

# PRO: confronting resistance to rule-based medicine is essential to improving outcomes

John D Blakey,<sup>1</sup> Michael Brown,<sup>2,3</sup> James Pinchin,<sup>2</sup> Mark Barley,<sup>4</sup> Sarah Sharples<sup>3</sup>

## ABSTRACT

The past 20 years have seen two great changes in the practice of medicine: the widespread adoption of evidence-based medicine, and the increasing challenge of managing complex multimorbid patients. Both these developments have resulted in clinical rules and protocols becoming ever more abundant and increasingly critical to delivering safe and effective patient care. These evidence-based clinical rules perform at least as well as expert opinion, and the increasing volume and quality of available clinical data suggests their performance could continue to improve. This article considers why clinicians deviate from effective rules, highlighting key issues such as the persisting culture of heroism, institutional inertia, deference to authority and personal heuristics. We argue that better rules can be created, and that clinical improvements will follow if there is a 'common knowledge' of these rules. Furthermore, we argue that there is a ceiling to the effectiveness of any rule, even one as simple as ensuring hand hygiene, unless individuals are held accountable for transgressions.

## INTRODUCTION

Ask yourself if medical dramas such as 'House' would be as popular if we watched a large team complete checklists and work through flow charts. Is your house officer more impressed by a registrar who 'bangs in' large bore chest drains or the one who follows page 114 of the guidelines? Perhaps you know learned clinicians who feel protocols are for lesser intellects. In this context, it might be surprising that there are a growing number of medical guidelines and protocols. This abundance of rules

represents a marked change in our approach to medicine when compared with previous generations, and generates debate questioning their worth. This article discusses why we need rules, suggests how we can make them more effective, and debunks arguments against their use.

## SO FAR, SO GOOD

The reason rules proliferate in medicine is because they usually work well. Meta-analyses show clinical acumen alone is usually inferior to mechanical (statistical or algorithmic) prediction<sup>1</sup> or rule-based action. Indeed, we have seen much greater improvements in morbidity and mortality in those specialties that adopt a more mechanical approach, including halving of mortality from myocardial infarction since the adoption of statistically derived risk scores.<sup>2</sup> Rules need not be specialty specific: a simple patient handover protocol applying practice from motorsport and aviation reduces handover duration, technical errors and omissions.<sup>3</sup> Evidence from multiple sources should not be confused by counterarguments supported by anecdote or special circumstances.

## RULES ARE BECOMING INCREASINGLY IMPORTANT

Current trends in clinical practice mean that rules are becoming more critical to delivering safe, effective patient care. Modern-day clinical practice involves *specialists who are becoming increasingly specialised*; it is commonplace for secondary care physicians to have a single organ or single disease focus in response to the growing complexity of clinical practice. Simultaneously, *patients are becoming more complex*: as mortality for individual conditions falls, comorbidity is on the rise.<sup>4</sup> Couple this with the choice of treatments for common conditions and doctors are becoming more likely to face conditions or therapies outside their specialist interest. The authors are increasingly aware of our reliance on rules that other experts produce. Finally, *better data is driving better rules*: as digital technologies become embedded in clinical work, activity is becoming easier to capture and

with an increasing depth and breadth.<sup>5 6</sup> It is therefore more straightforward to identify and codify best practice. Advances in information technology mean it is straightforward to disseminate large volumes of rules, and to carry them around in an accessible format such as on smartphones or through wearable technology like Google Glass.

## WHY DON'T SOME PEOPLE FOLLOW THE RULES?

We acknowledge clinicians deviate from rules or protocols. For example only half of high early warning scores were escalated in accordance with written protocols in a recent study at a thoracic centre.<sup>7</sup> Beyond ignorance, or a lack of resources, there are five key reasons why people stray from evidence-based practice.

1. *Pet theories*: people tend to interpret personal experience as supportive of current practices, and overemphasise the positive effects of personal factors such as judgement calls. In a phenomenon which human factors practitioners term 'self-serving bias' we usually remember when playing hunches went well, but not the occasions where sticking to guidelines was beneficial. Equally we don't see the improved outcomes that would have happened if we had not deviated from rules: You remember the physician who won the Nobel prize after giving himself *Helicobacter pylori*,<sup>8</sup> but not the many self-experimenters who simply ended up unwell.
2. *Heroism*: In our opening paragraph, we implied that medicine delivered outside the rules can be compelling viewing. This reflects a culture of heroism where clinicians respond to system stress or deficiencies by circumventing problems, and resolve any uncertainty by immediate action. It is preferable, though less entertaining, to adopt robust strategies that minimise the responsibility of individuals, emphasise the importance of systems and teams, and advocate methodical action in well-defined circumstances. Medical students might recount the story of a pneumothorax treated on a plane with a coat hanger and some whisky,<sup>9</sup> but are less likely to be enthused by a corporate system that would have identified and treated the injured passenger before the plane took off. We realise this systems-based approach is a challenging concept for some of our colleagues (and their egos).
3. *Inertia*: Studies investigating organisational change management in business reflect the experience in medicine: established ways of working can be

