

Communicate & Coordinate for Resilience & Reliability



Beth Lay – Calpine
Dave Christenson – Organizing 4 Resilience
Mike Rayo – Ohio State University
Zak Woods - Calpine

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“I think that more flow of information, the ability to stay connected to more people, makes people more effective as people.”

Mark Zuckerberg, founder of Facebook

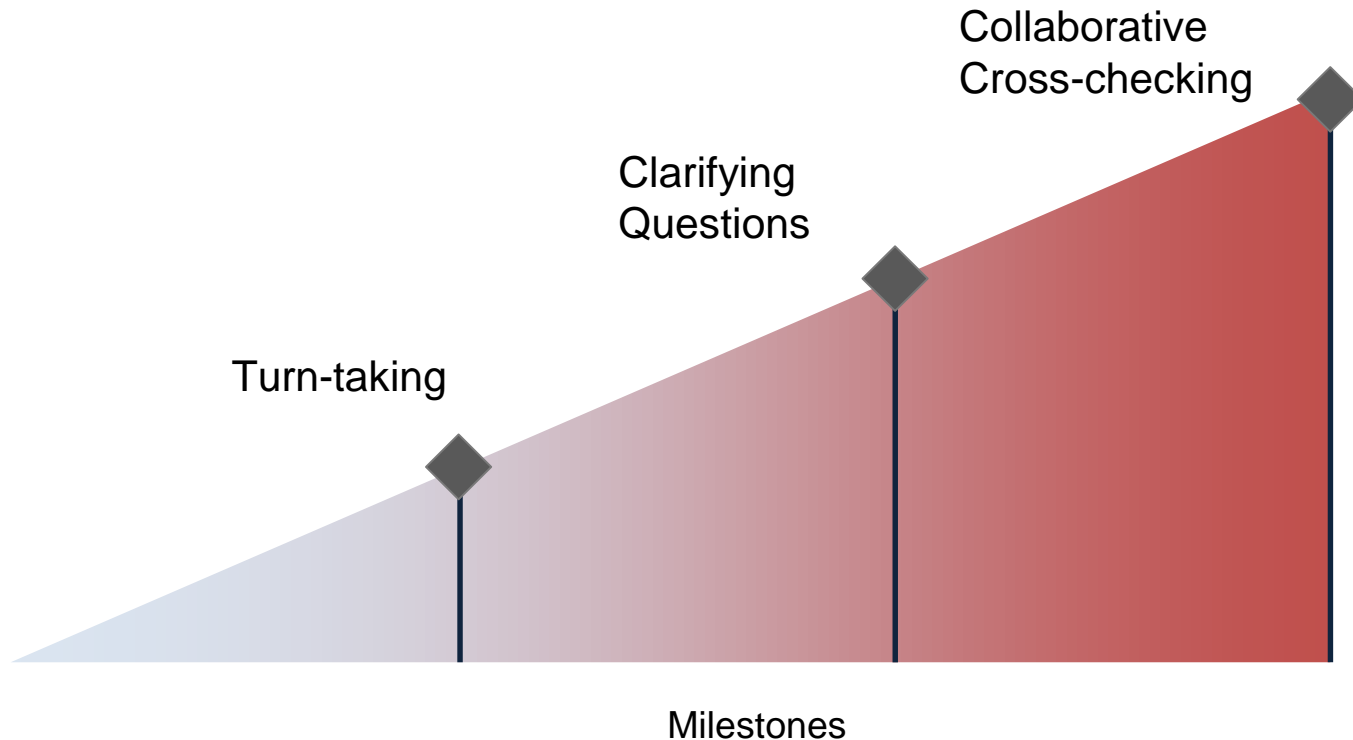
Mike Rayo – Collaborative Engagement in Healthcare Handoffs

Beth Lay – Real Time Risk Assessment

Dave Christenson – Possibilities opened by New View

Collaborative Engagement

...is the frequency of strategies used to invite participation of all involved in an encounter

