Studio Brief:
Reimagining Purpose, Equity, and Efficacy in Morbidity & Mortality Conferences

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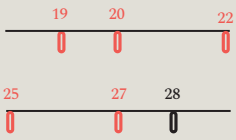
Jan 2021 - Protoyping Studio



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Studio Purpose

Explore the history, scholarship, design and management of the M&M Conference to understand its function or functions within the medical profession. To look for the complex challenges that may be compromising its value or effectiveness. In essence, to determine the highest and best purpose/s of the M&M and to answer the question -- is it fit for purpose?

Dual-task

Apply creative practices in order to look beyond the information provided by others. Through a variety of approaches we hope to gain unique insights by releasing our collective imaginations from what others define as evidence and the limits of how others define the pertinent problems. We will work to develop jigs, prototypes, and potential interventions in order to consider reforms to the M&M, or to imagine new systems to achieve the most productive and useful purposes possible from a review of medical performance and adverse outcomes in care.

Studio Terms of Engagement

Work to surface surprise + and create the conditions so that surprise can be instrumentalized.

Actively foster psychological safety. Don't shut down and dismiss ideas, but look for what can be opened up, built upon, discovered

Apply the dandelion principle. Surface insights on what's most important/relevant means making room for plurality of perspectives on specific issues.

Strong opinions, loosely held. (Paul Saffo). Nothing (idea, sketch, tool) is precious.

Physically and tangibly externalize your thinking, how and when you're trying to make sense of something.

Pursue insight and not perfection. Perfection implies completion. What are the things to get to better things?

Pose the important questions that help us look beyond what is obvious in order to surface new insights / understanding.

Be as exhaustive and generative in your thinking as you can be. Notice where and when you're stopping, stuck, and constrained. Ask yourself why in these moments.

Interrogate the prior logics shaping how things operate the way they do. Develop strong new logics from imperfect information.

Create space for uninterrupted individual thinking and then for social learning to collaboratively amplify and challenge individual thinking to synthesize something new.

Shifting headspace/mindspace between morning and afternoon. Make comfortable and disorient.

Cameras are optional. Please be mindful of when you choose to be on and off camera. Being visible and present to others can be critical at some times. Allowing for periods of being seen and unseen can be an act of self-care. A balance of presence and invisibility can help foster equity, epistemic humility, and the emergence of deeper truths. Let's be mindful of the space we take up, even in our virtual boxes.

When someone says something, and it evokes something in you, ask yourself why are you having that association, why is that coming to mind for you?

Be rigorous and nimble in pursuing insight. Interrogate and reimagine thoughts. Construct and deconstruct ideas. Stabilize and destabilize what we believe is known.

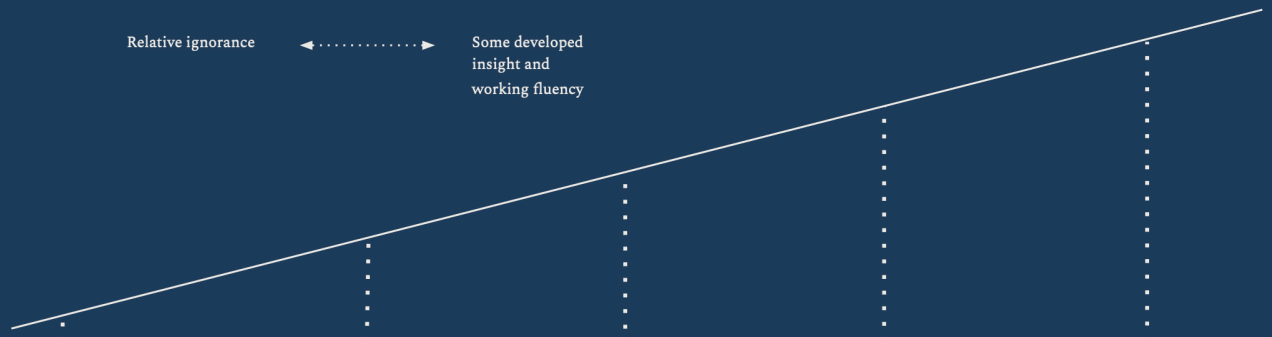
Surface flawed assumptions, constructs, boundaries of scope affecting thinking.

