

Paradox

The Checklist Manifesto



Surgical Checklists, System Change,
Collective Competence and Complexity

Lorelei Lingard, PhD

October 2013



July 1, 2010

Hospitals told to use surgical checklists to reduce safety risks

Human error is behind the vast majority of operating room mistakes leading to death or injury, and that's precisely why **all B.C. hospitals must now use surgical checklists** to cut down on infections and other complications.



July 1, 2010

Hospitals told to use surgical checklists to reduce safety risks

... a spokeswoman for the B.C. government said **checklists are a relatively simple and inexpensive way** to improve patient safety.



July 1, 2010

Hospitals told to use surgical checklists to reduce safety risks

... a spokeswoman for the British Columbia government said checklists
are a relatively simple and inexpensive way to
improve patient safety.



THE *NEW YORK TIMES* BESTSELLER

THE **CHECKLIST** MANIFESTO

HOW TO GET THINGS RIGHT



PICADOR

ATUL GAWANDE

BESTSELLING AUTHOR OF *BETTER* AND *COMPLICATIONS*

“It has been years since I read a book so powerful and so thought-provoking...
Gawande is a gorgeous writer and storyteller, and the aims of this book are ambitious.”
—MALCOLM GLADWELL, author of *Outliers*

IN HIS LATEST BESTSELLER, Atul Gawande shows what the simple idea of the checklist reveals about the complexity of our lives and how we can deal with it.

The modern world has given us stupendous know-how. Yet avoidable failures continue to plague us in health care, government, the law, the financial industry—in almost every realm of organized activity. And the reason is simple: the volume and complexity of knowledge today has exceeded our ability as individuals to properly deliver it to people—consistently, correctly, safely. We train longer, specialize more, use ever-advancing technology, and still we fail. Atul Gawande makes a compelling argument that we can do better, using the simplest of methods: the checklist. In riveting stories, he reveals what checklists can do, what they can't, and how they could bring about striking improvements in a variety of fields, from medicine and disaster recovery to professions and businesses of all kinds. And the insights are making a difference. Already, a simple surgical checklist from the World Health Organization designed by following the ideas described here has been adopted in more than twenty countries as a standard for care and has been heralded as “the biggest clinical invention in thirty years” (*The Independent*).

“I read *The Checklist Manifesto* in one sitting, which is an amazing tribute to the book that Gawande has crafted. Not only is the book loaded with fascinating stories, but it honestly changed the way I think about the world. It is the best book I've read in ages.”
—STEVEN D. LEVITT, coauthor of *Freakonomics*

“Packed with vivid writing, heart-stopping anecdotes, and statistical surprises... a compelling argument.” —HEIDI MOORE, *Los Angeles Times*

“Thoughtfully written and soundly defended, this book calls for medical professionals to improve patient care by adopting a basic, commonsense approach.”
—SARAH HALZACK, *The Washington Post*

WWW.PICADORUSA.COM/THECHECKLISTMANIFESTO

COVER DESIGN BY LISA FYFE

PICADOR

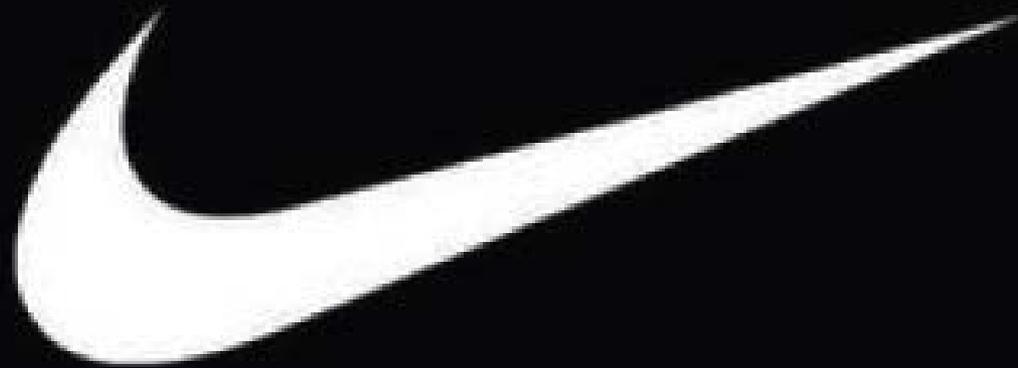
“the simple idea of the checklist”

“the simplest of methods: the checklist”

“a simple, surgical checklist”

“a basic, commonsense approach”

JUST DO IT.





not so
easy

On the frontlines of simple checklist interventions

“Sure, we did the big launch, the training, the leadership walk-about. And something called a checklist is being counted as ‘done’ here. But honestly, there’s such variability in terms of who’s there, what they bother to talk about, how seriously they take the whole thing ... we’ve had surgical site errors twice in the last month, both in cases where the checklist was ‘done’. Who’s kidding who?”

Outline

- **Review** the history of the checklist
- **Reveal** dimensions of the checklist paradox
- **Reaffirm** the point: collective competence
- **Reorient** our efforts via complexity theory

A note on terminology

Checklist

Briefing

Review

the history of the checklist

SPECIAL ARTICLE

N ENGL J MED 360;5 NEJM.ORG JANUARY 29, 2009

A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population

Alex B. Haynes, M.D., M.P.H., Thomas G. Weiser, M.D., M.P.H.,
William R. Berry, M.D., M.P.H., Stuart R. Lipsitz, Sc.D.,
Abdel-Hadi S. Breizat, M.D., Ph.D., E. Patchen Dellinger, M.D.,
Teodoro Herbosa, M.D., Sudhir Joseph, M.S., Pascience L. Kibatala, M.D.,
Marie Carmela M. Lapitan, M.D., Alan F. Merry, M.B., Ch.B., F.A.N.Z.C.A., F.R.C.A.,
Krishna Moorthy, M.D., F.R.C.S., Richard K. Reznick, M.D., M.Ed., Bryce Taylor, M.D.,
and Atul A. Gawande, M.D., M.P.H., for the Safe Surgery Saves Lives Study Group*

Rate of postoperative deaths and complications fell by $> 1/3$.

SPECIAL ARTICLE

N ENGL J MED 360;5 NEJM.ORG JANUARY 29, 2009

A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population

The NEW ENGLAND JOURNAL of MEDICINE

Alex E

V

Abde

Teodoro F

Marie Carmela

Krishna Moort

and Atul A. Ga

SPECIAL ARTICLE

N ENGL J MED 363;20 NEJM.ORG NOVEMBER 11, 2010

Effect of a Comprehensive Surgical Safety System on Patient Outcomes

Eefje N. de Vries, M.D., Ph.D., Hubert A. Prins, M.D., Ph.D.,
Rogier M.P.H. Crolla, M.D., Adriaan J. den Outer, M.D.,*
George van Aniel, M.D., Ph.D., Sven H. van Helden, M.D., Ph.D.,
Wolfgang S. Schlack, M.D., Ph.D., M. Agnès van Putten, B.Sc.,
Dirk J. Gouma, M.D., Ph.D., Marcel G.W. Dijkgraaf, Ph.D.,
Susanne M. Smorenburg, M.D., Ph.D., and Marja A. Boermeester, M.D.
for the SURPASS Collaborative Group†

Similarly positive results.
Lower complication rates
associated with more
complete checklists.

SPECIAL ARTICLE

N ENGL J MED 360;5 NEJM.ORG JANUARY 29, 2009

A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population

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SPECIAL ARTICLE

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Effect of a Comprehensive Surgical Safety System on Patient Outcomes

JAMA. 2010;304(15):1693-1700. doi:10.1001/jama.2010.1506

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Susanne M. Sn

Association Between Implementation of a Medical Team Training Program and Surgical Mortality

