclusive Leadership

- Leaders who:
  - Are accessible
  - Proactively invite input
  - Acknowledge their own fallibility

**Inclusive leaders**

*lower the psychological costs of speaking up and*

*raise the psychological costs of silence*
Children’s Hospital & Clinics
The Patient Safety Initiative (1999-2009)
It was difficult to broach the topic of safety because most people get defensive. Talking about safety implies that we are doing things, ‘wrong.’”
Health care is a very complex system, and complex systems are, by their very nature, risk-prone. The culture of health care must be one of everyone working together to understand safety, identify risks, and report them without fear of blame. We must look at ways to change the whole system when we manage to zero defects.”
The “Worse Before Better” Problem

System-wide patient safety reports at Children’s Hospital
Sacrificing Accountability

Is it a matter of finding the right point on a balance beam?

PSYCHOLOGICAL SAFETY

ACCOUNTABILITY
Psychological Safety & Accountability

- **Comfort Zone** (high psychological safety, high accountability)
- **Learning Zone** (high psychological safety, low accountability)
- **Apathy Zone** (low psychological safety, low accountability)
- **Anxiety Zone** (low psychological safety, high accountability)

THE POWER OF TEAMING
“Grades” Given to Morath by Executives

<table>
<thead>
<tr>
<th>Taking Charge</th>
<th>Planning the initiative</th>
<th>Implementing the Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>B/B+</td>
<td>C</td>
</tr>
</tbody>
</table>
Teaming and Team Scaffolds:
with Melissa Valentine
The need for teaming without stable teams is on the rise

- Organizations and occupations are changing
  - More professional and technical occupations, more contingent work, weaker employee-employer relationship
  - Brings a need to understand the new structures and activities associated with these changes
  - Especially with focus on concrete work activities
    (Barley and Kunda 2001; Cappelli 2000)

- New team forms are on the rise
  - Fluid teams, sand-dune teams, multiple team membership, extreme action teams, 24/7 shiftwork

- How to promote effective teaming?
One Approach: Role Theory

- Role structures allow coordination to be *depersonalized*
  - People “grant each other respect, authority, information … based on position in role structure, rather than on personal knowledge of each other’s competence.”

(Klein 2006, pg. 617)

- firefighters
- film crews
- trauma department

(Bigley and Roberts 2001; Bechky 2006; Klein 2006)
Roles Aren’t Enough

- Different mental models, and language barriers
- Ambiguous accountability
- Status differences between roles
- Role occupants can focus on individual role responsibilities at expense of overall task

(Bates 1975; Rossides 1998; Ashforth, Kulik & Tomiuk 2008)

(Donchen et al. 1995; Huber and Lewis 2010)

(Hackman and Oldham 1980; Edmondson & Nembhard)

Firefighters suspended for getting into a brawl with police officers

by Sameer Vasta
Another Approach: Team structures

- Stability
- Boundedness
- Whole interdependent tasks

(Hackman 1980; Hogg and Terry 2001; Hackman 2002; Wageman et al 2006; Lewis and Herndon 2011)
Roles

Teams

Teams SCAFFOLDS

Role coordination theory
(Bechky, 2006; Klein et al, 2006)

Role Set

Boundary

Shared Responsibility for Whole Task

Social identity theory
(Hogg & Terry 2000)

Job design theory
(Hackman 1980)
“Team Scaffolds”

- **Minimal Team Structures**
  that enable temporary, fluid, groups of people to act like a team during brief episodes working together

Do they influence behavior?
How and why?
Research Context

- Emergency Departments (ED) of US Hospitals
  - Rely on teamwork/coordination between physicians and nurses
  - 24/7 operations with multiple staggered shifts
  - Some implementing more team-based operations
Previous coordination structure

Patients → Nurses → Residents → Attendings
New coordination structure - PODS

Note: the work (task division), technology, staff, patient population remain the same
Qualitative Data and Analysis

