Why Johnny Cannot Operate

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Disclaimers
Before we get started:

- Not intended to hurt anyone’s feelings
- IS intended to be a discussion about resident education
- Some of this will sound familiar
- No personal agenda
- Discussion of 80 hour work weeks and rest periods
- If you behave, I will continue

Do NOT freak out

(I have no financial disclosures)
Why Johnny Cannot Operate

• Richard H. Bell Jr., MD
• Assistant Executive Director, American Board of Surgery (ABS)
• Presidential Address:
  – Central Surgical Society Meeting, May 2009
• Article printed:
  – Surgery, Sep 2009; 146(533-42)

*Now has mustache
Why Johnny Cannot Operate

“I CONSIDER THE PERFORMANCE OF SURGICAL OPERATIONS to be the MOST complex psychomotor activity that human beings are called upon to perform. In the arts, athletics, games, and other realms of human activity, I have found nothing that matches the difficulty of surgery.”
Rate of Complication

- 13% morbidity all comers in US surgery
- 2% postoperative mortality
- Spawned “Patient safety movement”
- 2/3 of death & disability due to intraoperative complication
- Intraoperative Mistakes:
  - 63.5% = Error in technique
  - 29% = Error in judgment
- Both types can be attributed to LACK OF EXPERIENCE
Is he really going to say that we are all going to be bad doctors?
“You were always a good doctor, just had bad hair”

Source Unknown
Where to start?

1. Operative Skill is learned, not innate
2. Current operative experience of general surgery residents vs. surgical expertise
3. Teaching and learning in the OR
4. Transferable skills?
5. Where do we go from here?
Learned Operative Skill

Operative Skill (at least):

1. Technical skills
2. Visio-spatial and tactile skills
3. Determination of pathologic vs. normal conditions
4. Ability to make good judgments

No traits are possessed \textit{A PRIORI}:
- Some may be born to BECOME surgeons, but \textbf{NO ONE IS BORN A SURGEON}
Expert

- n. An ordinary fellow from another town - Mark Twain
- n. A man fifty miles from home with a briefcase - Will Rogers
EXPERTISE: $n$, the mechanisms underlying the superior achievement of an expert

i.e. "one who has acquired special skill in or knowledge of a particular subject through professional training and practical experience"

- K Anders Ericsson, FSU Cognitive and Expertise Lab
Competency (based on Dreyfus model)

- Novice
- Advanced Beginner
- Competent *BARE MINIMUM
- Proficient *GOAL @ END OF 5 YRS
- Expert
  - 10,000 hours of *dedicated practice*
  - 8 hours per day x 5 years!
So where are we?
Operative Experience of “New” General Surgery Residents

• Hot topic at ACS/AAST meetings this year
• Generally perceived as poor nowadays by the “old guard”*
• Begs the question:  

Can Johnny Operate?

*Anecdotal, but just ask any of ‘em. They will tell you all about it
Are residents competent?

• Surgical residency program directors
• Rank 300 ACGME index cases according to necessity for competency
  ➢ A = “essential”
  ➢ B = “should be”
  ➢ C = “not necessary”
• 121 operations were “essential” components of GS resident training by majority of PD’s (n=114/254)
Results…

• Review of ACGME op log for 2005 graduating chief residents

• Of 121 “essential” cases:
  – #1: lap ccy; median (M) cases reported = 84/resident
  – #38: M<5 cases
  – #74: M<2 cases
were shocking

- 52% (63/121) “essential” cases: mode number of cases/resident = ZERO

- Cases such as:
  - CBDE
  - Transanal excision
  - Whipple
  - Anal Fistulotomy
Could the data be skewed?

- Most cases reported were bottom heavy
- e.g. Parathyroidectomy mean <10, Mode 4

![Histogram of operations reported](image)
Operative Experience

- 70% agree/strongly agree they are happy with their operative experience

- Per Dr. Bell (anecdotally)
  - Chiefs & Attendings concerned about skill set and independent operative skill of graduating residents
  - Fellowship directors are “unimpressed” by the quality of applicant’s surgical skill…

- Will residents be the source of agitation for change in the operative experience?
  - According to Bell, No. Instead increased number to pursue fellowships
  - I ask, “Why not?”
So... we need to do more parathyroidectomies?