Remember there's a dual focus always: an emerging process for how we construct insight and the insight/instrumentality itself.

Don't assume there's agreement or commonality. Listen for what's implied, surface disagreement, probe for clarity, and look for negative space / what's hidden / anything missing. Approach disagreement with curiosity directly, rather than acquiesce to maintain peace. Remember, "All polishing is done by friction" (Mary Parker Follett).

Studio On-Ramp

On Ramp



DUE JAN 6

Assignment I: What does the scholarship on M&Ms reveal?

OUTPUTS

purpose of M&Ms

failings/shortfalls

resistance to reform

epistemological errors

operating principles

Negative Space

Where else do we need to look to evaluate whether or not M&Ms are underperforming / not working well?

DUE JAN 8

Assignment II: Interrogate & Reimagine Krizek's 5 Types of Errors

OUTPUTS

interrogation of error types

Interventions for expectation errors

Negative Space

What's actually in need of review?

DUE JAN 11

Assignment III: What do the organizational tools of M&Ms reveal?

OUTPUTS

problem definition

missed opportunities / things overlooked / lacking

tools observations/annotations

replacement/analysis on fishbone diagrams

Negative Space

Because the tools of analysis direct our gaze -- where and how we look and evaluate -- where do we not look?

DUE JAN 13

Assignment IV: Reimagine Roles + Rules of Engagement

OUTPUTS

ingredients for successful M&M conference

new roles, rules, principles of engagement

Negative Space

Do the criteria/ingredients for success miss anything, leave anything out, or obscure anything? Is the condition-setting for success adequate and what does it not do?

DUE JAN 13

Assignment V: Reimagine the M&M Conference

OUTPUTS

reimagining M&M conference or alternative model

Negative Space

What are the constraints being set and what are the boundaries being drawn?

INPUTS to STUDIO

purpose of M&Ms

failings/shortfalls

resistance to reform

epistemological errors

operating principles

interrogation of error types

Interventions for expectation errors

problem definition

missed opportunities / things overlooked / lacking

tools observations/annotations

replacement/analysis on fishbone diagrams

ingredients for successful M&M conference

new roles, rules, principles of engagement

reimagining M&M conference or alternative model

Studio Architecture

Overall Architecture

INPUTS

- purpose
- failings/shortfalls
- resistance to reform
- epistemological errors
- operating principles
- interrogation of error types
- Interventions for expectation errors
- problem definition
- missed opportunities
- tools observations / annotations
- replacement/analysis on fishbone diagrams
- new roles + rules of engagement
- reimagining M&M conference or new model

WEEK I

DAY I - TUES JAN 19

AM

TRUTH SEEKING

Objectives / Terms / Structure

Assignment I & II Synthesis & Learnings

Constructing Taxonomies of Purpose

PM

Environments that Surface Truth

Shifting Conditions/Relations in M&Ms

Recap

OUTPUTS

- Assignments I & II Insights
- Disconnects Between Stated Goals + Reality
- Truth Seeking Challenges / Mechanics / Adaptations
- Condition/Relation Shifts
- Bus Schedule-Like Evidence
- Role of review + reflection

DAY II - WED JAN 20

AM

SUITABLE TOOLS FOR INSIGHT

Assignment III & IV Synthesis & Learnings

How/Where Measuring Error/Mistake Falls Short?

Adequate Tools for Noticing Bus Schedule Connections?

PM

Synthesis to Construct a Successful Model of Review

Recap

OUTPUTS

- Assignments III & IV Insights
- Success & Failure in M&Ms
- Limits of Error/Mistake
- Disconnects Between Tools & Stated Goals
- Bus Schedule Insights
- Ingredients for a Successful Model

DAY III - FRI JAN 22

AM

ENVIRONMENTS CONDUCIVE FOR LEARNING

Mapping Opportunities and Developing a Portfolio of Interventions

PM

Why Is There Resistance to Change?