Julia Neily, RN, MS, MPH

Peter D. Mills, PhD, MS

Yinong Young-Xu, ScD, MA, MS

Brian T. Carney, MD

Priscilla West, MPH

David H. Berger, MD, MHCM

Lisa M. Mazzia, MD

Douglas E. Paull, MD

James P. Bagian, MD, PE

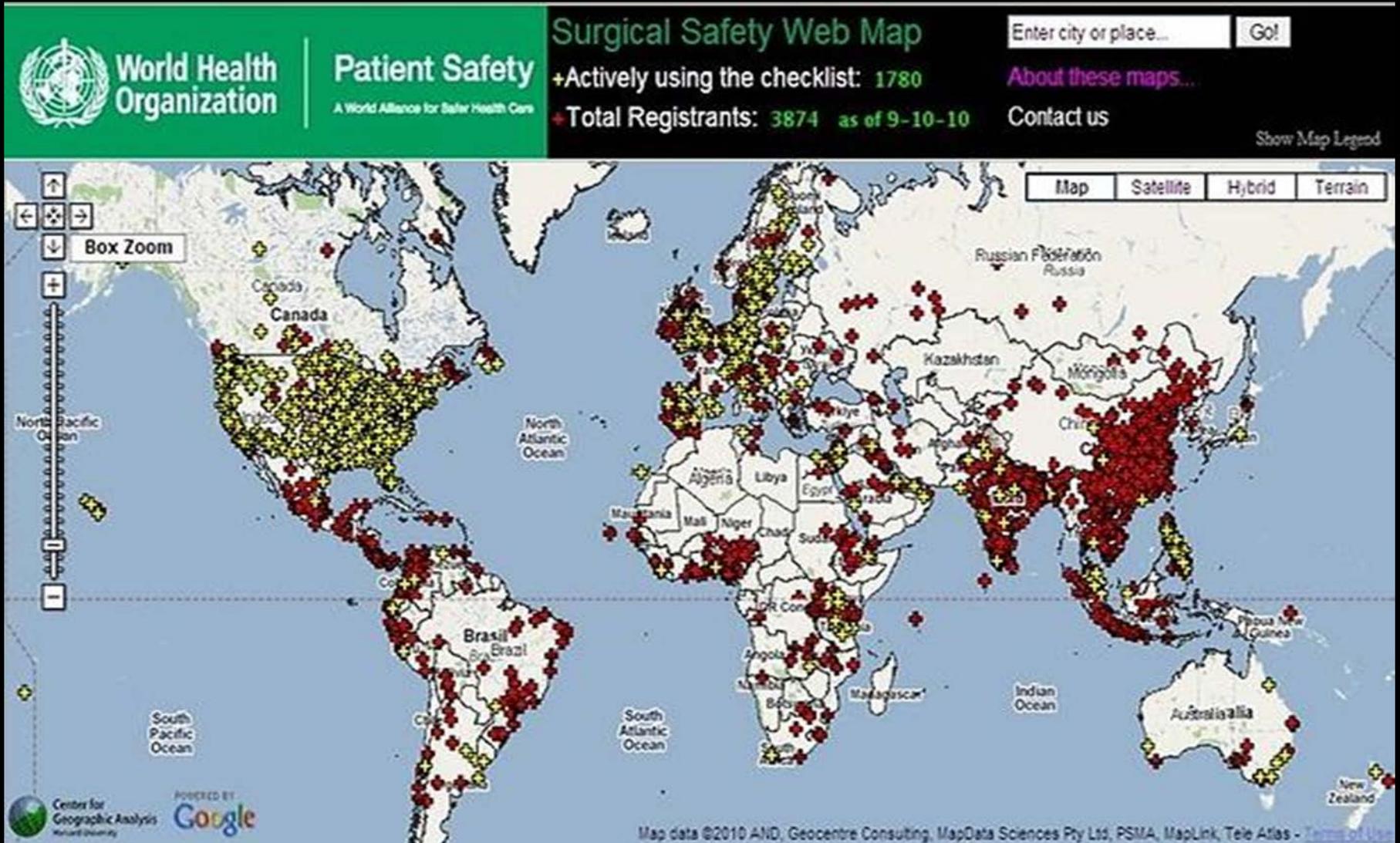
Context There is insufficient information about the effectiveness of medical team training on surgical outcomes. The Veterans Health Administration (VHA) implemented a formalized medical team training program for operating room personnel on a national level.

Objective To determine whether an association existed between the VHA Medical Team Training program and surgical outcomes.

Design, Setting, and Participants A retrospective health services study with a contemporaneous control group was conducted. Outcome data were obtained from the VHA Surgical Quality Improvement Program (VASQIP) and from structured interviews in fiscal years 2006 to 2008. The analysis included 182 409 sampled procedures from 108 VHA facilities that provided care to veterans. The VHA's nationwide training program required briefings and debriefings in the operating room and in-

74 VA hospitals.
Formal team training
& checklist
implementation.
18% reduction in
mortality.

A KT Success Story



Surgical Safety Checklist

www.safesurgerysaveslives.ca



<p>Attending surgeon or fully informed designate initiates briefing. Attending surgeon initiates briefing for stat cases.</p> <p>Nurse verifies:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The patient was seen and site marked by surgeon or designate and the patient has confirmed his/her identity, site, procedure and consent <p>Surgeon or Designate confirms with nurses:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Are all necessary equipment and implants available and sterile? <input type="checkbox"/> Positioning confirmed if necessary? <input type="checkbox"/> Is essential imaging displayed? <p>Anesthesiologist verifies:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Does the patient have a known allergy? <input type="checkbox"/> Lab data reviewed, group and screen done? <input type="checkbox"/> Anesthesia equipment available and checked? <input type="checkbox"/> Are there any patient-specific concerns? <hr/> <p>Does anyone have any questions?</p>	<p>Surgeon verifies:</p> <ul style="list-style-type: none"> <input type="checkbox"/> All team members have introduced themselves by name and role. <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> The patient's name, procedure, and the site and side marking of the incision. <hr/> <p>Has Antibiotic Prophylaxis been given within the last 80 minutes?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable <hr/> <p>Has VTE / DVT Prophylaxis been provided?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable <hr/> <p>Anticipated Critical Events</p> <p>Surgeon verifies:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Are there any critical surgical or unexpected steps that the team should know about? <input type="checkbox"/> How long will the case take, and what is the anticipated blood loss? <hr/> <p>Does anyone have any questions?</p>	<p>Nurse verifies:</p> <ul style="list-style-type: none"> <input type="checkbox"/> What is the name of the procedure to be recorded? <input type="checkbox"/> Are all counts complete? <input type="checkbox"/> Is specimen labeling accurate? <i>(read specimen labels aloud, including patient name)</i> <input type="checkbox"/> Do any equipment problems need to be addressed? <hr/> <p>To Surgeon, Anesthesiologist, and Nurse:</p> <ul style="list-style-type: none"> <input type="checkbox"/> What are the key concerns for recovery and management of this patient? <input type="checkbox"/> What is the post-operative destination? <input type="checkbox"/> Who will be responsible for post-operative analgesic orders? <hr/> <p>Have the Surgeon, Anesthesiologist and Nursing reviewed the case to follow?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable <hr/> <p>Does anyone have any questions?</p>
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A KT Success Story



ACCREDITATION CANADA
AGRÉMENT CANADA

Driving Quality Health Services
Force motrice de la qualité des services de santé

Canadian Health Accreditation Report

Required Organizational Practices:

Emerging Risks, Focused Improvements

Reveal

the paradox of surgical checklists

Paradox

A statement that apparently
contradicts itself
and yet might be true

Paradox 1:

Simple checklists are not simple.

Paradox 1

- The tool – *a checklist* – is simple
- The act – *a briefing* – is less simple
- And the social process of *implementing and sustaining briefing practice* is complex



Dr. Atul Gawande, TEDtalk 2012

http://video.ted.com/talk/podcast/2012/None/AtulGawande_2012.mp4

Why aren't briefings simple?

Perceptions of Operating Room Tension across Professions: Building Generalizable Evidence and Educational Resources

Lorelei Lingard, Glenn Rogehr, Sherry Espin, Isabella Davito, Sarah Whyte, Douglas Buller, Bohdan Sadovy, David Rogers, and Richard Reznick

Abstract

Background

Effective team communication is critical in health care, yet no curriculum exists to teach it. Naturalistic research has revealed systematic patterns of tension and profession-specific interpretation of operating room team communication. Replication of these naturalistic findings in a controlled, video-based format could provide a basis for formal curricula.

Method

Seventy-two surgeons, nurses, and anesthesiologists independently rated

three video-based scenarios for the three professions' level of tension, responsibility for creating tension and responsibility for resolution. Data were analyzed using three-way, mixed-design analyses of variance.

Results

The three professions rated tension levels of the various scenarios similarly ($F = 1.19$, ns), but rated each profession's responsibility for creating ($F = 2.86$, $p < .05$) and resolving ($F = 1.91$, $p < .01$) tension differently, often rating their

profession as having relatively less responsibility than the others.

Conclusions

These results provide an evidence base for team communications training about tension patterns, disparity of professional perspectives, and implications for team function.

Acad Med. 2005;80(10 suppl):S75-S79.

- Because the multiple professional values and identities in the OR create tensions (2005)

Why aren't briefings simple?

JAN

JOURNAL OF ADVANCED NURSING

ORIGINAL RESEARCH

Silence, power and communication in the operating room

Fauzia Gardezi, Lorelei Lingard, Sherry Espin, Sarah Whyte, Beverley Orser & G. Ross Baker

Accepted for publication 10 February 2009

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GARDEZI F., LINGARD L., ESPIN S., WHYTE S., ORSER B. & BAKER G.R. (2009) Silence, power and communication in the operating room. *Journal of Advanced Nursing* 65(7), 1390–1399
doi: 10.1111/j.1365-2648.2009.04994.x

- Because team members sometimes don't share what they know; speaking up can be dangerous (2009)

Why aren't briefings simple?

Social Science & Medicine 69 (2009) 1757–1766

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Uptake of a team briefing in the operating theatre: A Burkean dramatic analysis[☆]

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ABSTRACT

Communication among healthcare professionals is a focus for research and policy interventions designed to improve patient safety, but the challenges of changing interprofessional communication patterns are rarely described. We present an analysis of 756 preoperative briefings conducted by general surgery teams (anesthesiologists, nurses, and surgeons) at four urban Canadian hospitals in the context of two research studies conducted between August 2004 and December 2007. We ask the questions: how and why did briefings succeed, how and why did they fail, and what did they mean for different participants? Ethnographic fieldnotes documenting the coordination and performance of team briefings were analyzed using Kenneth Burke's concepts of motive and attitude. The language and behaviour of participants were interpreted as purposive and situated actions which reveal perceptions, beliefs and values. Motives and attitudes varied both within and across sites, professions, individuals, and briefings. They were contingent on the organizational, medical and social scenes in which the briefings took place and on participants' multiple perceived purposes for participating (protecting patient safety, exchanging information, engaging with the team, fulfilling professional commitments, participating in research, and meeting social expectations). Participants' attitudes reflected their recognition (or rejection) of specific purposes, the briefings' perceived effectiveness in serving these purposes, and the briefings' perceived alignment (or conflict) with other priorities. Our findings illustrate the intrinsically rhetorical and variable nature of change.

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- Because participation in or rejection of team briefings is driven by local/individual motives and attitudes more than by organizational imperatives (2009)

Why aren't briefings simple?

Cogn Tech Work (2008) 10:287–294

DOI 10.1007/s10111-007-0086-8

ORIGINAL ARTICLE

Paradoxical effects of interprofessional briefings on OR team performance

**Sarah Whyte · Lorelei Lingard · Sherry Espin ·
G. Ross Baker · John Bohnen · Beverley A. Orser ·
Diane Doran · Richard Reznick · Glenn Regehr**

- Because briefings sometimes do the opposite of what they're intended to (2008)

Paradox 1:
Simple checklists are not simple.

