The Ostrich Paradox

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Why We Underprepare for
Disasters, Defects, Mistakes, Accidents

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Ortho Clinical Diagnostics
Evolution in Quality Thinking

Trends:
Intuitive -------> Scientific
Reactive -------> Proactive
Special-cause -----> Common cause
Correction -------> Prevention

Product Quality (DPMO)

- 690,000
- 308,000
- 6,000
- 600
- 233
- 3.4

- 1920
- 1940
- 1960
- 1980
- 2000

Mass-production
Inspection
Statistical methods
Focus on Process Control
Rigorous problem-solving
Error-proofing
Benchmarking
Lean
DFM
Quality at the Source
TQM
Prevention
Robust design
Prevention

Intuitive --- Scientific
Reactive --- Proactive
Special-cause --- Common cause
Correction ------ Prevention

- 188
- 221
- 265
- 305
- 351
- 394
- 416
- 459
- 481

- 690,000
- 308,000
- 6,000
- 233
- 3.4

- 3.4
- 233
- 6,000
- 308,000
- 690,000

- ?

- 
99% quality not good enough

- 250,000 deaths/year from surgical errors out of 48M surgeries (0.52%) - CDC
- 99,000 deaths/year from Nosocomial Infections out of 39M hospital stays (0.25%) - NCBI
- 10,265 deaths involving drunk-driving (0.75% of drivers on road >.08 BAC) - NTHSA
- In a sequence with 50 steps, each at 99%, the rolled throughput yield equals only 60%.
Risk management is new frontier for Quality Improvement

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<th>Tools</th>
<th>Hazard identification</th>
<th>Risk screening</th>
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<td>Pareto</td>
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<td>Checklist</td>
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<td>Preliminary hazard (PHA)</td>
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<td>What if (WIF or SWIF)</td>
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<td>Failure mode and effects (FMEA)</td>
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<td>Hazard and operability (HAZOP)</td>
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<td>Fault tree (FTA)</td>
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<td>Event tree (ETA)</td>
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<td>Bow tie Diagram (BTA)</td>
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ISO 9001:2015

Most Risk tools rely on people to identify hazards and assess risk...
People notoriously bad at judging odds

- People are poor judges of low or skewed probabilities.
- People decide based on averages rather than distribution tails.
- Many probability decisions do not follow normal-curve statistics.

*Industries which profit from people’s poor judgement in probability*
People can be irrational judging risk

Fear Unknown risks more than Known risks

Fear Scary risks more than Boring risk

Fear Events beyond our control more than Risks we choose
Psychology of Risk can hinder judgement

- Risk Homeostasis: people compensate when perceived risk doesn’t match their risk tolerance
  - (example) many people drive faster in a car equipped with ABS brakes, negating safety advances

*Psychology can help explain, and help overcome, why smart people make irrational risk decisions.*
Two cognitive systems govern decision-making...

- Deliberative vs intuitive thinking.
- Most times intuition keeps us safe.
- Sometimes intuition drives us to poor decisions (unfamiliar, complex or temporally distant situations).
6 Risk Biases identified:

- Myopia
- Amnesia
- Optimism
- Inertia
- Simplification
- Herding
#1 Myopia

- Focus on short-term, and discount future or hypothetical consequences
- Aversion to expenditures today leads to procrastination.
#2 Amnesia

- Forget/Discount past incidents, or those not directly affecting us.
- Personal experience often teaches protective actions go unrewarded, and we are better off ignoring warnings.
#3 Optimism

- Distorted perception of risk.
- Losses happen to others, not me.
#4 Inertia

- Preference for no decision, or the status quo.
- Easy-out often wins over deliberation.
- Easy decision often is far from ideal.

25% stocks + 25% CDs + 25% mutuals + 25% bonds
#5 Simplification

- Fail to consider full information, when overwhelmed by complex decision.
- Short-cut by ignoring risks of adverse events.
- Single-action bias: “at least I did something”.
#6 Herding

- Guided by actions of others.
- Absence of regulations often taken as excuse for poor decisions.
- People look for role models conforming to own personal inclination.
Myth: ostriches bury their head in the sand.
The Paradox is a flightless bird has evolved survival mechanisms.

- Long neck
- Sand-colored skin
- Can run far & fast

Moral: People can overcome our human psychology which handicaps us in risk decisions.
# Behavioral audit tool

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<th>Remedial Measures</th>
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Disclaimer (as if I were a lawyer)

• Hypothetical examples included here are for illustrative purpose with a general audience, and are not intended to represent, denigrate or trivialize any particular organization or industry.

• The statements made here are not offered to diagnose, cure or prevent any shortcomings or ailments. Check with your personal provider.