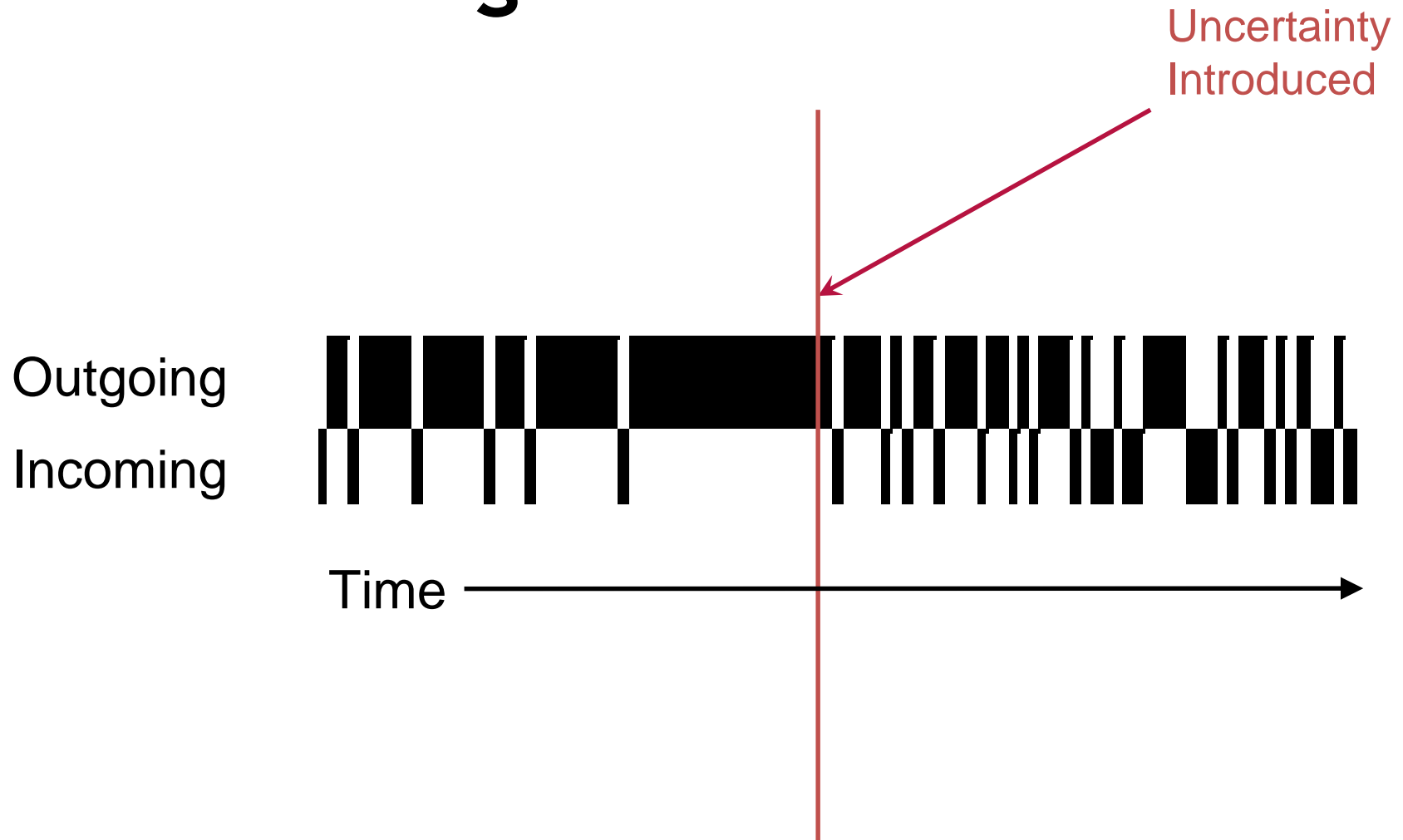


Designing in Slack...

| Type | Examples |
|-------------------|--|
| Resource | Redundance, abundance |
| Temporal | NASA's scheduled hold |
| Control | Underspecification of commands |
| Procedural | Flexible rules, focusing on goals and process as well as actions |
| Conceptual | Speaking up, requisite variety |

...leads to increase in **Margin of Maneuver**.

Turn-taking



Clarifying questions

Confirm
understanding

Clear up gaps in
knowledge

- *Was she doing it all herself, or was she on the vent?*
- *What was her glucose again?*
- *You couldn't get an A-line in, right?*
- *About the Epi and the atropine ... how much of each?*

Questions to clarify or ask to repeat information.