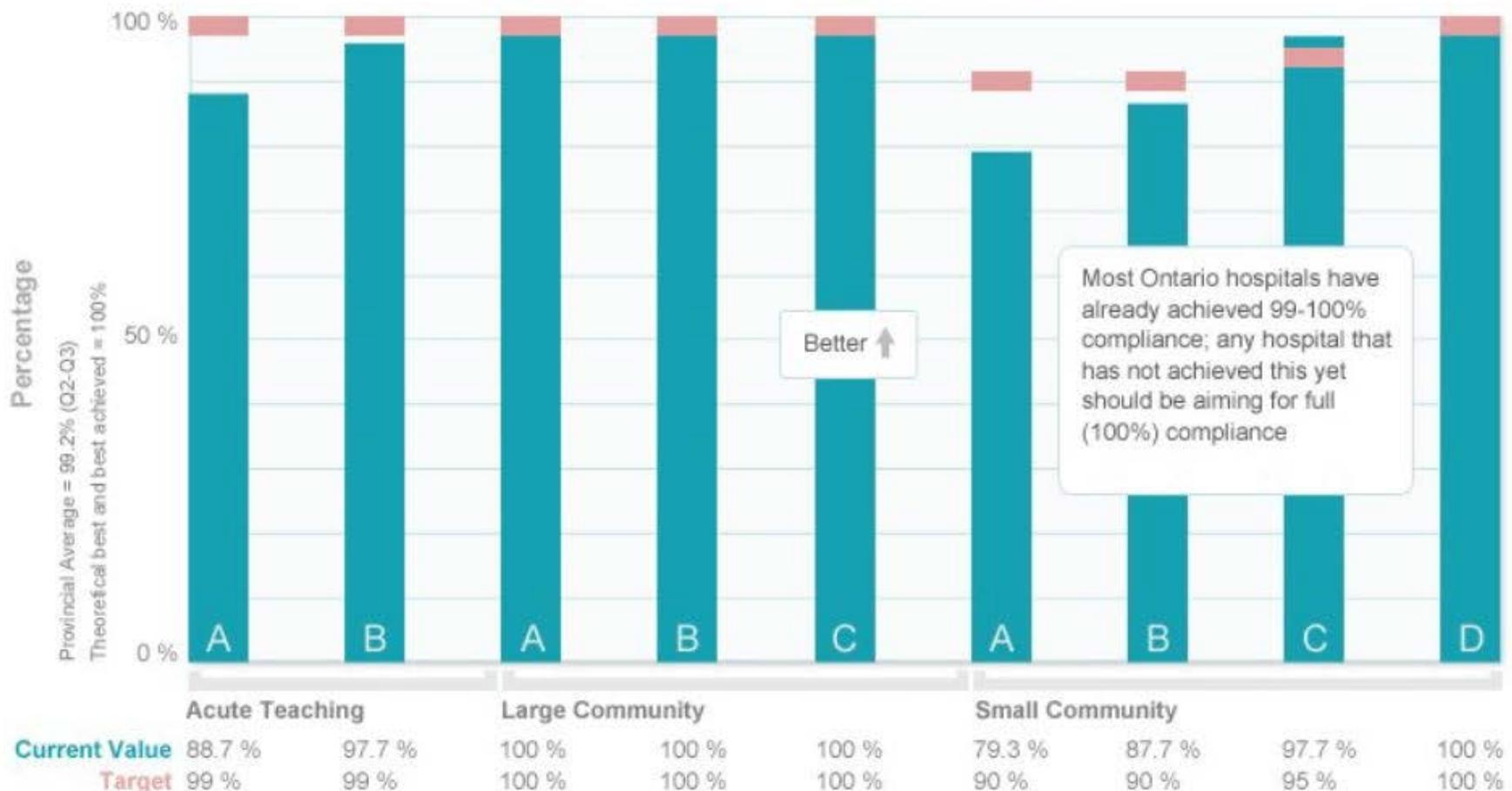
Because
while the tool is deceptively simple,
the practice is not.

Paradox 2:
Compliance rates signify something,
and nothing

Health Quality Ontario: Quality Improvement Plans – Hospital Surgical Safety

Updated on Apr 18, 2013

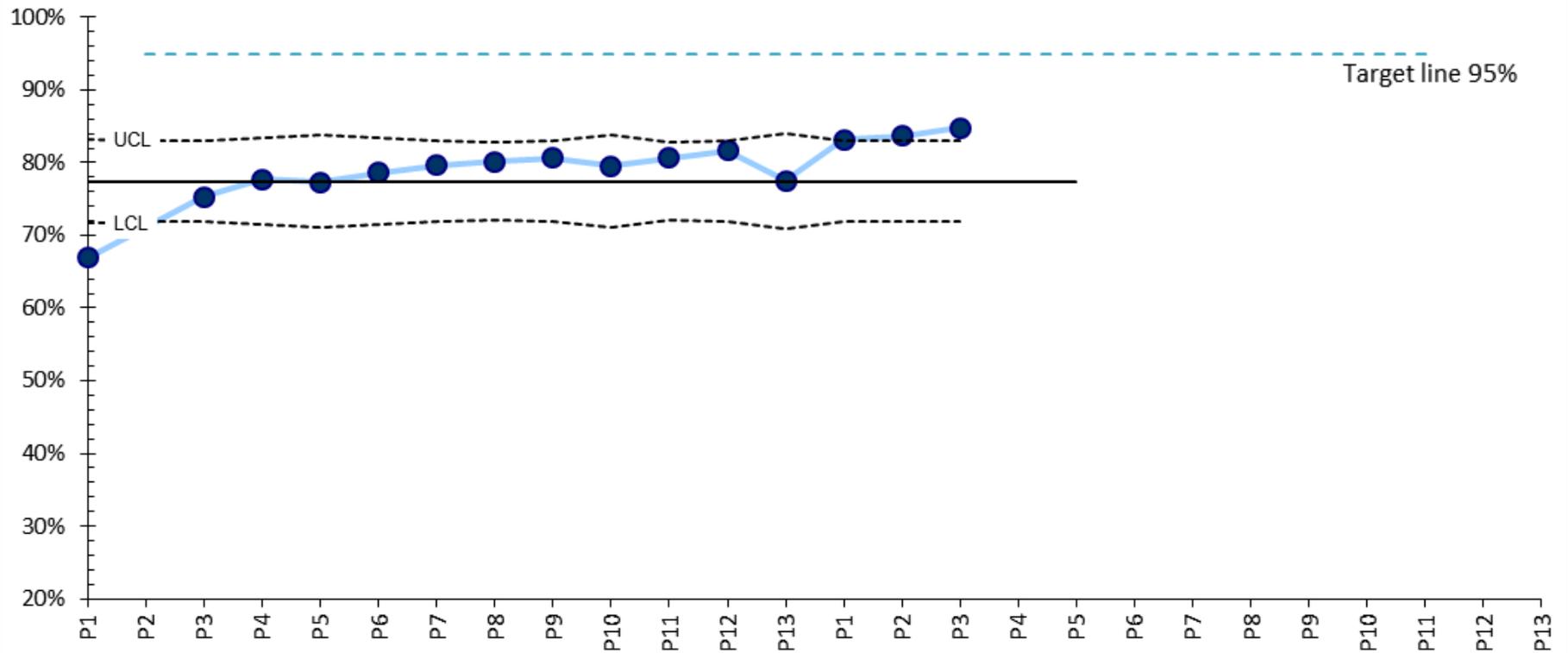
Surgical Safety Checklist (by Hospital), 2012/13 QIPs



BC compliance rates June 2013

Clinical Care Management Initiative

Surgical Checklist Province



Are checklist compliance rates
higher in Ontario than in BC?

Yes

No

??

Are checklist briefings better
in Ontario than in BC?

Yes

No

??

Are surgical teams safer
in Ontario than in BC?

Yes

No

??

So what *do* compliance rates signify?

- An audit culture
- Where documentation of a practice becomes more important than the practice itself
- Fostering a *tick and flick* attitude to checklist practice (C. Hayes 2012, *Healthcare Quarterly* Vol. 15)

Barriers to staff adoption of a surgical safety checklist

Aude Fourcade, Jean-Louis Blache, Catherine Grenier, et al.

BMJ Qual Saf 2012 21: 191-197 originally published online November 7, 2011

doi: 10.1136/bmjqs-2011-000094

- 1440 surgical procedures observed
- Mean checklist compliance rate: 90.2 %
- Mean item completion rate: 61%

Implementing a surgical checklist: More than checking a box

Shauna M. Levy, MD, Casey E. Senter, BS, Russell B. Hawkins, BA/BBA, Jane Y. Zhao, BA, Kaitlin Doody, Lillian S. Kao, MD, MS, Kevin P. Lally, MD, MS, *and* KuoJen Tsao, MD, *Houston, TX*

Surgery (September 2012), 152 (3), pg. 331-336

- 142 pediatric surgical cases observed
- Hospital compliance data: 100%
- Average # of checklist items performed: 4/13

THE NEW ZEALAND MEDICAL JOURNAL

Journal of the New Zealand Medical Association



Sept 2011, Vol 124 No 1342

Compliance and quality in administration of a surgical safety checklist in a tertiary New Zealand hospital

Nicole Vogts, Jacqueline A Hannam, Alan F Merry, Simon J Mitchell

	Sign In	Time Out	Sign Out
Checklist Domain Administration (rate per 100 cases)	99	94	2
Mean Checklist Item Compliance	56	69	40

Is the Surgical Safety Checklist successfully conducted? An observational study of social interactions in the operating rooms of a tertiary hospital

Stéphane Cullati, Sophie Le Du, Anne-Claire Raë, et al.