Visualizing Organizational Institutional Oppression

Constructing a Theory of Change - IOOI for M&Ms

Recap

OUTPUTS

- Mapping Opportunities for Intervention
- Systems of Resistance
- Visualizing How Organizational/Institutional Oppression Works
- IOOI + Theory of Change
- Learning Objectives for Successful Model of Review
- Proposal PItch to RWJF

WEEK II

DAY IV - MON JAN 25

AM

ROLE OF CREATIVE PRACTICE

Accounting for Relevant/Missing Questions from Studio Brief

Assessing and Specifying Where M&Ms Sit on a Continuum of Equitable Behaviors

PM

What Lessons a Painting Offers About Drawing Inferences in an M&M?

Recap

OUTPUTS

- Outlier Questions from Studio Brief
- Learning from Success
- Applying an Equity Lens to M&M Behaviors
- Limits and Biases of Interpretation

DAY V - WED JAN 27

AM

COHERING BLIND SPOTS

How are Biases Operative in M&Ms?

What Can we Learn from Charles L. Bosk's Study

What Should People Leave Having Learned from M&M?

Guest Practitioner

PM

Shifting Relations/Conditions in M&Ms

Prototypes to Test What's Outstanding

Closing Comments

Recap

OUTPUTS

- Operative biases
- New ingredients for success and questions inspired by Bosk
- To what end of learning?
- Condition/Relation Shifts
- Prototypes to Test What's Outstanding

POST PROCESSING

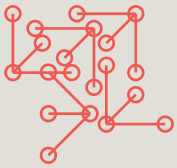
DAY VI - THR JAN 28

Threads Between the 5 Days

Threads Between the 5 Days

	IF		*THEN*
Truth-Seeking	**DAY I** If M&Ms are truth seeking	.....	**DAY I** have they designed environments fit to do that?
Suitable Tools for Insight	**DAY II** If the tools of the M&M should yield relevant evidence, useful inputs, and should construct and/or apply a useful process for sense-making,	.....	**DAY II** is the design of the tools suitable/sufficient to achieving those outputs?
Environments Conducive to Learning	**DAY III** If M&Ms are resistant to change	.....	**DAY III** are they fit environments for learning?
Role of Creative Practice	**DAY IV** If creative practices surface new insights,	.....	**DAY IV** does the M&M conference present opportunities to do so?
Cohering Blind Spots	**DAY V** If communities of practice rely on social cohesion, yet individuals are products of personal and cultural bias...	.....	**DAY V** can the M&M both cohere the group and surface productive conflict and disagreement?

Challenge:



Emergency Medicine relies on Morbidity & Mortality Conferences (M&Ms) to guide treatment in real time and to review adverse outcomes as a tool for systematic improvement[1]. They are also widely believed to be valuable, not just for improving medical practice, but for a range of other insights relating to liability, ethics, and transparency.

In some circles M&M conferences are viewed as an anachronism-- a vestigial structure of a toxic culture where more powerful physicians lay blame on the less experienced. Many clinicians have been inspired by their experience and by the insights of Chris Bosk in his seminal book Forgive and Remember to question whether the design and focus of the M&M makes it fit for purpose, and whether the resultant atmospheres of hostility could possibly be conducive to learning [8].

If M&Ms want to lay claim to their validity as a tool for improving outcomes, or reducing errors, then they are on shaky ground. Self-reported "medical error" continues unabated, by some reports more than doubling between 1999 and 2010 [13]. Equally alarming, past research has shown that the fear of being blamed actually led physicians to conceal their errors, which suggest the numbers are likely higher than reported. And it remains "far from clear that M&Ms were the best way to address the larger problem of medical errors..." [8]. The search for error and blame appears to subvert the stated goals of the M&M.