<sup>1</sup>Clinical Sciences, Liverpool School of Tropical Medicine, Liverpool, UK; <sup>2</sup>Horizon Digital Economy Research, University of Nottingham, Nottingham, UK; <sup>3</sup>Human Factors Research Group, University of Nottingham, Nottingham, UK; <sup>4</sup>Department of Anaesthetics, Nottingham University Hospitals NHS Trust, Nottingham, UK

**Correspondence to** Dr John D Blakey, Clinical Sciences, Centre for Tropical Infectious Diseases, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L5 3QA, UK; [jblakey@liverpool.ac.uk](mailto:jblakey@liverpool.ac.uk)



incredibly resilient to change. For example, the stepwise British Thoracic Society asthma treatment guidelines are engrained and trusted in organisational and individual memory and are thus difficult to revise.

4. *Deference*: It is engrained in the culture of most organisations to defer to those with perceived authority. This may well be at the expense of those with genuine expertise, or the rules they have generated based on an even-handed appraisal of the evidence. This behaviour remains evident on respiratory wards: if the professor describes clinical scores such as CURB65 as being for doctors who are unable to assess patients, there is less chance that his juniors will employ *all* such tools, to the potential detriment of their future patients.
5. *Ideology*: Recent studies have overturned perceived wisdom, and shown that intelligent people are *more* likely to display ideologically motivated cognition.<sup>10</sup> As a reader of an academic journal, you are paradoxically less likely to be able to make evidence-based decisions if there is an ideological dimension, and more likely to reveal your group loyalties.

### CREATING BETTER RULES

The thoughtful creation, dissemination, embedding and revision of high quality rules can facilitate best practice, and combat the issues highlighted above.

The first barrier to overcome is ensuring rules have credibility among those who interact with them. This can be done if there is transparency and rigour in their formulation through an inclusive peer-reviewed process, and if there is clarity as to their limitations. This ideal is something the BTS guidelines aspire to and frequently achieve. Elsewhere there can be less clarity around when rules are just extended from sources such as clinical trial inclusion criteria (such as giving omalizumab in accordance with serum IgE) or simply an opinion (eg, yearly spirometry in asthma). Robust, transparent construction and responsive review should ensure the cries of “my patient doesn’t fit in the guideline!” and “what do they know?” grow steadily fainter.

### IMPROVING AWARENESS OF RULES

It is insufficient to have a high quality process for creating rules. Once derived, they must be made known to all who might use them, and others must know they exist. The advanced life support guidelines are an example of such ‘common knowledge’ facilitating strangers

working together in an emergency setting, and those who are not trained at least know that there *are* rules to follow. More complex or specialist rules are unlikely to achieve the same penetration, and therefore need to be visibly present at the point of decision-making or action. For instance, the ‘Can’t Intubate, Can’t Ventilate’ guideline<sup>11</sup> is available in most anaesthetic rooms, just as checklists in aviation reside in the cockpit. In contrast, medical guidelines are too often only accessible away from the patient via slow NHS computers that require multiple logins to get to a poorly signposted intranet page.

### ACCOUNTABILITY

Increasing the awareness of rules and monitoring their application also means it is clear when they are being transgressed. Peer review may be rigorous for academic grants and journals, but we do not appraise our colleagues’ clinical activity so diligently.

As a simple example, we all agree hand hygiene is essential. To counter poor hand hygiene in recent years, institutions have introduced additional sinks and alcohol gels, and disseminated concordance rates; that is, they have addressed the system problem. Any persisting issues relate to individuals not taking personal responsibility, so those that don’t wash their hands should be challenged. Historically patients and junior professionals have not felt empowered to challenge those they perceive as more senior, fearing repercussions. Healthcare providers are beginning to encourage this culture of speaking up, for example by using the Centers for Disease Control Hand Hygiene Saves Lives videos. It has been suggested that institutions should also consider remote surveillance of such vital aspects of healthcare provision, in the same way that red light cameras reduce transgressions at junctions.<sup>12</sup>

Persistent offenders should also be held accountable for their actions with clear penalties for contravention,<sup>13</sup> requiring a cultural shift in medicine. If a pilot turned up late for a flight then taxied off without undertaking thorough checks they would be suspended, whereas a medic rushing into a ward round passes without comment.