BMJ Qual Saf 2013 22: 639-646 originally published online March 8, 2013

doi: 10.1136/bmjqs-2012-001634

- Only 13% of Time Outs and 3% of Sign Outs were properly checked (all items validated)
- Time Out validation was better during highest risk surgeries (29%) than during lower risk surgeries (15%)

Paradox 2:

Compliance rates signify something,
and nothing.

Compliance rates are not
a transparent record of
checklist performance;
in fact, they obscure key problems.

Paradox 3:
Safer surgery checklists
may threaten safety

Strategies for Improving Surgical Quality — Checklists and Beyond

John D. Birkmeyer, M.D.

N ENGL J MED 363;20 NEJM.ORG NOVEMBER 11, 2010

- “the benefits of surgical checklists could wane over time as they lose their novelty and become a perfunctory component of care”

Barriers to staff adoption of a surgical safety checklist

Aude Fourcade, Jean-Louis Blache, Catherine Grenier, et al.

BMJ Qual Saf 2012 21: 191-197 originally published online November 7, 2011

doi: 10.1136/bmjqs-2011-000094

- “bureaucratic use of the checklist was of no benefit and might even have a negative impact”

Safety checklist compliance and a false sense of safety: new directions for research

Christofer Rydenfält, Åsa Ek and Per Anders Larsson

BMJ Qual Saf published online October 3, 2013

doi: [10.1136/bmjqs-2013-002168](https://doi.org/10.1136/bmjqs-2013-002168)

- Checklists are a “weak type of safety barrier vulnerable to normalizations of deviance”
- Checklist practice may replace other barriers against patient harm

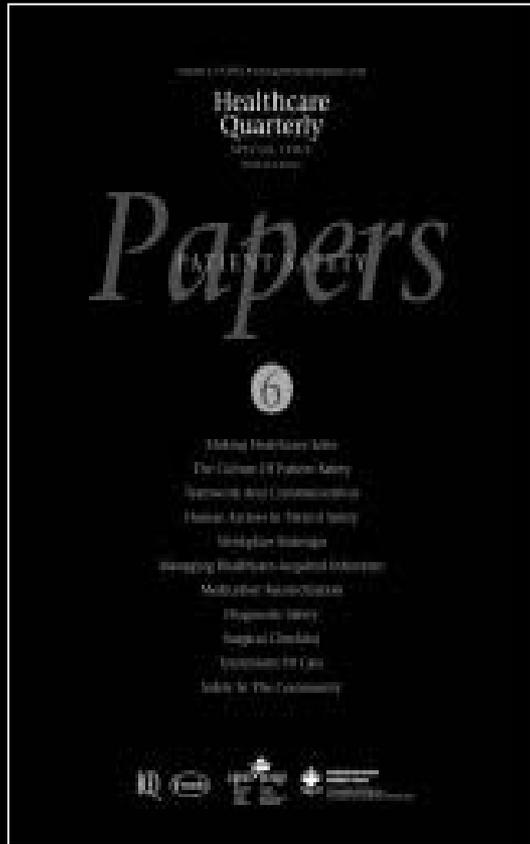
Safety checklist compliance and a false sense of safety: new directions for research

Christofer Rydenfält, Åsa Ek and Per Anders Larsson

BMJ Qual Saf published online October 3, 2013

doi: 10.1136/bmjqs-2013-002168

- “When both premises are true at the same time – when compliance with the checklist is flawed and other safety checks are omitted because they are thought of as being handled by the checklist – then we have a new safety threat because we have induced a *false sense of safety* into the healthcare system.”



There is a lack of rich data regarding what happens to a team's communication when checklists are introduced. This lack perpetuates the assumption that, if checklists are in place, then team communication must, of course, be better. And this assumption signals a serious threat to safety: "the complacency induced when an organisation thinks that a problem is solved" (Bosk 2009).

L. Lingard 2012. Productive Complications: Emergent Ideas in Team Communication & Patient Safety. *Healthcare Quarterly* Vol. 15.

Paradox 3:
Safer surgery checklists
may threaten safety.

Checklists may create a false sense
of safety – of complacency – by
signalling that the problem is solved.

The Checklist Paradox

Simple checklists are not simple.

Checklist compliance rates signify something, and nothing.

Safer surgery checklists
may threaten safety.

Reaffirm

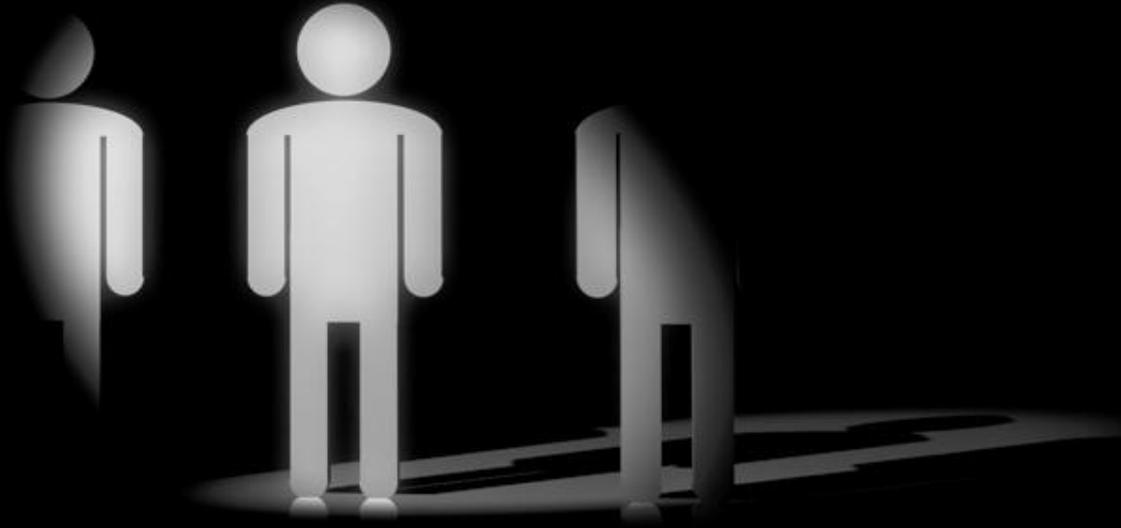
the original point:
collective competence

Healthcare is full of
highly competent individuals















The role of communication

- The ability of a team to be collectively competent relies in large part on shared knowledge and expectations
- These aspects of collective competence are achieved through team communication

Do checklists = collective competence?

- Checklists are merely a tool, a means to prompt a salient communicative act
- The communicative act, not the checklist tool, fosters collective competence
- But the means – checklists, checkboxes – has become the end

Evidence Gap

- Checklist research is mostly a 'counting' exercise
- There are few systematic studies of what briefing communication is, and does, on OR teams
 - What happens before, during & after briefing?
 - Do briefings influence within-case handover?
 - Do team members 'prepare' to brief?
 - How do briefings inter-relate across the team's day?
 - How do briefings influence other practices, like OR bookings or surgical training?

Safety checklist compliance and a false sense of safety: new directions for research

Christofer Rydenfält, Åsa Ek and Per Anders Larsson

BMJ Qual Saf published online October 3, 2013
doi: 10.1136/bmjqs-2013-002168

- Beyond compliance and completion data
- Explore *what happens* to system dynamics when a checklist routine is introduced
- Watch how existing barrier systems are affected by the new routine

How do we move forward?

...past checklist fatigue

...past organizational cynicism

...past the checklist paradox

Reorient
our efforts
via complexity theory

Current checklist science

- “The science of how to do checklists is in its infancy” (Pronovost 2012)

Current checklist science

- Emphasizes linear fixes to the checklist implementation challenge
 - Make the checklist shorter

A Simplified WHO Checklist Improves Compliance and Time Efficiency for Urological Surgery

John Henderson, Timothy Fung, Jaimin Bhatt and Amarjit Bdesha

British Journal of Medical and Surgical Urology 2012 5: 120

DOI: 10.1016/j.bjmsu.2011.08.003

Current checklist science

- Emphasizes linear fixes to the implementation challenge
 - Make the checklist shorter
 - Commit more resources
 - Adapt checklist items to local contexts
 - Train, retrain till personnel get it right

