RHCN Summer Meeting
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Separating Resilience and Success: Case Studies of Resilient Failure and Brittle Success

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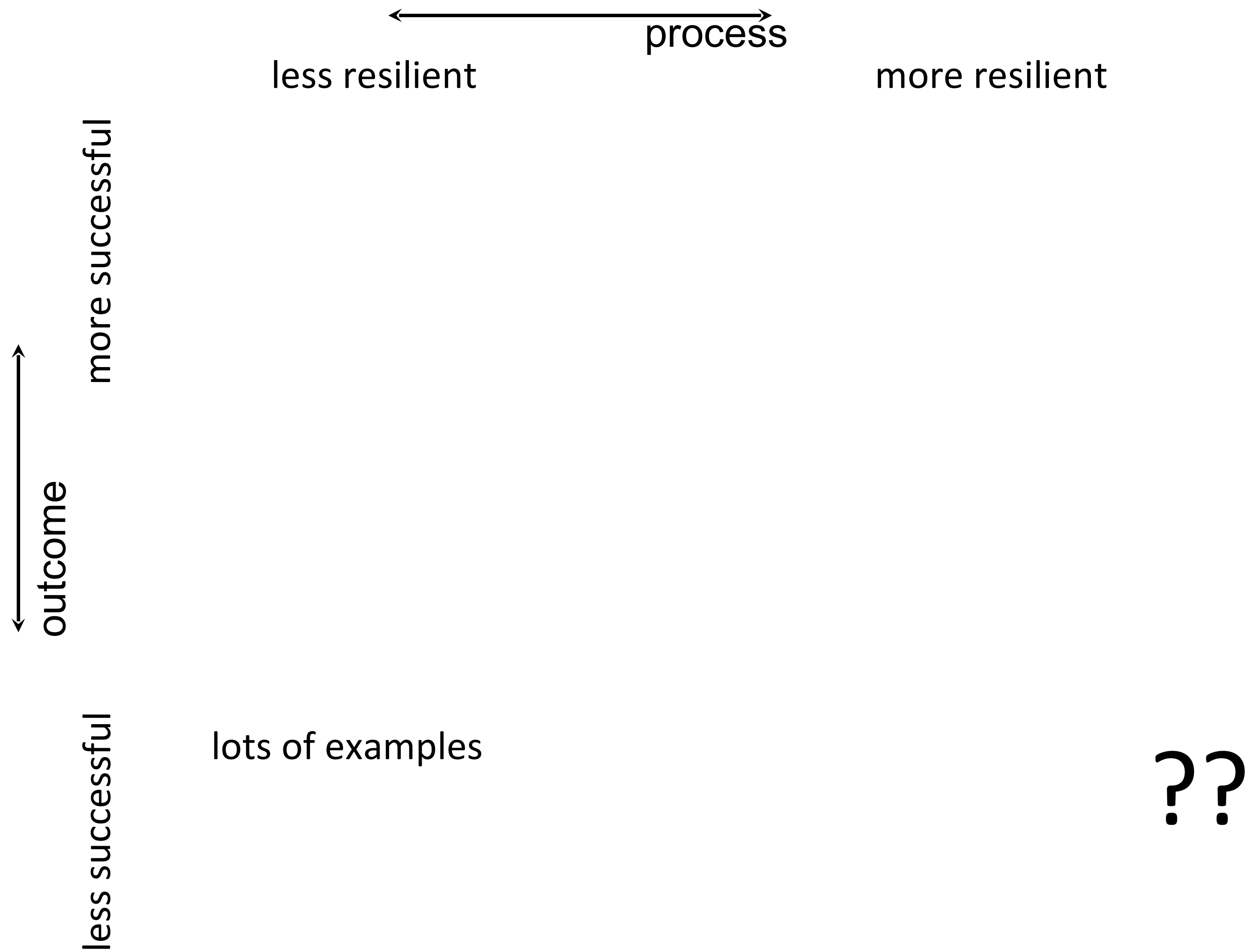
rationale

intellectual provenance

the outcome problem in case analyses

Apollo 13 – resilient! Challenger – not resilient!

separating resilience from outcome



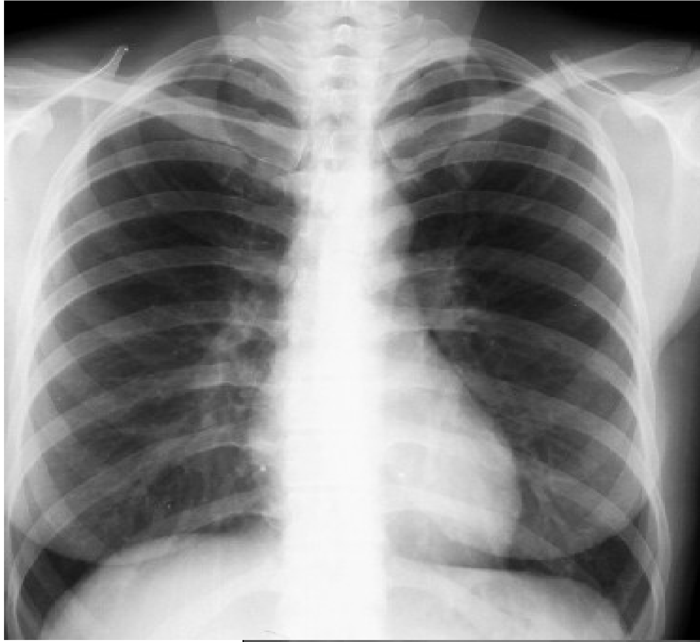
case 1- resilient failure

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*



24 cm

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 peformance 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 withresilience 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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