Sure, why not?
10,000 hours to becoming an expert

• 80hrs x 49wks x 5yrs = 19600hrs/residency

• Dr. Bell’s method:
  1. 121 essential cases x hour value per case
  2. Mean number of cases x hour value per case

• The global data:
  – # hrs OR on “essential” cases/resident = 1,148
  – 6% of 80-hour work week = ½ day in OR/wk
  – Chung, et al., reported 2793 hours (14%) in OR when ALL cases included
The UK data

• Caseload per M&M data
• Hours per case (my best guess)
• 80-hour work week
• Double scrub cases count for both residents
• Limitations:
  – 4 residents on vacation
  – 4 services not represented (SGR/TXP/STJ/MHD)
  – Poor M&M recording
The UK Results

OR time per resident (n=16):

Overall  9.1 h/wk/res  = 11.4%
PGY5     11.5 h/wk/res = 14.4%
PGY4     16.5 h/wk/res = 20.1%
PGY3     5.5h/wk/res  = 6.5%
PGY2     1.16h/wk/res = 1.5%
PGY1     0.3h/wk/res  = 0.4%
1st annual Gabriel Bietz busiest resident award

21.5 hrs/wk = 26.9%

The Enterprise thanks Gabe for single handedly doubling the workload at UK Good Samaritan
UK Data by service

- SGB 44.75 hr = 11.2%
- Endo 2.5 = 3.1%
- PDS 17.75 = 22.2%
- SGG 11.5 = 4.8%
- SGO 12.5 = 15.7%
- CT 4.5 = 5.6%
- VAGS 11 = 13%
- VAVASC 11.5 = 14.3%

Caveats:
- No breast “fellow”
- No vascular junior
- Only one Categorical on PDS (intern vacation)
- VAGS PGY3 on vacation
Conclusions about UK

• We Own Johnny
• Overall, above average amount of time in OR
• Juniors underrepresented in data because of Morehead, but still lacking OR time
• Does not tell us much about what is actually going on in the OR
Teaching Hospital?

Dr. Rudolph Matas lecturing on popliteal aneurisms
Miles Amphitheatre
Charity Hospital 1917
Learning Hospital?
Dearth of information

• Relative lack of papers written on teaching of residents in operating room
• Recent trend of evaluating skill acquisition in simulation labs (minimally invasive labs, technical skills) in the literature
• Surgical education vs. Surgical teaching
Ideal world

According to Bell:
- Resident comes prepared
- Practiced on simulator
- Resident briefed by attending day prior
- “Read a book”
- Post-Op debriefing
- Standardized grading tool & National database
- Feedback analysis on attending teaching and resident learning
- Video review and note taking post-op to review difficult areas & improve in future
Current world

According to Bell:

– Unprepared resident
– Uninformed about patient
– Uneducated about steps of operation
– Goes through motions
– Feedback: “good job” & “make the incision look nice”
– Resident moves on to lunch, flirting with nurses, whatever…
– Lather, rinse, repeat.

“In those four out of five doctors’ commercials, I’m the fifth doctor.”
Reality?

Somewhere in between
Obstacles to learning

- Bad timing/change in practices
- Ideas of teaching/learning at odds
- Minimal scientific studies
- Poor/useless assessment tools
- Outside influences
  - Pressure to produce
- Supervision of teaching
  - Who is watching those who watch the residents?
- 80 hour work week
Does anyone recognize this?
Now we have this…

Nexium®
esomeprazole
Pugh et al.

• Asked Attendings @ ACS:
  – Which areas do residents need to study to be better prepared to perform an operation?

• Asked Residents @ ACS:
  – What do you need to understand better to be prepared to perform an operation?
<table>
<thead>
<tr>
<th>Area of study</th>
<th>Attendings (n = 92)</th>
<th>Residents (n = 125)</th>
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<td>Instrument use/selection</td>
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<td>Selection of suture material</td>
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<td>Operative field exposure</td>
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<td>Patient positioning</td>
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<td>Procedure choices</td>
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<td>Patient outcomes</td>
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<td>Natural history of disease</td>
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So what does that mean?

a) Are we all just too incompatible?
b) Do we have to break up?
c) Are residents untrainable?
d) Are attendings bad at teaching?

e) NONE OF THE ABOVE
Transferable skills

• Idea that skills can be transferred between procedures
• *e.g.* Ileocolic 2 layer anastamosis $\rightarrow$ esophagogastric 2 layer anastomosis
• Parathyroidectomy $\rightarrow$ thyroidectomy
• Maybe it is the same…
• But what about mobilizing right vs left colon?
Read a book!