- 30 exploratory and semi-structured interviews
  - Theoretical saturation
  - Little substantive variation on constructs of interest
- 5 days of observation of different pods
  - 2 days of observation 6 months after redesign
  - 3 days of observation 12 months after the redesign
- Line by line coding of interviews and field notes
- Axial coding into categories
- Development of a process model
  (Miles and Huberman 1994; Strauss and Corbin 1998)
BEFORE
Role structure: individual tasks

Nurses
Take patient history
Send for labs, administer meds, carry out interventions
Arrange discharge/admission

Residents: Patient history, order labs and imaging
Residents: Determine disposition, plan of care

Attendings: Approve course of care, possibly more orders
Attendings: Approve course of care, disposition

Physicians

Which nurse, which resident, and which attending work together on any given patient determined by availability
BEFORE
Behaviors: sequential coordination

- “Who’s Jackie?” - Resident
  - They didn’t know each other
- “They were always like, ‘that’s not my patient’” – Resident
  - They didn’t know who they were working with
- “You throw it over the wall” – Nurse
- “You’re just like a monkey following orders…no idea of the end result” – Nurse
  - They didn’t feel accountable for or aware of the whole task
- “It looks like crap now, it will look like crap when we get back” - Resident (on taking a 2 hour lunch)
  - They felt limited ability to personally improve things
AFTER – TEAM SCAFFOLDS
Role structure and Team Structure:

1. ROLE SET
2. BOUNDARY
3. WHOLE TASK
4. BENCHMARKED PERFORMANCE

Set of Patients owned by whole role set
Behavior: Fast-paced teaming

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-determining group-level priorities</td>
<td>“If the docs need something urgent they’ll say, “Hey, this is just the one last thing we need,” and then I’m going to try to make that blood pressure happen before I go do something else that’s going to take ten or 15 minutes and then we can get somebody out of there.” (Nurse)</td>
</tr>
<tr>
<td>Communicating in informal feedback loops</td>
<td>“We aren’t necessarily going through the computers [to give orders] but there is a positive feedback loop verbally. There is a lot of verbal communication. People are telling each other what’s going on.” (Resident)</td>
</tr>
<tr>
<td>Helping each other</td>
<td>“We say to each other: ‘There’s three [orders]. You take that one, I’ll take this one, and he’s going to take that one.’ It isn't a lot of, ‘Well, that’s not my patient. That’s on your bed. You need to take care of that.’” (Nurse)</td>
</tr>
</tbody>
</table>
How different structures enable coordination

**Depersonalized (Role SET)**

“It is a totally different team most of the time… If you have clearly defined roles and plug somebody else in who know what they’re doing, it’s going to continue to function fine.”

- Resident

“Working with a set group of nurses during your shift means you know whose attention you need to draw to something. I’m not like, “Her.” You get to know their names, and you’re getting them involved.”

- Resident
How different structures enable coordination

- **Belonging**

Before: “Who is this patient’s doctor?”
After: “Who is my doctor today?”

“You always know who your resident is and you always know your faculty, they’re right there so you can walk up and find your doctors because they’re right there.”

-Nurse
## How different structures enable coordination

<table>
<thead>
<tr>
<th>Team Structure</th>
<th>Team Scaffold</th>
<th>Role Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bounded</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Co-ownership</strong></th>
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</thead>
<tbody>
<tr>
<td>“The attendings do feel ownership, and I think the Pod Lead nurses do. I think everybody feels like, ‘It’s my pod. I have a sense of ownership with it.”” - Resident</td>
</tr>
<tr>
<td>(“There are so many combinations on a given shift. It’s kind of hard to come in and say “We’re Pod 1 today.”” - Attending)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accountability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint focus, shared responsibility, aligned priorities</td>
<td>Ownership and Co-ownership, Focus and Co-focus</td>
</tr>
</tbody>
</table>