• Past performance is not indicative of future success. Use wisely.
# Risk: Out of Tolerance parts not discovered at incoming inspection

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<td>Myopia</td>
<td>Supplier with a solid track record means supplier has quality firmly under control</td>
<td>OOT parts from certified supplier on skip-lot inspection or dock-to-stock may not be discovered before use.</td>
<td>More scrutiny of quality system at the source – e.g. FMEA, Control Plan, Error-proofing. In-house operators must be vigilant and react to near-misses or subtle clues</td>
</tr>
<tr>
<td>Amnesia</td>
<td>Supplier with no recent incidents means supplier has quality firmly under control</td>
<td>OOT parts from certified supplier on AQL inspection or dock-to-stock may not be discovered before use.</td>
<td>Require First Article data and updated Control Plan for every tool or process change at supplier</td>
</tr>
<tr>
<td>Optimism</td>
<td>Supplier that submitted 8D or CAPA means supplier now has quality firmly under control</td>
<td>Sorting or re-training are one-time or short-term corrections, overlooking correction to underlying root cause</td>
<td>Critical scrutiny of Root Cause Analysis. Effectiveness check, for example 6 months after remedial action instituted.</td>
</tr>
<tr>
<td>Inertia</td>
<td>Inspection using routine levels of acceptance sampling may not discover incipient problems or adverse trends</td>
<td>Rote implementation of AQL or previous inspection plans may not detect non-conformances or trends</td>
<td>First article inspection of all new p/n or supplier transfers. Inspectors and operators: if you see something, say something.</td>
</tr>
<tr>
<td>Simplify</td>
<td>Supplier making one part is assumed to be capable of increased volume or adding similar design part.</td>
<td>Fast-track approval for similar parts. Cursory validation of new part based on supplier making similar part(s)</td>
<td>Be alert to volume increases leading to supplier process changes (new work shift or location) or duplication of work cells (without full validation)</td>
</tr>
<tr>
<td>Herding</td>
<td>Supplier is granted preferred status based on track record at sister division, or ISO9001 certification.</td>
<td>Latent problems may not be discovered early because no one is looking closely</td>
<td>Robust procedures to require thorough review and investigate red flags.</td>
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## Risk: Inadequate infection control in a medical setting

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<td>Myopia</td>
<td>Medical staff understand germ transmission and the role of hygiene. Medical personnel will always put patient safety first.</td>
<td>Medical staff may assume their hands, equipment need no disinfection. Managers may assume medical staff know enough to police themselves.</td>
<td>Adequate guidelines need to be established as policy, which apply to all.</td>
</tr>
<tr>
<td>Amnesia</td>
<td>Medical staff know how germs transmitted in medical setting. Cause and effect are difficult to prove conclusively.</td>
<td>New hires and rotation of personnel turnover the employee population over time. Lessons learned are lost.</td>
<td>Articles in newsletter or posters in staff areas to keep awareness high.</td>
</tr>
<tr>
<td>Optimism</td>
<td>Medical staff are part of the solution, not part of the problem. Medical providers view themselves as caring, giving people.</td>
<td>Thinking that no news is good news, that current controls are adequate and working.</td>
<td>Circulate work surface audit results and technical papers on germ transmission to counter undue optimism.</td>
</tr>
<tr>
<td>Inertia</td>
<td>If there is no policy or no way to measure cleanliness, then it must not be important.</td>
<td>If there is no procedure or way to measure cleanliness, then nothing for office manager to check or enforce.</td>
<td>Safety/compliance Committee to add disinfection to their mission statement. Review of safe practices and near-misses should occur at least quarterly.</td>
</tr>
<tr>
<td>Simplify</td>
<td>Medical staff will know what needs to be done.</td>
<td>Supplies and equipment purchased, but no procedures in place or proper protocols for use.</td>
<td>Good practices must be commonplace and accepted until they become habitual</td>
</tr>
<tr>
<td>Herding</td>
<td>People revert to routine practices from previous training or work practice(s).</td>
<td>Fail to consider new hires and transfers need training on local policy and practices.</td>
<td>Training to raise awareness for new hires; consider annual retraining.</td>
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# Risk: Alcohol overconsumption at an open party

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<tr>
<td>Myopia</td>
<td>Members will always act responsibly, and in our best interest. Guests will be supervised by members who invite them.</td>
<td>Organizers consider only actions of members, or only actions within the house 4 walls.</td>
<td>Either actively keep non-members out, or planning must broaden. Consider influence of all potential participants.</td>
</tr>
<tr>
<td>Amnesia</td>
<td>Members will remember instructions and will think clearly, even while consuming mass quantities.</td>
<td>Ignore hazards from past incidents and near-misses, or downplay likelihood or seriousness of incidents.</td>
<td>Risk planning by team of diverse ages and perspectives. Keep reports of past incidents and lessons learned. Formally debrief after every event.</td>
</tr>
<tr>
<td>Optimism</td>
<td>Assume nothing bad will happen, or won’t get caught doing bad stuff. Discount incidents which occurred at other chapters/campuses.</td>
<td>Plan for best case scenario with no consideration of unexpected events or worse case scenario.</td>
<td>Appoint a Devil’s Advocate to challenge rosy scenario planning.</td>
</tr>
<tr>
<td>Inertia</td>
<td>Believe IFC or College rules or past practices are sufficient to prevent adverse incidents.</td>
<td>Rote attention to risk planning; superficial planning.</td>
<td>Challenge chapter to exceed IFC minimal expectations. Devil’s Advocate to challenge overly optimistic plans.</td>
</tr>
<tr>
<td>Simplify</td>
<td>Focus only on most obvious or most pleasant aspects of planning.</td>
<td>Assume control measures will work as planned.</td>
<td>Incorporate triggers for self-audit and accountability, of sober monitors for example. Have backup escalation plans ready.</td>
</tr>
<tr>
<td>Herding</td>
<td>Too much red tape will drive guests to party at another house.</td>
<td>Believe risk practices from last party or those from other houses are good enough.</td>
<td>Consider unique elements of the latest event and how risk profile might have changed.</td>
</tr>
</tbody>
</table>
Discussion / Q&A

• Do you have other examples of the 6 biases you can share?
• How does this knowledge improve our ability to make decisions in the face of risk?