As Thomas Krizek, MD has written:

> "Adverse events and medical errors occur when good surgeons are doing their best. They involve good residents doing their best. They involve good health care workers trying to do their best. True negligence is unusual. This is important since the system will change only when all of these people, doing their best, redirect their efforts toward the system. Our data clearly demonstrate that the problems are most often systemic, that is, within the system. Attempts to find the parties responsible when the system itself is at fault is fruitless. It makes it most difficult for good people to volunteer information when they become victims of blame, silence, disapproval, or liability" [3].

So, why does the practice and the belief in its value continue and why are attempts at reform or redesign limited or unsuccessful? Why is the system so intractable? While many institutions have made advancements and improvements, change has not been embraced widely. Systems often remain intractable when the complexity seems too dense to navigate. Better to stick with what we know than risk further damage or collapse. In addition, intractable systems are often supported by the groups that benefit from them. And coming to terms with this often requires an examination of the goals and principles --the history and assumptions-- on which the system was created.

M&Ms began in Boston, Massachusetts in the early 1900s, birthed at the same time as the first health insurance. An important connection is that the first M&Ms may not have had teaching and improvement as their principle goals, but the avoidance of liability.

Ernest Codman is credited with first proposing a system of performance review at Massachusetts General Hospital. His innovative thinking was met with resistance and "for his pains he lost his staff privileges there after suggesting the evaluating of surgeon competence." But his ideas "contributed to the standardization of hospital practices — including a case report system that ascribed responsibility for adverse outcomes — by the American College of Surgeons in 1916." How might this early resistance to the evaluation of surgeon competence be present in the M&M tradition that resulted?

In addition, neither female nor Black physicians were welcome in the Massachusetts Medical Society at this time. How could contemporary ideas about competence, expertise, gender, and race have influenced the design of systems of accountability? When we accept how flawed the creators were, how can we not wonder how flawed their creations may be? How might the philosophical beliefs of mainstream medicine have been built into the systems developed at this time? And how might that flawed foundation continue to influence current practice?

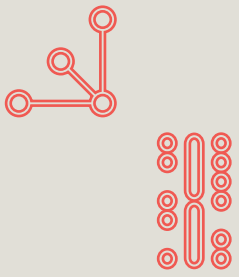
A more recent influence on healthcare and the M&M that is the work of Dr. W. Edwards Deming whose Five Principles for quality improvement defined healthcare workers as the "smart cogs" and establishes the axiom that "if you cannot measure it -- you cannot improve it" [15]. Perhaps the very notion of quality controls and improvement, as Deming applied to the making of automobiles, electronics, and television, needs to be reexamined. Perhaps the differences between quality improvement in manufacturing and quality improvement in healthcare need to be more deeply considered. How is it that expectations and normative behaviors, to name just two different kinds of error, can be standardized and controlled?

If the value of M&Ms as a learning tool is questionable, then so is its value for reducing error. Dr. Joseph Bernstein writes, "as a method of uncovering error, the M&M conference is flawed; and as a means of analyzing the causes of error, the M&M approach leaves a lot to be desired" [2].

Reflecting on the history and foundations of the M&M, we propose that the very assumption that looking for mistakes as a way to improve performance is an epistemological error.

The development of our healthcare system emerged from "accidents of history", and was not designed with any cohesion or long-term vision [14]. It developed in response to conditions of history, and the same applies to the M&M conference. The public and private pressures to which the medical community was responding at that time was quite different. The understanding of how to make improvements was nascent. The understanding of how to prevent mistakes, either to do no harm to the patient, or to prevent lawsuits, was limited. But the conditions were also less complex. The difference between a surgical suite or an emergency room in 1920 and 2020 is dramatic. How can a tool designed to prevent mistakes and achieve improvements remain relatively unchanged in a system that has become so complex?

