Separating Resilience and Success: Case Studies of Resilient Failure and Brittle Success

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rationale

intellectual provenance

the outcome problem in case analyses

   Apollo 13 – resilient!
   Challenger – not resilient!
separating resilience from outcome

process

less resilient

more resilient

outcome

more successful

less successful

lots of examples

??
case 1- resilient failure

while at sea:

34 y/o sailor-PMH neg
3 day hx migratory pain & numbness
  1st while weightlifting
2 episodes symptomatic hypotension, resolved

in ED:

A&O x3
pectus exavatum deformity (genetic predisposition)
severe hypotension, tachycardia
allergic to shellfish (iodine)
fluids, EKG, CXR, etc
case 1- resilient failure

CV surgery called immediately
  - NL course: get scan, if + call resident covering CV surgery
  - no answer
    - Including EM Attending direct to CV Attending
  - call to OR desk: “CV operating?”
    • turns out only one in town
    • give message to surgeon: look at CXR while in OR (unique request)

• message back: pre-med, get CT; will meet patient in scanner when done
  • extensive dissection from heart into legs

• bypass team assembled
• pt on table within 70 min of arrival

• procedure typically 7-8 hours

• unexpected arrest at hour 4 and expired
case 2 - brittle success

ED in northeast US (70k/year = 200/day)

↑ competition
   specialty boutique hospitals/urgent care centers

“lean” intervention w/goals:

↓ waiting time
↑ throughput
↑ patient satisfaction

major change:

classic nurse triage model ➔ “rapid assessment unit” (RAU)
ED patient flow
“re-engineered” ED process
goals met!

ED performance measures:
- pt satisfaction: 60 to 90 %ile
- waiting time decreased
- throughput increased

staff reaction (8 months into project)

“always working just on the edge …”
case 2 - brittle success

organization view: goals met
• pt satisfaction  
• waiting time  
• throughput faster

Staff view:
• stress levels
• “constantly working on the edge”
• feel like making “snap” judgments
• “hoping for the best...trusting to luck”
• increased interruptions from phone calls transferring patients to main ED
  • periodic warnings “not to put too much stock” in the RAU judgments
• RAU contributions to misdiagnosis identified
case 2 - brittle success

80 yo woman, vague left chest pain

RAU ‘rapid’ assessment ➔ do extensive workup
  • CT for a triple rule out, serial cardiac enzymes, etc
  • risks: dye load to 80-year-old kidneys, several hour ED stay.

workup negative

detailed history taken after:
  likely pre-herpetic neuralgia (no workup req’d)
discussion

what makes behaviour in case 1 resilient?

respond (adaptively)
- calling the OR, suggesting to display the CXR
- CV surgeon willing to look at film while operating
deviating from normal sequence

anticipate
- surgeon’s sense of false alarms from ED
- clinical deterioration imminent

monitor
- CV not calling back

learn
- new strategy for dealing with failure to respond
discussion

what makes behaviour in case 2 brittle?

reduced capacity for adaptive responses
  working at the margins—no resources to call on
  loss of waiting room as a buffer

increased workload on the main ED
  rapid arrival of many pts from RAU
  increased interruptions (phone calls)
  interruptions of limited value
goal tradeoffs

case 1
  tradeoff allergy / kidney safety for speed
  benefits of hierarchy in teaching environment bypassed for speed/risk of imminent death

case 2
  tradeoff improved basic performance measures for decreased ability to respond
  “shortest processing time first” issue ?mission of ED?
summary

looking at resilience as a capability
to anticipate, respond, monitor, learn
existence proof: *can* separate resilience from success
dilemma: if resilient without success—why bother?

*success more likely with resilience than without*......

*eg, diet, exercise => good health*

CAS – actions control nothing, influence everything

resilience NOT synonymous with success

not just relabeling
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