Linear approaches

**Requirements for the design and implementation of checklists
for surgical processes**

**E. G. G. Verdaasdonk · L. P. S. Stassen ·
P. P. Widhiasmara · J. Dankelman**

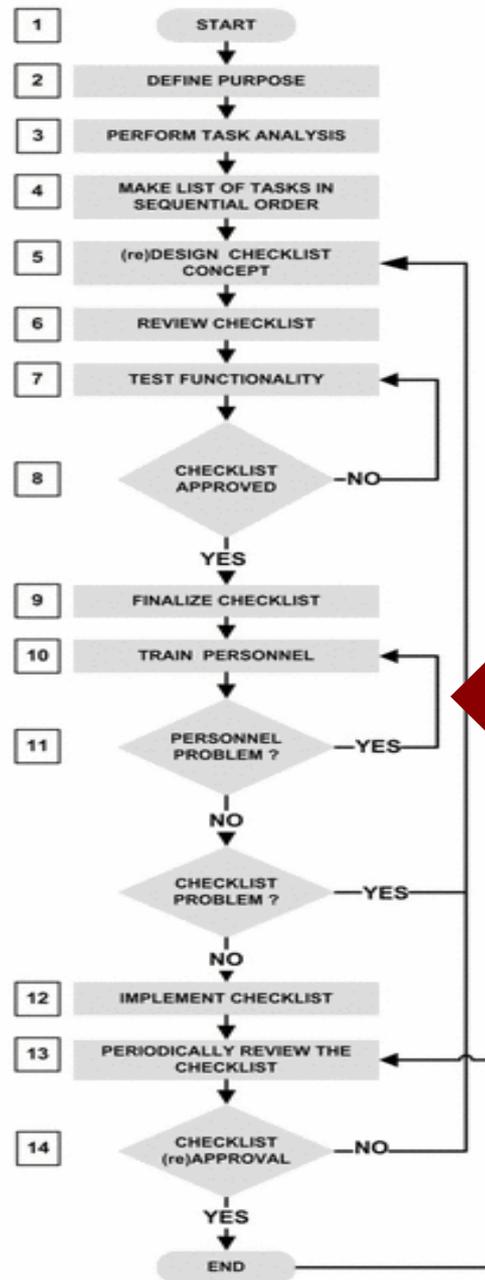
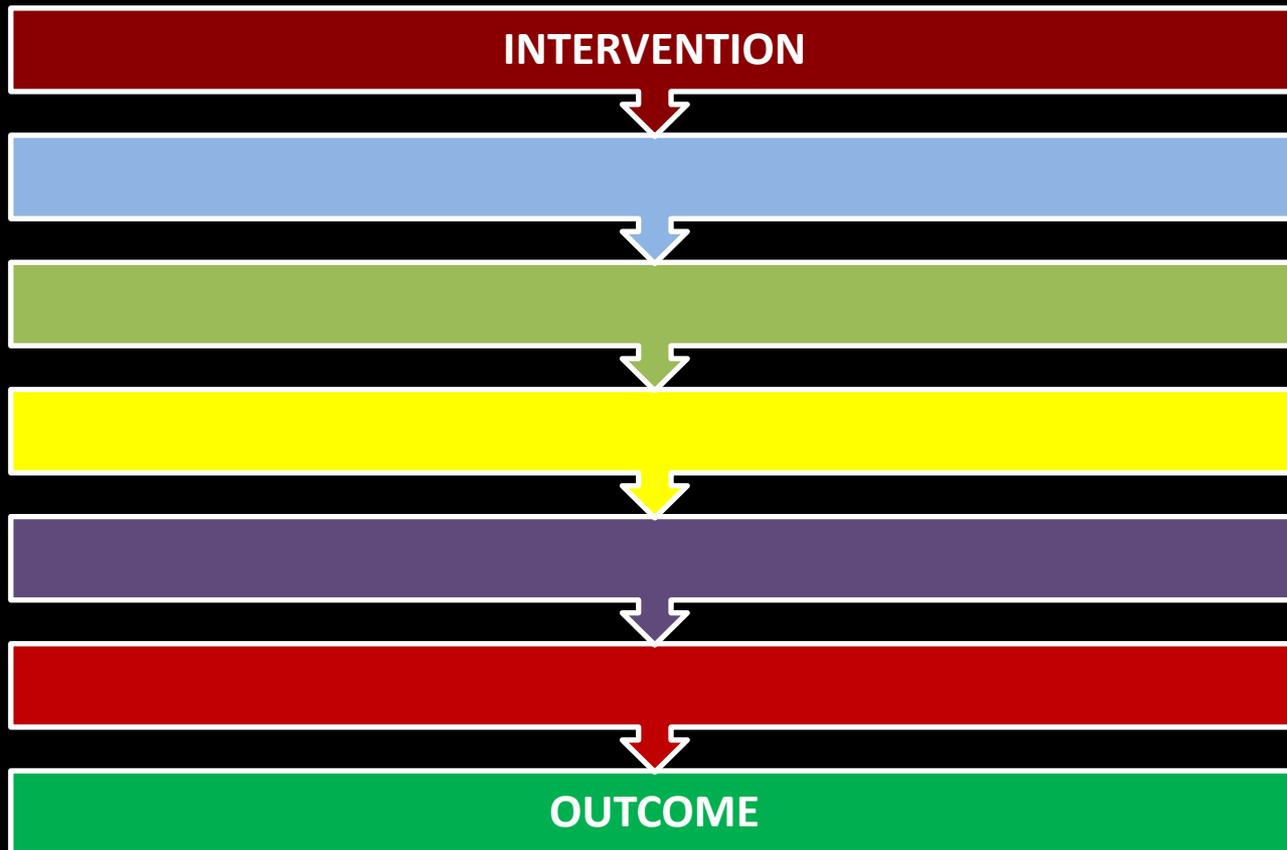


Fig. 1 Flow diagram of checklist implementation

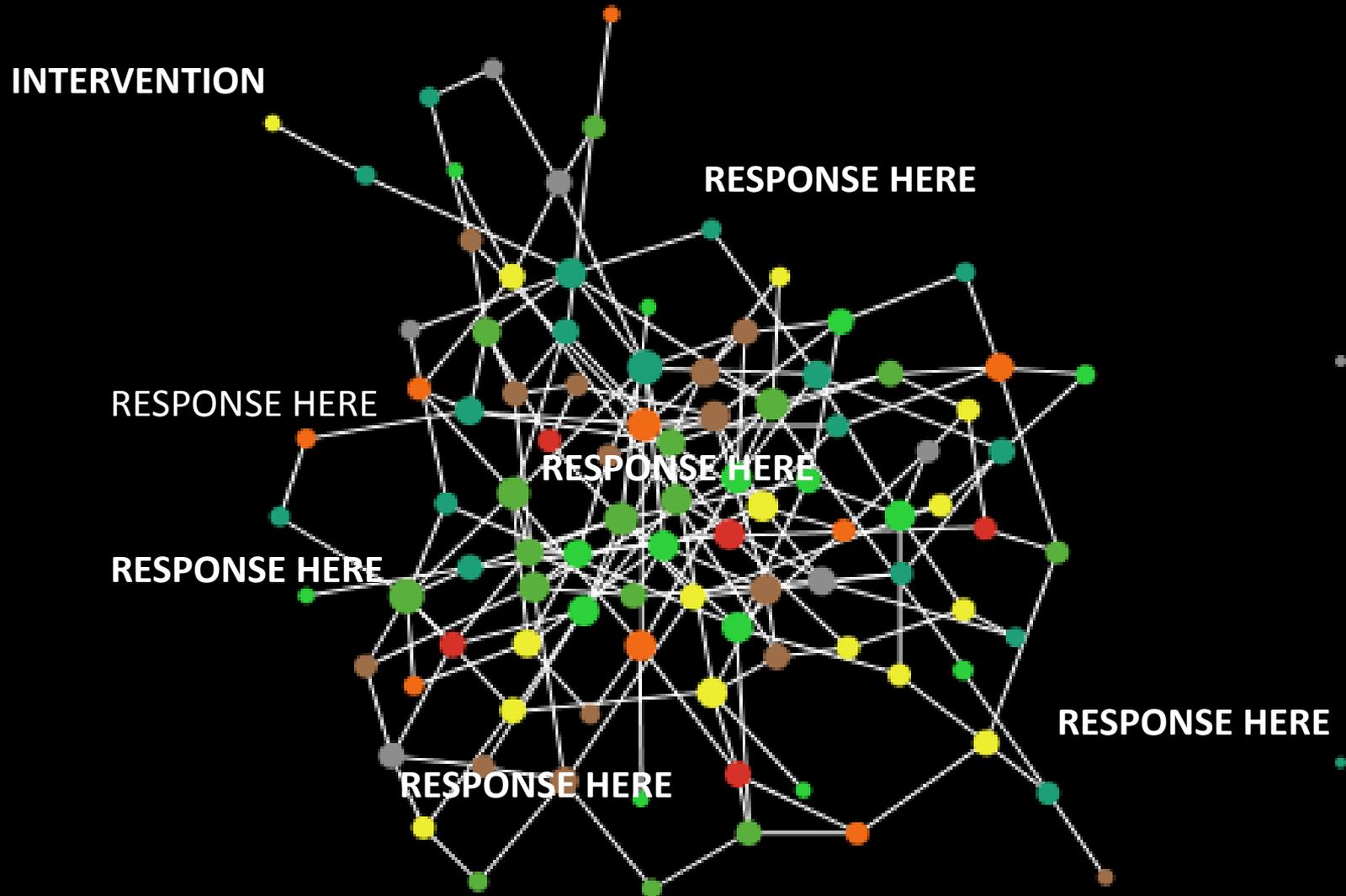
Linear approaches

- These aren't bad ideas
- They just don't bring us any closer to predicting what will happen when teams brief
- Why?

Change in this setting
doesn't look like this



Change looks more like this



Because the surgical team
is a complex adaptive system (CAS)

Other CAS:
a neighbourhood,
a political event, a spreading virus,
a weather system, a military campaign

Key features of CAS

- Non-linearity
- Emergence
- Self-organization

(Capra 1996; Stacey 2006; Lewin 1999;
Fenwick 2012; Bennett 2010)

Non-linearity

- No clear lines of causation or intention can be traced from interactions to their outcomes
- Order at higher levels is not reducible to (or predictable from) patterns at local levels

Emergence

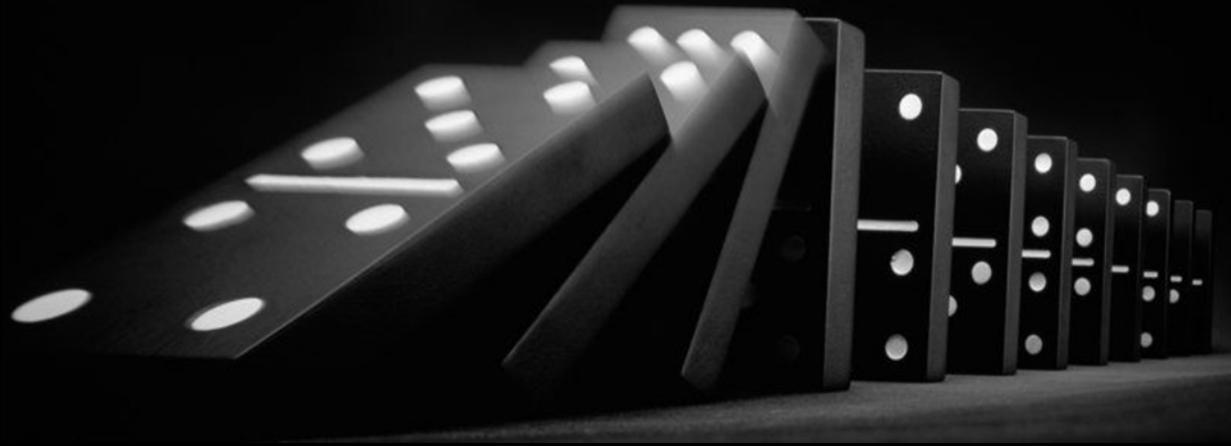
- Agents in the system interact in apparently random ways, through a few simple rules that produce abundant possibilities
- As these interactions feedback into the system, patterns may emerge

Self-organization

- No hierarchy of command/control
- Just constant re-organising among agents to find the best fit with the environment, in response to perturbations or disturbances
- Small disturbances can have big effects through amplification in the feedback loop (the butterfly effect)

What does CAS mean for us?