As medicine answers the call to address inequity in healthcare, it must also address inequity within its own systems. They are interrelated. A system that is recognized as hypocritical and yet profoundly powerful is an inequitable system. A system that continues traditions that cause harm to its members amounts to institutional oppression. Medice, cura te ipsum. Medicine must care for its own. This must be the first step in improving the system of care for others.



Questions as Basis for Investigation + Proposition

Foundational Constructs

Are M&Ms fit environments for social learning across clinical practice?

Can all adverse outcomes be defined as errors?

Can blame always be clearly assigned for adverse outcomes?

Do we actually learn from our mistakes, or does this inflict more harm?

Does the practice of ferreting out error cause clinicians to hide mistakes?

Do clinicians agree on a definition of error?

What constitutes evidence of error in an M&M?

Do M&Ms transmit existing knowledge and/or construct new knowledge?

Does the investigative nature of M&M create tensions that put organizational and individual interests at odds?

How do M&Ms factor into limiting liability in cases of adverse outcomes?

What do institutions do (beyond the M&M) to assist clinicians who have made errors or who have been accused of error?

Do M&Ms set up adequate conditions for acting and reflecting to improve decision-making and outcomes?

Why do we partition clinical and non-clinical spaces when health and healthcare do not operate by these boundaries? Why do we divorce clinical information and settings from non-clinical information and settings?

Tolerance For Behaviors

Does the environment in M&Ms encourage honest dialogue -- willing to risk conflict in pursuit of rigorous insight?

Do M&Ms consider how different points of view and feedback can be held in the same space? Does the system have tolerance for opposing or conflicting views?

Is disagreement welcomed in an M&M? Are differences in thought and opinions probed for their sources?

Do perceptions and barriers relating to authority, expertise, and hierarchy get in the way of generating insight in M&Ms?

Is there opportunity in M&Ms to challenge and reimagine clinical norms and standards of care?

Do M&Ms incentivise and/or exclude certain kinds of behavior and information? Are there things tolerated and things that aren't tolerated, and if so, how is this communicated?

Are M&Ms interested in assessing job performance against standards of best practice, absolute standards, and/or some other benchmark? Does assessment look to understand the personal/psychological conditions which influence job performance?

Do conditions in an M&M lead to inauthentic behaviors, and do they consider the consequences of this?

Do M&Ms acknowledge the importance of forgiveness?

Do M&Ms lead to detachment from difficult emotions? Do they bring clinicians together in response to shared trauma?

Do M&Ms take into consideration how these conferences make clinicians feel?

Do the conditions exist for opinions and assumptions to be safely questioned?

Limits On Form + Content

Do M&Ms question whether the tools, methods, and modes of sharing information are adequate and fit for purpose?

Do M&Ms question when and how either too much or too little information contributes to the ability to make sound decisions?

Is an M&M like a courtroom? Is that format fit for purpose? What other models of engagement might better support the stated goals?

Do M&Ms allow for insights that cannot be properly articulated as error?

By focusing on error and mistake, do M&Ms overlook other factors, behaviors, and circumstances that contribute to adverse outcomes?

Do M&Ms investigate and reimagine how clinical staff interpreted, understood, and framed what was happening in the circumstances that led to poor outcomes?

Do M&Ms examine the consequences of misinterpreting goals and expectations on behavior and outcomes?

Do M&Ms consider the role of bias (e.g. individual core assumptions / beliefs) when investigating poor outcomes?

Are there roles or procedures that clinical staff have to follow in an M&M? How are these roles and procedures decided?

Do M&Ms take stock of the things that are on people's mind before a conference begins, and what are the sources for the mental states people bring into the conference?

Are there "cultures" of decision-making and if so, do M&Ms investigate the conditions which shape cultures of decision-making, where they stem from, and why they persist?

Do M&Ms consider issues and evidence that are difficult to measure, quantify, or understand empirically?

Does the practice of M&M conferencing understand the historical roots that may continue to influence the methodology and potentially limit its viability?

Do M&Ms take the time to investigate the things clinical staff consider important and draw interpretations from?