Collaborative Cross-Checking

Ask “what if” & “why” questions

- *It doesn't seem like shock liver. What could be causing it? Maybe it's Tylenol overdose.*

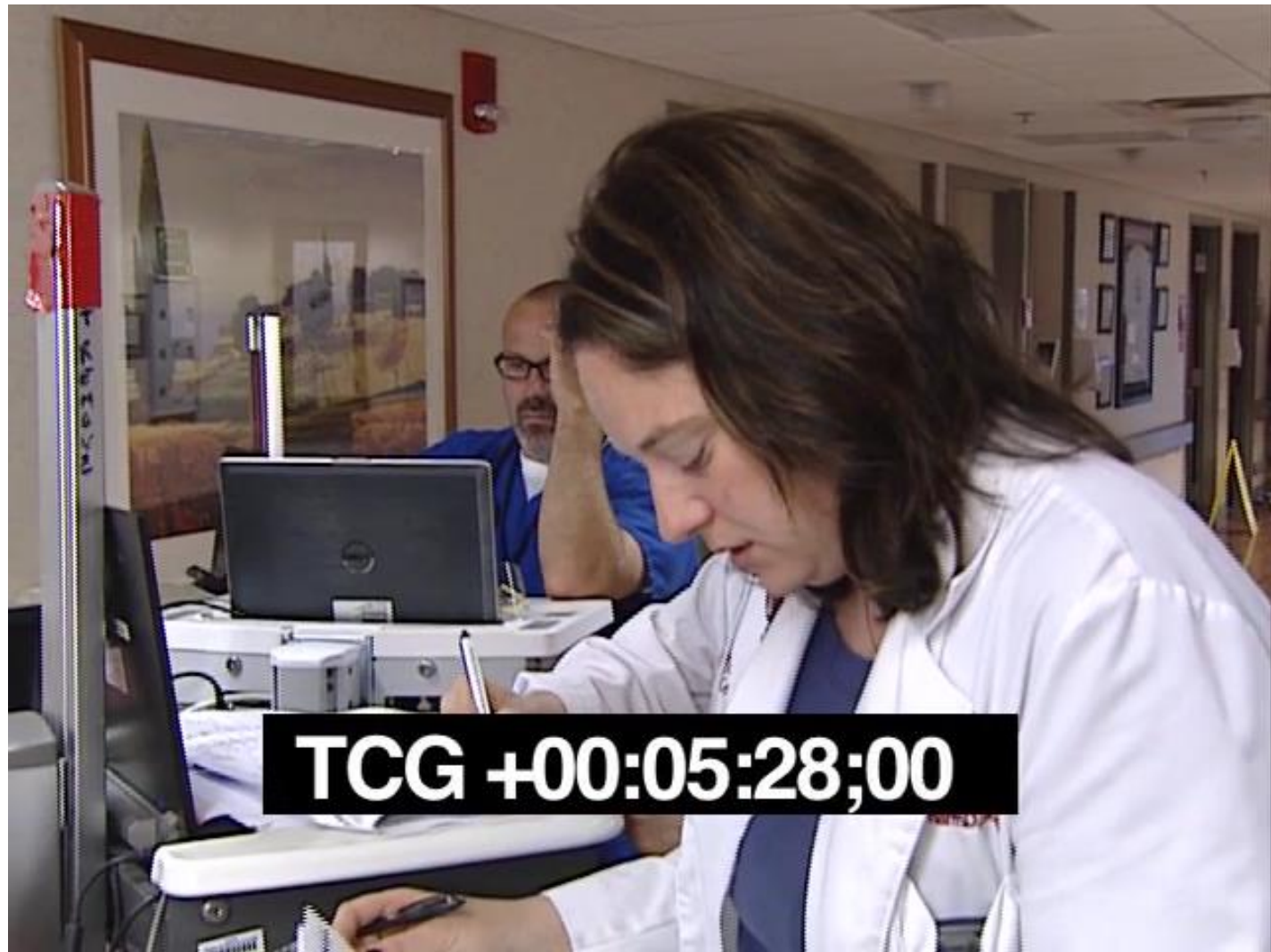
Play “devil's advocate”

- *I'm not familiar with using Flovent for that. Were they just up against a wall?*

“Are you sure?”

- *Is current plan is best one?*
- *Have alternatives been thought out?*
- *What's the intent behind the plan?*

- *So a lot of this could be caused by the pulmonary hypertension, too, I mean from a respiratory standpoint, you think?*



TCG +00:05:28;00

“Are you sure?”

- *“I’m curious why she’s getting a level ... it looks like the last level was on the 20th, so that would be two weeks ago and it was on the low end of normal so I’m not sure if we should try to ... the procedure was on submission right, and it was started”*
- *“Did he have bilateral lower DVT? ... So should we do an STD on the other leg, or, is the heparin enough? ... I mean, if he even needs it on the heparin drip”*

“Are you sure?”