- Linear, mechanistic approaches to intervention are unlikely to have predictable effects
- You can't explain or alter the whole by studying its parts



What does this mean?

- A CAS often presents 'wicked problems'
 - Dimensions/agents constantly shifting
 - Intervening "here" often has unanticipated effects "over there" because parts are interdependent
 - Each attempt to solve the problem changes the nature of the problem

What does this mean?

- Small, positive 'disturbances' can be as valuable as large-scale efforts
- By amplifying small positive changes, we may be able to create desirable butterfly effects



Small disturbances

- Since early 90s, organizational science has used complexity to explain

“how small disturbances can provoke changes that are generative and sustainable, through amplification and feedback loops”

(Tsoukas 2004)



Small disturbances

As a way forward
from the checklist paradox...



What small disturbances have you seen in your checklist practices?

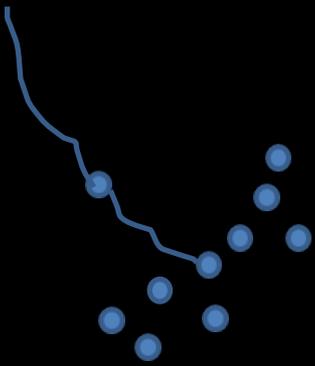
Activities that seem random, are not patterns yet, but could encourage the system to re-organise in a positive way



How might those small disturbances be amplified?

Feedback loops that might amplify the
disturbance so that it grows to be an
emergent pattern at the system level

An example from my experience

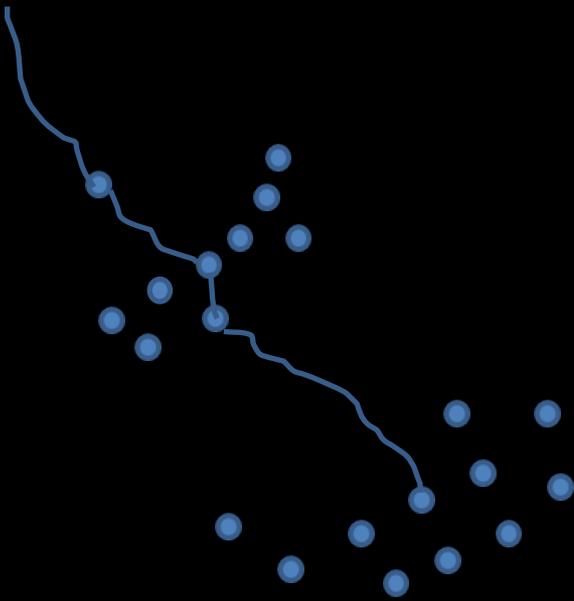


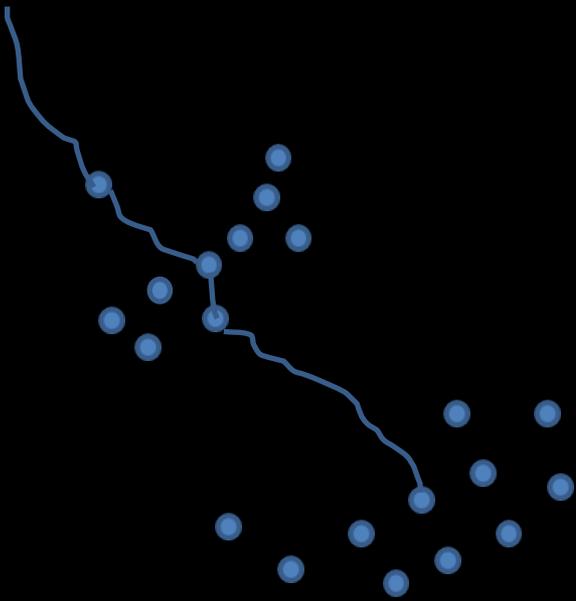
Surgeon is uncomfortable leading team briefings.

She could:

- Carry on as usual, regardless of discomfort
- Start arriving to OR too late to participate
- Participate minimally/do incomplete briefing
- Refuse to do briefing at all
- Devise strategy to delegate briefing to resident

Surgeon devises educational strategy
to delegate briefing to resident
by linking checklist with ITER