Do M&Ms create boundaries around inquiry that limit/exclude what could be considered to better understand adverse outcomes?

What do practitioners leaving an M&M walk away having learned, if anything? These lessons could include insight about improved medical practice, the organization, their colleagues, the value of the M&M itself, process of inquiry, context of societal conditions.

Who's invited and not invited to an M&M and why? How are these invitations made?

How is control exercised in an M&M and in what ways? Are there rules of engagement?

How does the institution evaluate whether the M&M has been a successful teaching and learning experience?

Do conditions in an M&M lead to inauthentic behaviors, and consider the consequences of this?

Does the structure of M&Ms address implicit bias or reflect it?

How important is being in-person and face to face in an M&M?

Process Lenses

Do M&Ms achieve their stated/intended goal of XYZ. If they are not, why do they persist?

Are there flawed premises, beliefs, assumptions, boundaries underpinning how M&Ms came to be operate and are conducted?

What is actually in need of review? Should review only be limited to adverse outcomes and errors? Should all systems be reviewed together? Are M&Ms a symptom of a larger issue or set of issues?

Do M&Ms serve useful purposes beyond the stated/intended goals? Do they serve purposes not clearly evident?

Are the systems related to, supporting, and underlying M&M conferences achieving the stated goals or are they actually antithetical to the stated goals? What is the architecture of these systems, how do they interrelate, and what behaviors do they affect? Are the principles underlying these systems sound?

Why are M&Ms resistant to change?

Opportunity

What should be done to improve the culture, purpose, equity, and efficacy of M&M conferences? Considering their flaws and limitations, M&Ms may need a redesign or a wholesale re-imagining. Incremental approaches are often inadequate for creating change within conditions of complexity and uncertainty.

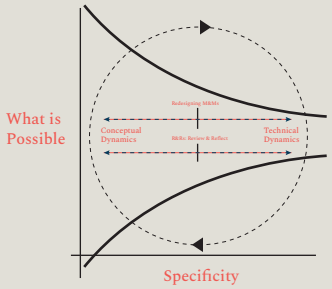
Reimagining the systems and constructs on which M&Ms have been built requires a systems approach. In practice, that means identifying the architecture of issues, surfacing the disconnects within cultures and systems, and developing pathways for strategically improving outcomes concurrently.

The categories of questions presented In Basis for Investigation and Proposition -- foundational constructs, tolerance for behaviors, limits on form and content -- represent not only the basis for investigating how M&Ms currently work, but the basis for proposing and prototyping new operating principles and interventions. The evidence revealed through this process of questioning will allow us to identify what current operating principles need to shift and how, what new vision M&M conferences could work towards, and what specific interventions when piloted and tested will coherently realize that vision. This work would be followed by a period of self reflection for the institution - a stage where it is imperative that the institution see the gaps between stated goals and efficacy.

At the CfC, we operate "at the edge of the inside", a phrase coined by columnist David Brooks. We engage and collaborate directly with front-line professionals who provide the subject matter expertise, while we work at enough distance to see constraints and influences. This allows us the benefit of the objectivity and plasticity needed to navigate between conceptual and technical questions across scales and contexts. We are dedicated to understanding and improving complex systems by applying an approach that works to dismantle the silos that impede effective communication and collaboration. We engage systems in their full complexity. In undertaking a reimagination of the M&M, we would engage in a process that surfaces unseen connections, exposes important questions and reframes challenges as a way to consider new approaches to achieve desired improvements and outcomes.

Our proposal is inspired, in part, by the many clinicians with whom we have collaborated over the past two years examining the challenges to 21st century systems of care. They have expressed their hope that a partner outside of the system, unconstrained by the politics and incentives of the system, might be able to advance the work in ways that have proven to be impossible from within.

What are the possibilities and opportunities? There is no doubt that clinicians and patients, hospitals and insurers need systems of reflection and improvement. Current national debates around systems of oppression and the lack of equity provide renewed reason to focus on the role of the M&M as an important and systemic tool that impacts the culture of medical practice and the quality of care.