“I’m curious why she’s getting a level ... it looks like the last level was on the 20th, so that would be two weeks ago and it was on the low end of normal so I’m not sure if we should try to ... the procedure was on submission right, and it was started”

“Did he have bilateral lower DVT? ... So should we do an STD on the other leg, or, is the heparin enough? ... I

mean, if he even needs it on the heparin drip”



When to use cross-checking

- Use for hard cases
 - More isn't always better
 - well-meaning cross-checks perceived as noise if initiated frequently
 - Routine, rarely need heightened collaboration
- Invite it
 - *“We need a set of fresh eyes”*
 - Implicitly encourages collaboration
 - strong relationship often needed
 - Communicate uncertainty
 - explicitly or implicitly

Quick Case – Putting It All Together

O1: I'll finish it, obviously

Clarifying question

I: Full Code?

O2: So just a touch more so we kind of talked about his differential on his picture and he has a gap acidosis and metabolic alkalosis component

Shows Uncertainty

but we really don't know why and kind of just running through mud piles ... really uremia is all thing we could think of, it's not a toxin, he's like 68 out now

Clarifying question

I: glucose and everything ... ?

O1: Yeah, it's like 111

Quick Case – Putting It All Together

Shows Uncertainty

O2: Again, his lactate was like just fine. It's like what ours is. You know, is it uremic? I would imagine it would have be a lot cruddier to have it that high, you know what I mean?

I: It's hard ... I've heard some people say it just depends on the patient

O2: So I would bring it up again on nights rounds you'll probably want to grab another gas. it's been about four hours. His echo showed severe pulmonary hypertension

Clarifying question

O1: Here, did that go here?

Clarifying question

I: Oh, we did it ... it's done already?

Quick Case – Putting It All Together

Praise – team building

O2: Maybe but you know ... and the head CT, too, he's just not stable to go down but if you do your miracle work which you've been doing every night and get him all teed up it would be great to get that head CT.

Cross-check

I: So a lot of this could be the pulm hypertension, too, I mean from a respiratory standpoint, you think?

Uncertainty

O2: Yeah the thing is it's not like he's he's got a huge respiratory think on his gas, I mean PCS is normal, his O2 is normal... when he came in he looked a little worse but even now correcting his respiratory status it's gotta be metabolic. His bicarb is normal, too. I'm little confused on his overall, but he's definitely not straightforward.

Quick Case – Putting It All Together

I: Hmm... ok. Yeah he's complicated

Agreement

O2: He's super complicated, super super sick

Cross-check

I: Yeah, I'll have to read more about him the fellow knows all about him?

O2: She knows all about him, she says we can put line together. CVP following up on his urine study. CVP, head CT if you can

I: Prep for head CT, get ready for ABG. The pic?

O1: Pull the pic. Was his EFRI on echo here. So we can push forward with some more fluids

Cross-check

I: The CVP still, this is a severe pulm hypertension I'm early not familiar with Flovent - it was just added given, kind of being up against a wall, like nobody knows ...

Quick Case – Putting It All Together

O2: I've never seen it in pulmonary hypertension but the way they do it here is it sounds like it after you've failed the ventilator stuff you can go to the oscillator or you go to Flovent or what else was he on ...

I: Oh my gosh I don't know a lot about this

O2: I just have experience from the NICU and I had one patient that was on the oscillator but it's, you know it will basically just give a ton of tiny tiny tiny little breaths, just kind of constantly keep alveoli open, so anyway, if he fails this then we need to talk about where to go next so maybe nitric ... get him on nitric oxide would be the next thing. Flovent's dramatically cheaper than nitric oxide, so that's why they started it, magnitude of thousands of dollars, so without any clear evidence that one is more advantageous than the other.

Real Time Risk Assessment

Short, structured collaborative conversation to surface & assess risk & uncertainty for situations that are limited in extent.

Resilience Engineering applied:

- Identifies where knowledge is
- Brings in fresh set of eyes
- Bridges boundaries
- Actively translates conversation into risk
- Uncovers trade-offs, uncertainty, & variability
- Builds deeper knowledge

Real Time Risk Assessment

Short, structured collaborative conversation to surface & assess risk & uncertainty for situations that are limited in extent.