(Klein 2006) (Hackman 2002)
Team Scaffolds as minimal in-groups: The Pod Wars

“The way it plays out is someone will say “Pod 4 is killing us!” and then the pace and intensity of communication will increase.” (Resident)

“For the most part, I think there is a sense that we’re all [doctors and nurses] in this competition together” –Attending
Quantitative Data

- Archival data from electronic medical record (EMR)
- 18 months of data from EMR

6 months pre pods 12 months post
Quantitative Data

- Nurse
- Resident
- Attending

Patient
Two-mode Network

One 24-hour period before the redesign.
291 patients, 81 staff (43 nurses, 12 attendings, 26 residents)
Average ego size: 16.7
Average throughput time: 7.9 hours
One 24-hour period after the redesign.
294 patients, 76 staff (38 nurses, 15 attendings, 23 residents)
Average ego size: 13.1
Average throughput time: 4.2 hours
### Pod Implementation, Coordination Patterns and Throughput Time (hours)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PODS</strong></td>
<td>-3.11***</td>
<td>-1.74***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.34)</td>
<td></td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td>0.34***</td>
<td>0.24***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0184)</td>
<td>(0.0213)</td>
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<tr>
<td><strong>Repeat collaborations</strong></td>
<td>-0.50**</td>
<td>-0.31*</td>
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<tr>
<td></td>
<td>(0.1586)</td>
<td>(0.1521)</td>
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<tr>
<td><strong>TEMPORAL CONTROL VARIABLES</strong></td>
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<tr>
<td>Pre-pod trend</td>
<td>-0.002</td>
<td>-0.016</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.002)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Upstaff trend</td>
<td>-0.003</td>
<td>0.018</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.03)</td>
<td>(0.032)</td>
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<tr>
<td>Upstaff</td>
<td>-0.94</td>
<td>0.27</td>
<td>-0.74</td>
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<tr>
<td></td>
<td>(0.004)</td>
<td>(0.48)</td>
<td>(0.49)</td>
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<tr>
<td>Training trend</td>
<td>0.003</td>
<td>0.07</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.04)</td>
<td>(0.046)</td>
</tr>
<tr>
<td>Training</td>
<td>-2.50</td>
<td>-1.50</td>
<td>-2.73</td>
</tr>
<tr>
<td></td>
<td>(0.59)</td>
<td>(0.43)</td>
<td>(0.50)</td>
</tr>
<tr>
<td>Post-pod trend</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.002)</td>
<td>(0.004)</td>
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<tr>
<td><strong>OPERATIONAL CONTROL VARIABLES</strong></td>
<td></td>
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</tr>
<tr>
<td>Day of the week</td>
<td>range: 0.36-1.1</td>
<td>range: 0.17-0.97</td>
<td>range: 0.18 – 0.86</td>
</tr>
<tr>
<td></td>
<td>(0.13-0.170)</td>
<td>(0.11-0.17)</td>
<td>(0.11-0.16)</td>
</tr>
<tr>
<td>Volume</td>
<td>0.006</td>
<td>0.0001</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.0014)</td>
</tr>
<tr>
<td>Avg number of diagnoses/case</td>
<td>1.12</td>
<td>0.13</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>(0.38)</td>
<td>(0.36)</td>
<td>(0.35)</td>
</tr>
</tbody>
</table>
Team Scaffolds - Conclusions

- A profoundly different social experience in the ER
  - We observed the social construction of a team experience in the absence of real teams

- Mechanisms: How team scaffolds support teaming
  - Accountability
  - Belonging
  - Visibility/Ease
Three Conclusions

1. The need for teaming is on the rise, but teaming doesn’t come naturally…

2. Psychological safety – and openness about error and failure – are essential to effective healthcare delivery, because of its inherent complexity and heterogeneity

3. Minimal structure can go a long way in promoting effective teaming…
9 Words for Healthcare Leaders

✓ Aim High
✓ Team Up
✓ Fail Well
✓ Learn Fast
✓ Repeat