### IN SUMMARY

Breaking rules can be appealing in the short term but is not safe or efficient. Collective knowledge delivered systematically almost always outperforms an ‘expert’ particularly around mundane or polarising issues. The clinical role of the doctor is to ensure the appropriate rules

are applied, to communicate effectively with patients and colleagues, and to challenge those who do not follow the rules.

**Contributors** This article arose from various conversations between the authors lamenting the gap between best practice inside and outside medicine. JDB drafted the article and significant alterations were made by all the authors. All the authors approved the final version.

**Competing interests** None.

**Provenance and peer review** Not commissioned; internally peer reviewed.



CrossMark

**To cite** Blakey JD, Brown M, Pinchin J, *et al.* *Thorax* 2015;**70**:110–111.

Received 2 July 2014

Accepted 7 July 2014

Published Online First 22 July 2014



► <http://dx.doi.org/10.1136/thoraxjnl-2014-206010>

*Thorax* 2015;**70**:110–111.

doi:10.1136/thoraxjnl-2014-205986

### REFERENCES

- 1 Grove WM, Zald DH, Lebow BS, *et al.* Clinical versus mechanical prediction: a meta-analysis. *Psychol Assess* 2000;12:19–30.
- 2 Smolina K, Wright FL, Rayner M, *et al.* Determinants of the decline in mortality from acute myocardial infarction in England between 2002 and 2010: linked national database study. *BMJ* 2012;344:d8059.
- 3 Catchpole KR, de Leval MR, McEwan A, *et al.* Patient handover from surgery to intensive care: using Formula 1 pit-stop and aviation models to improve safety and quality. *Paediatr Anaesth* 2007;17:470–8.
- 4 Barnett K, Mercer SW, Norbury M, *et al.* Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *Lancet* 2012;380:37–43.
- 5 Blakey JD, Fearn A, Shaw D. What drives the ‘August effect’? A observational study of the effect of junior doctor changeover on out of hours work. *JRSM Short Rep* 2013;4:2042533313489823.
- 6 Rich AL, Tata LJ, Free CM, *et al.* Inequalities in outcomes for non-small cell lung cancer: the influence of clinical characteristics and features of the local lung cancer service. *Thorax* 2011;66:1078–84.
- 7 Herrod PJ, Barclay C, Blakey JD. Can mobile technology improve response times of junior doctors to urgent out-of-hours calls? A prospective observational study. *QJM* 2014;107:271–6.
- 8 Watts G. Nobel prize is awarded to doctors who discovered *H pylori*. *BMJ* 2005;331:795.
- 9 Wallace TW, Wong T, O’Bichere A, *et al.* Managing in flight emergencies. *BMJ* 1995;311:374–6.
- 10 Kahan DM. Ideology, motivated reasoning, and cognitive reflection. *Judgm Decis Mak* 2013;8:407–24.
- 11 Can’t Intubate, Can’t Ventilate Guideline: Difficult Airway Society; [cited 2014]. <http://www.das.uk.com/guidelines/cvci.html>
- 12 McCarrt AT, Hu W. Effects of red light camera enforcement on red light violations in Arlington County, Virginia. *J Safety Res* 2014;48:57–62.
- 13 Wachter RM, Pronovost PJ. Balancing “no blame” with accountability in patient safety. *N Engl J Med* 2009;361:1401–6.

THORAX

## PRO: confronting resistance to rule-based medicine is essential to improving outcomes

John D Blakey, Michael Brown, James Pinchin, Mark Barley and Sarah Sharples

*Thorax* 2015 70: 110-111 originally published online July 21, 2014  
doi: 10.1136/thoraxjnl-2014-205986

---

Updated information and services can be found at:  
<http://thorax.bmj.com/content/70/2/110>

---

*These include:*

### References

This article cites 11 articles, 5 of which you can access for free at:  
<http://thorax.bmj.com/content/70/2/110#BIBL>

### Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

---

### Topic Collections

Articles on similar topics can be found in the following collections  
[Patients](#) (131)

---

### Notes

---

To request permissions go to:  
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:  
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:  
<http://group.bmj.com/subscribe/>