- Not good enough

- Research shows we need multiple exposures to procedures to develop rich, detailed mental models

- Even “master surgeons” can do it all because, for the most part, they have done it all!
Where do we go from here?

- National, accurate electronic data collection on resident case loads
  - Can be built into computerized case records

- Interim evaluations of resident operative experience
  - UK already does this (good job, Dr. Endean)

- National standard change for case requirements
  - Current index requirement >10% of previous
  - No repercussions for individuals, just programs
Where do we go from here?

• Make operative skill a required, testable competency
  – They actually used to do this
  – Too expensive, subjective for PPPHs/administrators
  – Should be the job of the residency right?

• Study and improve teaching in the operating room
  – This is a fascinating idea
  – Video evidence is abundant
  – Resident opinions are abundant too…
Where do we go from here?

- Scheme for teaching
  - Briefing, intraoperative teaching, debriefing
  - S.C.O.R.E. modules

- Standardized, validated resident evaluation tools
  - Pay attention to them

- Simulation
  - Seems to work pretty well for laparoscopy
  - Don’t confuse learning with teaching
  - Pie in the sky?
Maximum Resident Benefit
Maximum Resident Benefit

Those days are long gone…

• Hospital regulations on supervision

• Malpractice
  – Has been identified as a potential factor in decreased resident volumes

• Pressure to be efficient
  – Long operative times are bad
    • More infections (thanks Levi)
    • More money
  – Decreased operative times/staffing issues
MRB

- Can’t just operate on everyone who rolls in...
- Other things to do
  - Lots of clinic
  - 80 hours
  - Call coverage
  - ESS/trauma workups
  - Research

Do not fall asleep near this man
• Resident case logs show decreasing number of 1st assist & teaching cases

• Bell suggests, (and I personally agree) allowing modest increase in operative times & resident autonomy in training facilities

• Supervision determined by resident operative ability

• The short term benefits of faster/”safer” surgery may be detrimental to development of proficient surgical residents
• Necessary to identify and maximize good teaching behaviors.

• Evaluations of teachings need to fulfill 4 criteria
  – New Knowledge
  – Value
  – How to change
  – Motivation
Characteristics of good teaching

- Answers questions clearly
- Confident in role as surgeon and teacher
- Provides feedback without belittling
- Remains calm and courteous
- Exhibits fairness toward House officers, no favorites
- Role models good interaction w/ OR staff
- Explains reasons for actions/decisions
- Allows learners to feel pathology
- Demonstrates respect for patient
- Teaches with enthusiasm
80 hours

YES!!!
80 hours

• Enacted in 2003
• Will not be reduced in near future
• Alterations in duty hours to be studied and implemented by 2011
• Have destroyed attendings’ will to live.
• Make residents look soft
Does 80-hrs hurt residents?

• According to Most:
  – Decreased sense of responsibility
  – Decreased ownership
  – Less motivation
  – Weaker work ethic when entering residency
  – Decreased learning due to outside lives

• According to Bell:
  – Further limits time available to be in the OR
According to me

• Agree with some of the previous
• Changes the way we are perceived by older surgeons
• Does limit patient care time

Limits OR time, and thus experience

• Does NOT make me less motivated.
• No change in sense of patient ownership
• Duty hours not residents’ choice
  – Average age of US congressman= 56.7y, senators=61.7
  – Average age of ACGME task force on resident duty hours?
    • Actually I don’t know, but not < 35, guaranteed!
Future directions

• Increasing operative exposure (esp for juniors)
• Attend to teaching in the OR
• Will everyone have to specialize?
• SCORE/Simulation
• Longer residencies?

• Maybe they should study what we do here…
So, Why Can’t Johnny Operate?

He is inexperienced

He didn’t come to UK
References

• Bell, RH, Why Johnny Cannot Operate, Surgery Sep 2009; 146(533-42)
• R.S. Chung, How much time do surgical residents need to learn operative surgery?, Am J Surg 190 (2005), pp. 351–353
More References

Questions, Comments?