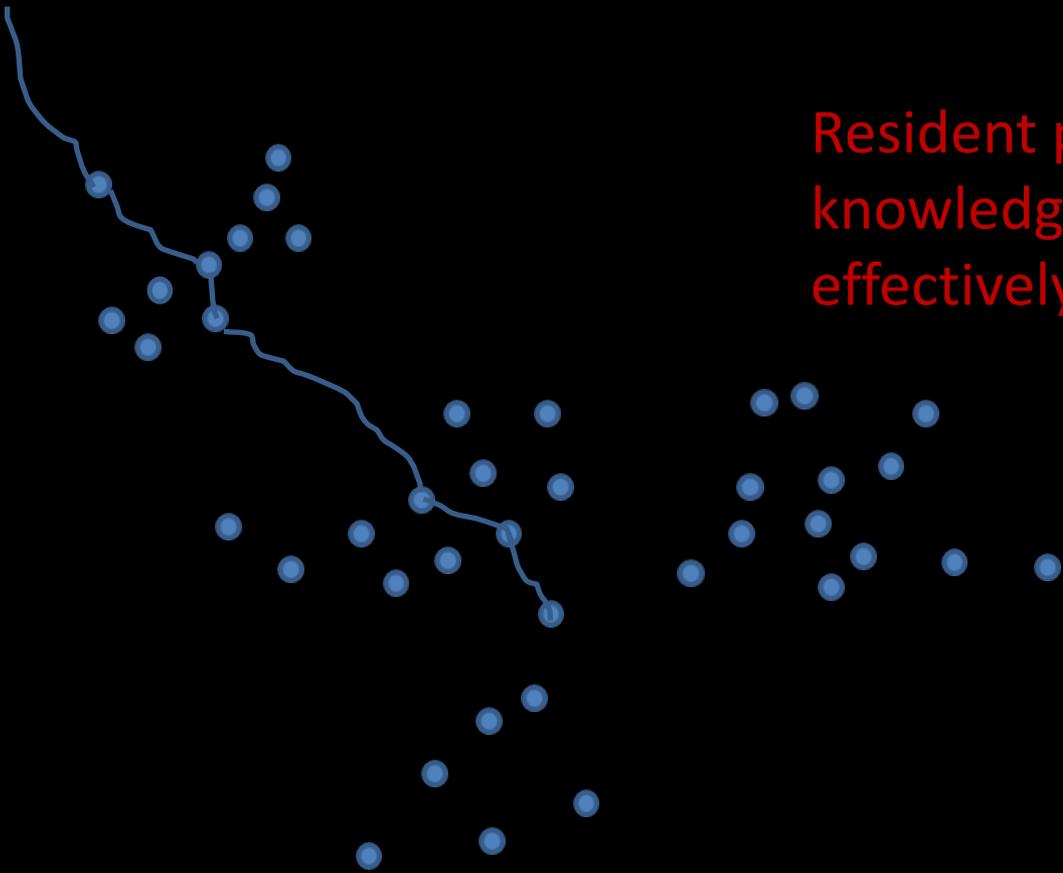


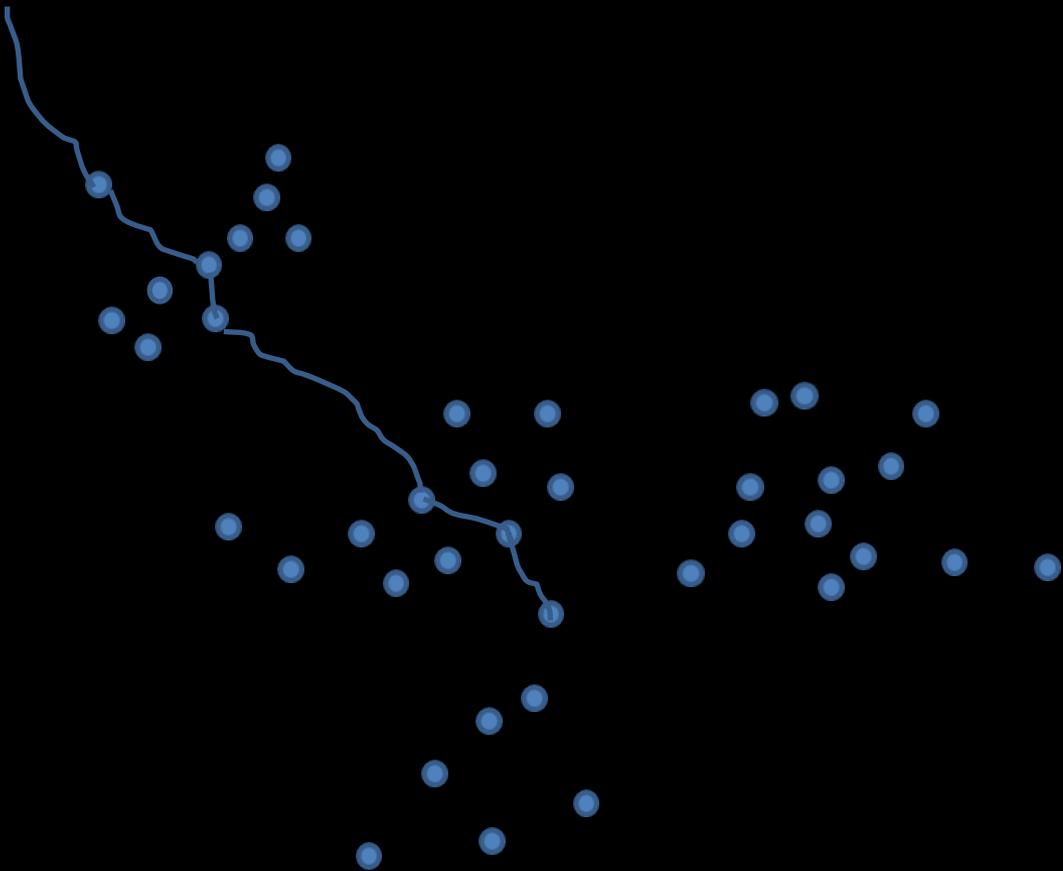


Resident could respond variously:

- By leading briefing but not changing prep routine
- By preparing for briefing as evaluative performance
- By doing everything possible to wiggle out of briefing

Resident preps in order to acquire
knowledge required to lead briefing
effectively

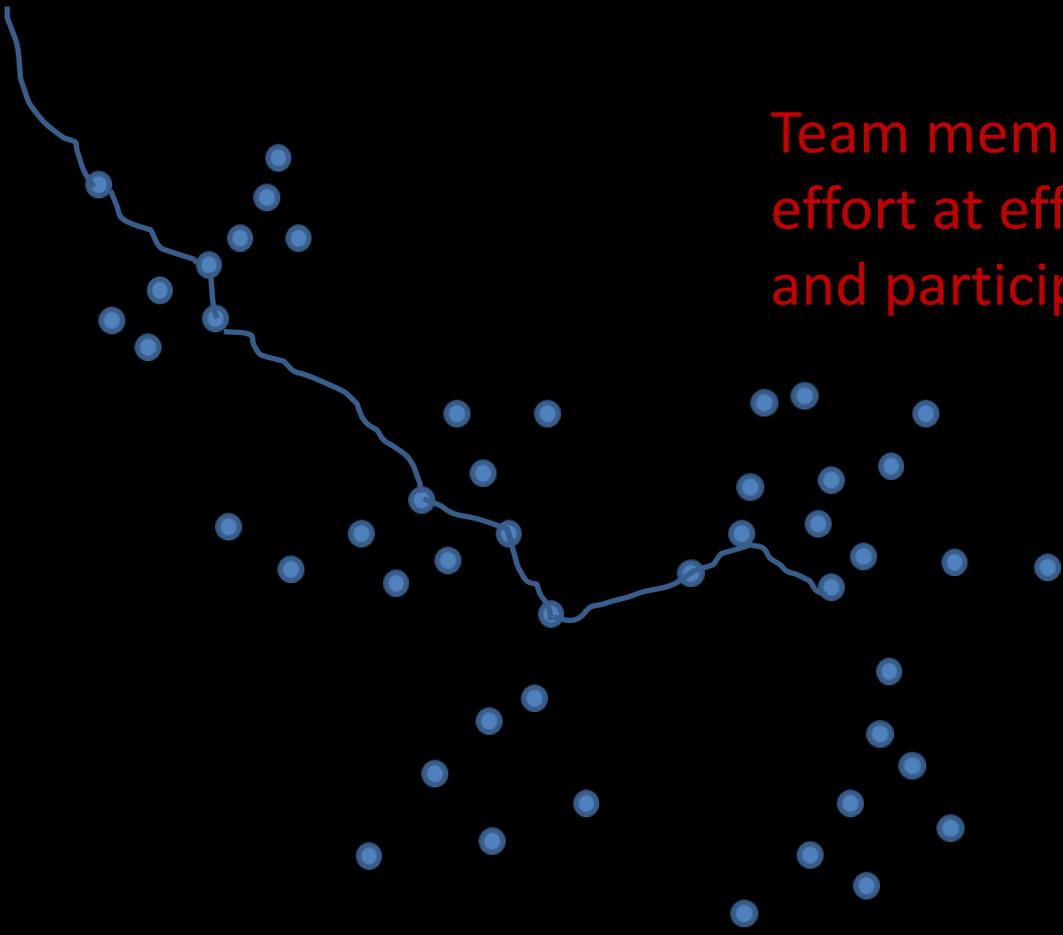


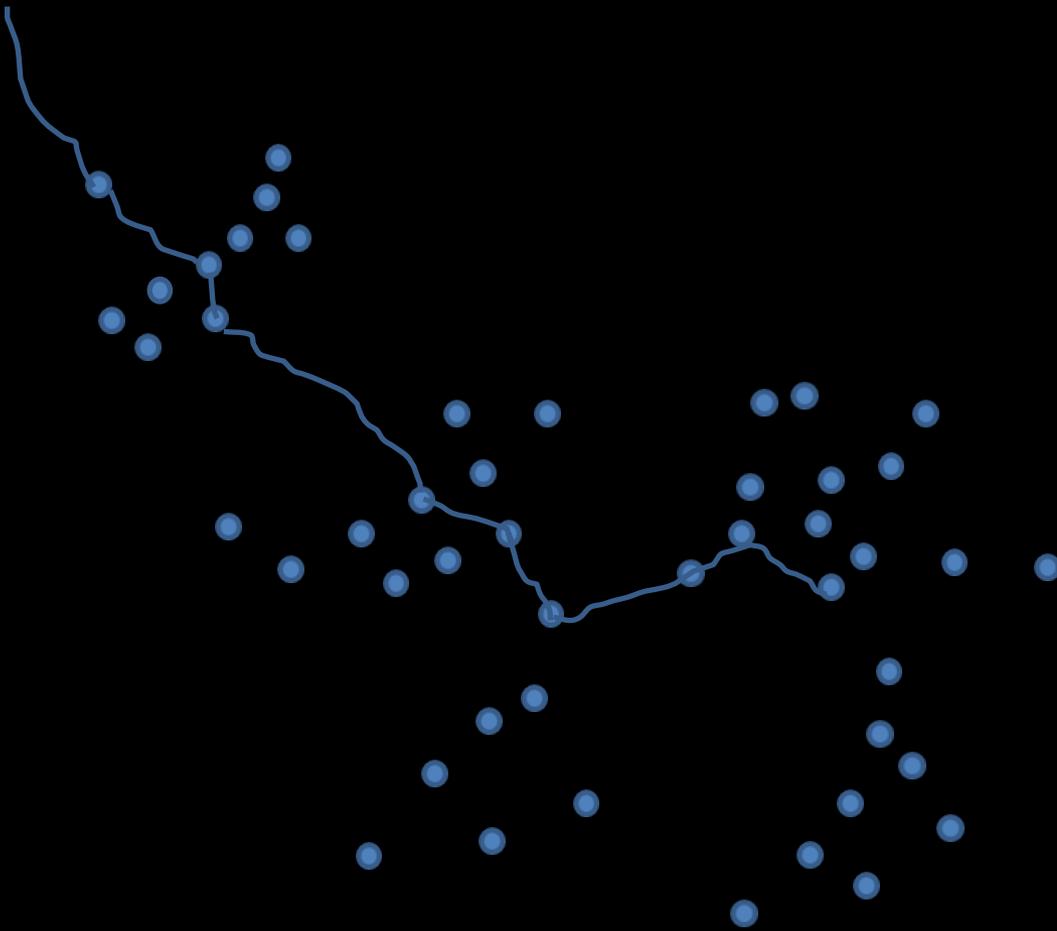


Other team members could respond variously:

- Appreciate the resident's preparation and participate fully
- Perceive the surgeon as sidestepping duty and refuse to participate
- Participate reluctantly and resentfully