We propose two pathways within which to apply a creative practice: redesign the form and content of M&Ms, and reimagine an alternative structure altogether.

Redesigning M&Ms:

As 19th Century scientist and polymath John Lubbock writes: "What we do see depends mainly on what we look for."

Focusing on error assumes that there was error. If the error is systemic, which it likely is, how do we properly examine that and not unfairly put the focus on the performance of individuals? (Krizeck)

Rather than focus on error, what could come from integrating the following sets of dynamics in M&M conferences: enabling conditions for greater trust, surfacing and confronting the truth, challenging and understanding norms, re-considering the role and needs for standards of quality improvement, reconsidering what constitutes evidence, and interrogating isolated case reports which lack broader context.

Prototyping ways to discern how sound decisions and interpretations are made may be more fruitful than probing the relevance of mistake and error.

In response to Covid-19, intubation turned out to not be beneficial to some patients (https://rb.gy/mjwtx3). Was intubation a mistake? In emergent conditions, under high stress circumstances, perhaps mistake is not always the appropriate mindset. What mindsets could replace the search for error and blame?

A creative process of redesign would engage front line professionals in approaches to "make the familiar strange." This is a process by which we would apply new metaphors, seemingly irrelevant lenses, and new associations in order to break down the components of an M&M and reconstruct them in ways to explore practical and useful alternatives. Strategies to make the familiar strange might draw on different senses to include music, performance, sound, and smell. What if an M&M started with questions rather than a presentation? In these ways we explore the existing boundaries of what are and are not components of the M&M and what, if anything, binds them together.

This may include a number of propositions including probing the instructional value of the M&M by gaining insight into the mental states of the participants. An approach could include prototyping how to surface what is on people's minds as they enter a conference. How does that thinking shift during and after the conference?

We believe that different ways of seeing and drawing interpretations open the process to the discussion and consideration of ideas that cannot be generated when we stick to the constraints of existing formats. It is not enough to simply evaluate what is already known. This work would engage clinicians in methods applied to exhaust the known, as well as what Donald Rumsfeld spoke of as the "unknown unknowns." To achieve this we might decouple information from reports and oral presentations, and reconsider them in new formats such as a drama, an incomplete map, or archaeological dig. What would the display of visualized evidence look like if we could exhaust different kinds of relevant information and inputs?

Inverting the paradigm of expertise, authority, and hierarchy might also lead to new insights. What if the rules of engagement and the roles individuals are assigned were reversed as a form of experimentation? What if conditions were set up to welcome and surface disagreement, conflict, and ambiguity?

Changing the conditions of the environment can also help reframe problems and what we look for. What conditions would clinicians change, what new conditions might they imagine in order to create a space conducive to learning and mutual support?

Finally, by reframing the inquiry away from error and mistake, we can reconsider the "evidence" separated from the presumption that error is the cause of the adverse outcome. This could reduce the factors that Krizek has powerfully identified as motivating dishonesty and leading to trauma. These may be the conditions needed to build useful learning environments. This process and even resistance to it, could reveal entrenched ideologies, bias, and their sources in service of improved outcomes.

Review & Reflect: Reimagining the case review process.

While we explore a redesign of M&Ms, we propose the concurrent development of a replacement model: the Review and Reflect (R&R) Conference. R&Rs would offer a new structure with a different purpose: reviewing benign situations and good outcomes. This exploration would identify the conditions present when things go well, specifically why and how. Rather than focus on the outliers, the R&R would look for learning opportunities in the routine. Through a study of dramatic alternatives, the R&R could yield benefits that inform improvements to the M&M, or could become the replacement epistemology if they prove more valuable and effective. Are aspects of R&Rs amplified, which dampen aspects of M&Ms, or some other combination? The principle goal should be the adoption of whichever model is most valuable as a teaching tool, improves equity, confronts bias, reduces error and liability, improves patient care, and limits trauma to clinicians.