This is how it works

Identifying Participants:



Similar
Experience &
Challenger



Project
lead



Knowledge
Broker



Design expert &
Matchmaker

RISK



Risk decision owner



Safety expert &
Challenger



Repair
expert



Frontline worker

1. Person needing help contacts **Knowledge Broker**
2. Knowledge Broker:
“Who is involved?”
Risk Decision Owner
Experts & peers
 - Design (what to do)
 - Repair (how to do)
3. Knowledge broker contacts **Matchmaker(s)**.
“Who has relevant knowledge/experience?”
Fresh Set of Eyes

Real Time Risk Assessment

Short, structured collaborative conversation to surface & assess risk & uncertainty for situations that are limited in extent.

This is how it works

The conversation:



Knowledge
Broker

1. Sets up call
3. **Asks questions** to reveal risks & uncertainty
5. Round Robin
“Any Concerns?”
7. Documents plan



Project
lead

2. Describes situation



Repair
expert
Vendor



Similar
Experience
&
Challenger



Safety expert &
Challenger



Design expert &
Matchmaker



Risk decision owner



Frontline worker

4. **Brainstorm & question**

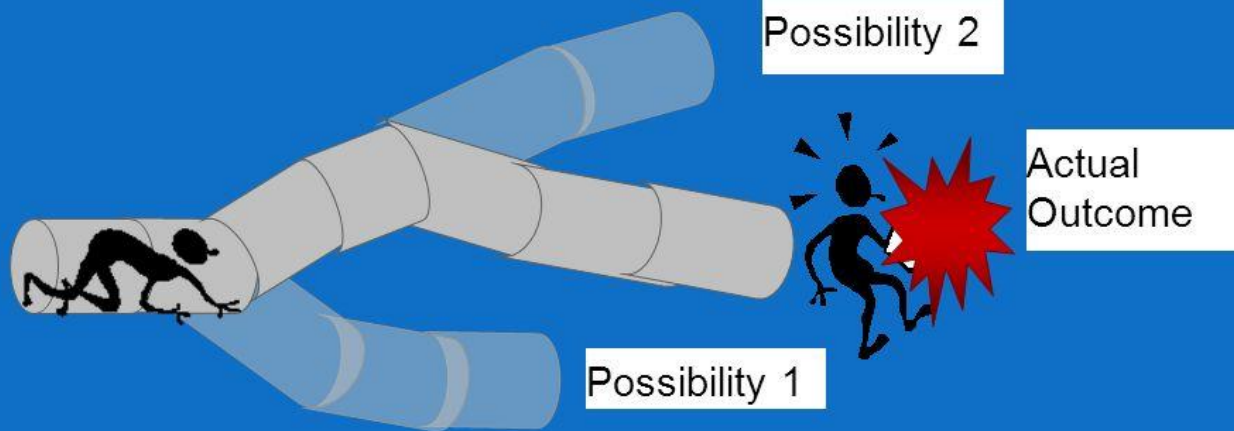
6. **Makes risk decisions**

New View HRO - RE



A New Way of Learning

Getting inside the tunnel



Human error: what goes wrong?

Old View

New View

Human error is a cause of trouble

Human error is a symptom of trouble deeper inside the system

To explain failure, you must find instances where people failed

To explain failure, do not try to find places where people went wrong

Blame people's inaccurate assessments for surprises

Understand how people's assessments and actions made sense to them at the time

Human error: how to make it right?

| Old View | New View |
|---|--|
| Complex systems are basically safe | Complex systems are not basically safe |
| Unreliable humans undermine defenses | Complex systems are trade-offs between multiple irreconcilable goals |
| Restrict the human contribution with tighter procedures | People at all levels of the organization create safety |



Organizational Communication & Coordination

New, novel practices that give the flavor of HRO / RE?

- After Action Review
- Premortem
- Restate Goals in the form of mistakes that must not happen
- Scan & revise assessments as situations or conditions change –
Zoom in / Zoom out

Contact us:

Beth Lay - Calpine Corp Houston TX

Elizabeth.A.Lay@hotmail.com , Beth.Lay@Calpine.com 321-946-4936

David Christenson – Organizing 4 Resilience

David@o4r.co 520-780-7590

Mike Rayo – Ohio State

rayo.3@osu.edu 614-688-0464

Zak Woods - Calpine Corp Houston TX

Zachary.Woods@Calpine.com (614) 271-0508

Tony Wiseman – Calpine Corp Houston TX

Tony.Wiseman@Calpine.com (919) 434-5658