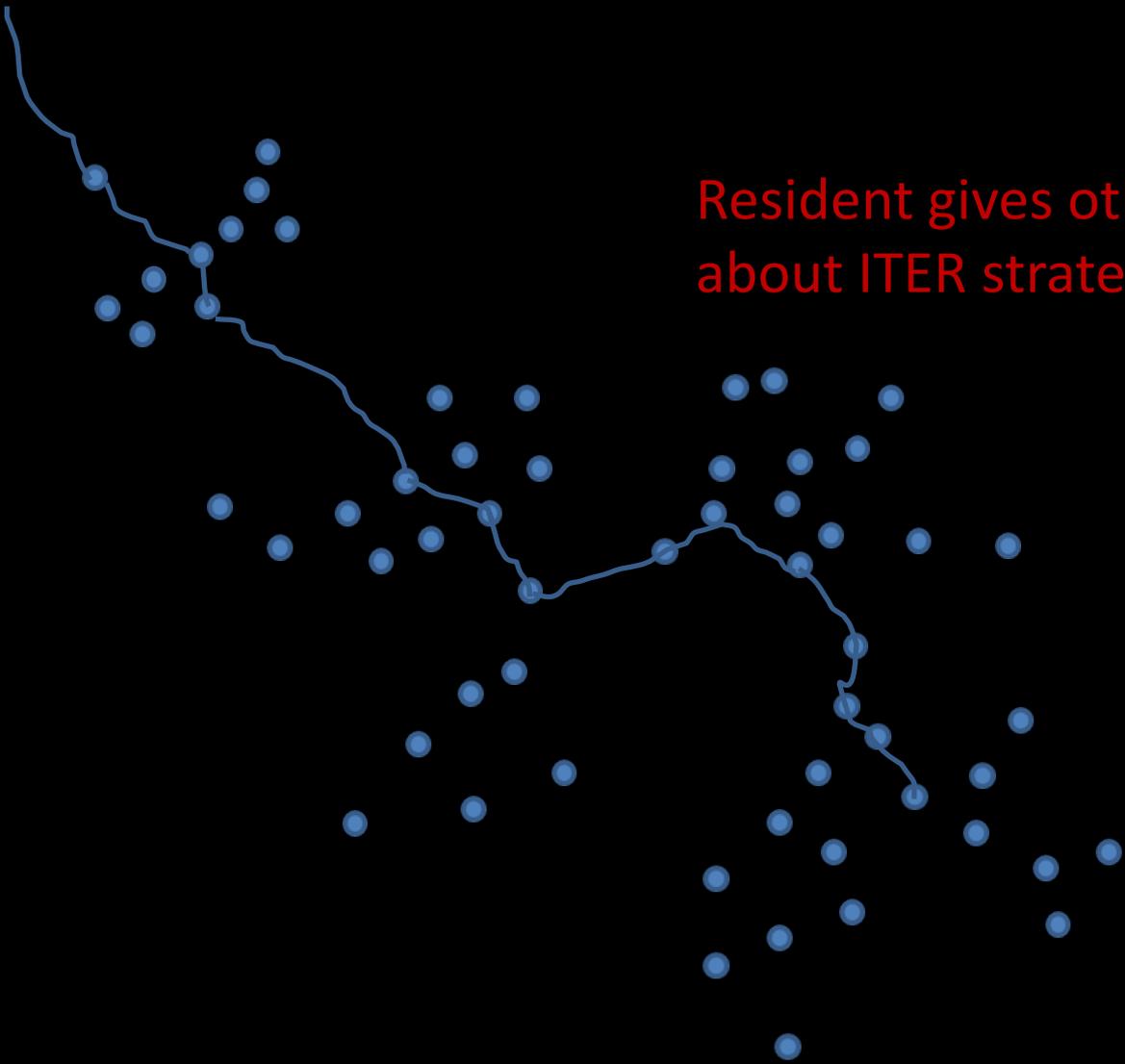
Team members appreciate resident effort at effective briefing leadership and participate fully





- This small disturbance could remain in one OR
- Or the resident could give other trainees a heads up to be prepared for checklist/ITER link
- Or surgeon could share ITER strategy with program director

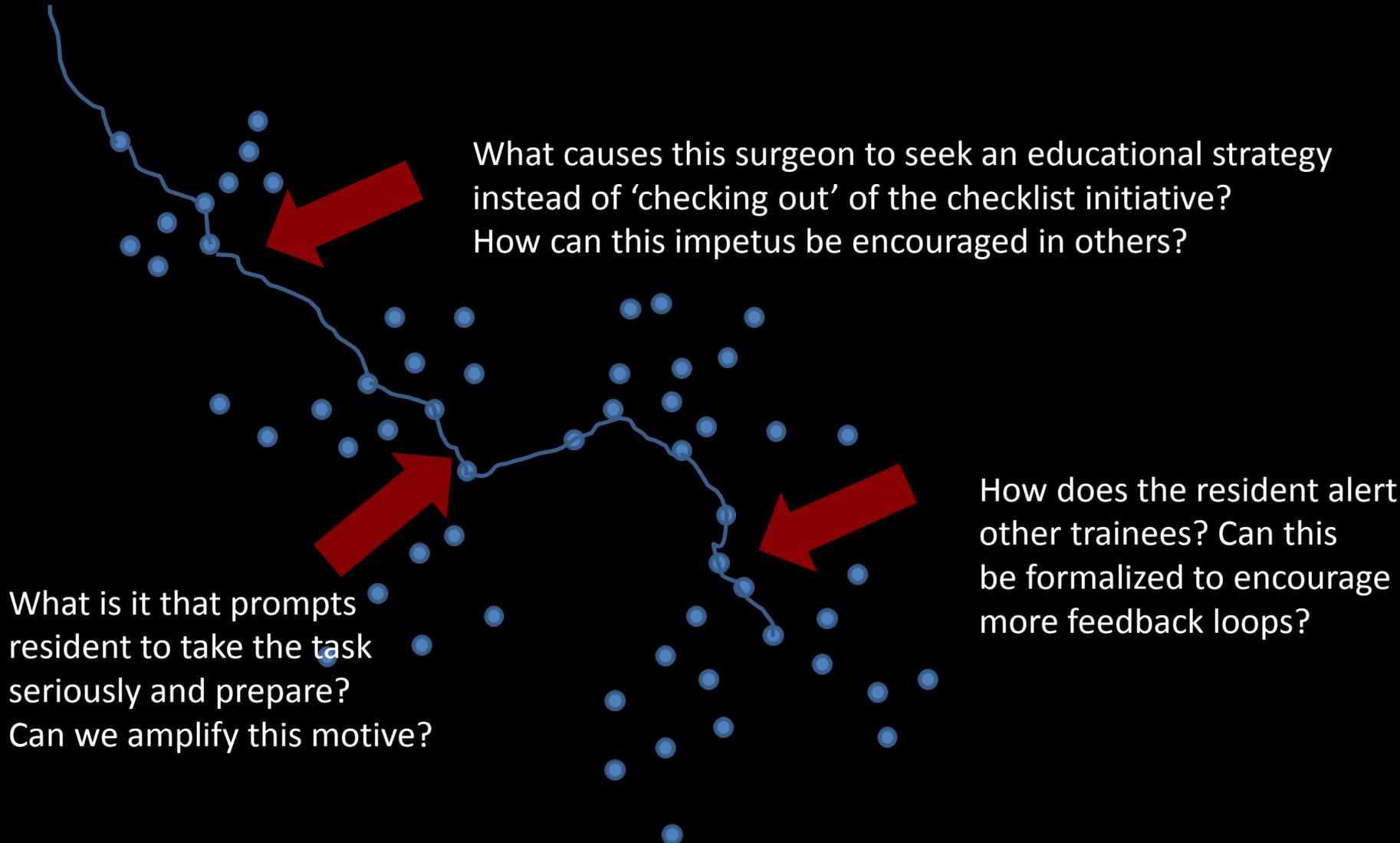
Resident gives other trainees a heads up about ITER strategy



Complexity can help

- To see precisely *how* openings become available in a system full of alternatives
- To focus on the everyday disturbances so that we can analyze what emerges and how
- To consider how amplification can work to support emergence

(Bennett 2010)



What causes this surgeon to seek an educational strategy instead of 'checking out' of the checklist initiative? How can this impetus be encouraged in others?

What is it that prompts resident to take the task seriously and prepare? Can we amplify this motive?

How does the resident alert other trainees? Can this be formalized to encourage more feedback loops?

Amplifying this small disturbance

A caution

Complexity shows how systems emerge in unpredictable ways through non-linear dynamics of mutual interaction and influence, producing a whole that is greater than the sum of its parts.

It doesn't give us more control! It gives us more understanding.

(Fenwick, 2013)

Implications

Moving forward

- Be alert to small disturbances in the system
- Try to amplify those disturbances
 - Share the knowledge thru rounds (“Unexpected Brilliance; Unexpected Barriers”)
 - Foster favorable conditions
 - Don’t squash disturbance with linearity or control
- Be prepared to collect imperfect data
- Be creative about costs
 - Trainees, student projects, etc

In summary

Paradox

Beyond The Checklist Manifesto

- **Review** the history of the checklist
- **Reveal** dimensions of the checklist paradox
- **Reaffirm** the point: collective competence
- **Reorient** our efforts via complexity theory



Organizational change
is a long, long road.

It takes generations.

Surgical checklists are
a critical step forward
in the quest for safer
patient care.



Reducing surgical briefings to checklists and compliance rates is no longer moving us forward.

We need to grapple better with the complexity of system change in the OR.



A proposal:

Let's try to
identify & amplify
small disturbances



Complexity theory: a short reading list

- Bennett, J. 2010. *Vibrant matter: a political ecology of things*. Durham NC: Duke University Press.
- Capra F. *The web of life: a new scientific understanding of living systems*. 1st Anchor Books ed ed. New York: Anchor Books; 1996.
- Fenwick, T. 2009. Responsibility, complexity science and education: Dilemmas and uncertain responses. *Studies in Philosophy and Education*, 28, no. 2: 101-118.
- McMurtry, A. 2010. Complexity, collective learning and the education of interdisciplinary health teams: Insights from a university-level course. *Journal of Interprofessional Care* 24, no. 3: 220-229
- Paley, J. 2007. Complex adaptive systems and nursing. *Nursing Inquiry* 14, no. 3: 233-242
- Stacey, Ralph.D. 2005. *Experiencing emergence in organizations: Local interaction and the emergence of global patterns*. London: Routledge.
- Tsoukas, Hari. 2004. *Complex knowledge studies in organizational epistemology*. Oxford: Oxford University Press.

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Thank you

www.dreamstime.com/stock-image



Connections are critical; individual agents much less so.



Simple rules result in complex & adaptive responses.



Agents have latitude of response within the rules.



Complex

Elements & their connections are equally important.



Simple algorithms produce simple & predictable responses.



Components response is fully determined.



Complicated

<http://www.beyondintractability.org/essay/complex-adaptive-systems>