This approach would set the conditions to level expertise and authority and how the rules of engagement, roles, procedures, and tolerances can shift behaviors and outcomes. Through a process of reimagining, we can assess the value of learning from success rather than failure. We can explore how the focus on extremes can skew our thinking and what constitutes evidence. R&Rs would be a replacement epistemology to inform the principles and practices for effectively making decisions, and improving outcomes.

"We learn from our mistakes" is an adage with many claims of authorship, as far back as 1837. It has become an unquestioned epistemology. Recent scientific studies reveal that "the brain responds to success at the level of individual brain cells, but the neurons show virtually no response to failures" (https://rb.gy/g6xkpx). R&Rs would provide the opportunity to apply the latest insights in brain science and might help repair damage done by cultures of blame and fear.

References

[1] Nancy E. Epstein - *Morbidity and Mortality Conferences: Their educational role and why we should be there:* https://rb.gy/bn5yll

[2] Joseph Bernstein - *Not the Last Word - Morbidity & Mortality Conference: Theater of Education:* https://bit.ly/33BlOK6

[3] Thomas J. Krizek - *Surgical Error - Ethical Issues of Adverse Events:* https://bit.ly/37nZVPn

[4] Tamara McColl et al - *M&M Shame Game*: https://rb.gy/xngkcf

[5] Nancy Berlinger - *Resolving Harmful Medical Mistakes: Is There a Role for Forgiveness:* https://bit.ly/2Jvrtdx

[6] Tad-y, Darlene B.; Pierce, Read G.; Pell, Jonathan M.; Stephan, Lindsie; Kneeland, Patrick P.; Wald, Heidi L. - *Leveraging a Redesigned Morbidity and Mortality Conference That Incorporates the Clinical and Educational Missions of Improving Quality and Patient Safety:* https://bit.ly/36rxKjp

[7] *The Ottawa M&M Model: A Guide to Enhancing Morbidity & Mortality Rounds:* https://bit.ly/36q2AIV

[8] Barron H. Lerner - *The 'Monday Morning' Medical Screaming Match:* https://nyti.ms/2JnHGl2

[9] Rondi M. Kauffmann, Matthew P. Landman, Julia Shelton, Roger R. Dmochowski, Sandra H. Bledsoe, Gerald B. Hickson, R. Daniel Beauchamp, and Jeffery B. Dattilo - *The Use of a Multidisciplinary Morbidity and Mortality Conference to Incorporate ACGME General Competencies*: https://bit.ly/3fWRgr4

[10] Donald N. Michael - *Some Observations Regarding a Missing Elephant*: https://bit.ly/2JCyM2P

[11] Lori B Andrews, Carol Stocking, Thomas Krizek, Lawrence Gottlieb, Claudette Krizek, Thomas Vargish, Mark Siegler - *An Alternative Strategy for Studying Adverse Events in Medical Care:* https://rb.gy/vkhiav

[12] Charles L. Bosk - *Forgive and Remember*: https://bit.ly/37sCcgO

[13] Niki Carver; Vikas Gupta; John E. Hipskind - Medical Error: https://bit.ly/39v7Lti

[14] Alex Blumberg and Adam Davidson - *Accidents Of History Created U.S. Health System*: https://n.pr/3lnkReb

[15] John Haughom - Five Deming Principles That Help Healthcare Process Improvement: https://bit.ly/2SpNaAl

[16] Robert B. Baker - *The American Medical Association and Race*: https://bit.ly/3h5qe1t

[17] Myra C. Glenn - *Women's Struggles to Practice Medicine in Antebellum America*: https://bit.ly/3h1drxa

[18] *American Medical Association - African American Physicians and Organized Medicine, 1846-1968 timeline*: https://bit.ly/3qpFZ83

[19] William M. Sage - *The Forgotten Third: Liability Insurance And The Medical Malpractice Crisis*: https://bit.ly/2UrLIy0