THE JOURNAL OF ACADEMIC
JADE
DEVELOPMENT AND EDUCATION

JADE Clinical Edition 2022 – Special Edition

Expected Publication Date: 27th September 2022

ISSN: 2051-3593

Managing Editor
Jane Jervis

Administrator
Charlotte Hulme

Telephone
+44 (0)1782 734436

Email
jade@keele.ac.uk

Web
https://www.keele.ac.uk/kiite/publications/jade/

Address
KIITE, Claus Moser Building, Keele, ST5 5BG

Clinical reasoning and decision making in ACP: a case study.

Paul Curtis, Russells Hall Hospital, The Dudley Group NHS Foundation Trust

Clinical reasoning and decision making in ACP: a case study.

Abstract

Advanced Clinical Practice should be underpinned by complex decision making skills, analysing complex problems to make appropriate, evidence based judgements to improve patient care. This paper presents a case encountered in clinical practice where a 999 call was received for a gentleman who had fallen at home, however clinical assessment revealed he was critically unwell. A decision needed to be made between aggressive treatment and transport or unplanned palliative care. Evidence shows that while clinicians believe they use critical thinking to analyse a problem, most decisions are in fact made by rapid pattern recognition.

Keywords

'Advanced Clinical Practice', 'Clinical Reasoning', 'Decision Making',

Context

Advanced Clinical Practitioners (ACPs) must demonstrate advanced problem solving and decision making abilities, making decisions using critical thinking skills and judgement which in turn allow autonomous practice (Health Education England (HEE), 2015). Advanced Clinical Practice (ACP) should be underpinned by complex decision making skills (HEE, 2015), using analysis and synthesis of complex problems to make appropriate, evidence based judgements or diagnoses to improve patient experiences and outcomes (HEE, 2017). The author presents a case encountered in pre-hospital clinical practice whilst a trainee ACP, exploring the associated decision making theories.

Discussion

An emergency call was received for an 80 year old gentleman, reported to have fallen out of bed. Working as a paramedic mentor, crewed with a newly qualified and a student paramedic we arrived on scene only a few minutes after the call. The patient's wife met us and showed us to the bedroom where we found the patient who, to maintain confidentiality (Health & Care Professions Council (HCPC), 2016) will be referred to only by the pseudonym Albert. He was on the bedroom floor, in a prone position. Albert's wife explained that he had been restless in bed all night and had fallen when trying to stand that morning. Elderly fallers make a substantial part of the ambulance service workload, and Simpson et al (2017) state that decision making is heavily influenced by the paramedic's perception of the role and their perceived validity of these cases. Albert was alert and able to confirm that he had no injuries, so he was assisted to a seated position. Once in this position however, it was immediately apparent that he was very unwell. Although alert, he was ashen

and diaphoretic with a weak, rapid radial pulse. Basic observations revealed a heart rate of 130 beats per minute, blood pressure 70/40 mmHg and a tympanic temperature of 34.5 degrees centigrade.

The initial impression was that this was likely to be sepsis (National Institute for Health & Care Excellence (NICE), 2017) so preparations were made to rapidly move him to the ambulance for transport to hospital. While eliciting a history to identify a source of infection, Albert complained of some abdominal pain although he had no associated symptoms such as nausea or vomiting, diarrhoea or constipation. His wife offered us his current medication to inspect and stated there he was known to have a large abdominal aortic aneurysm (AAA) which the doctors said was inoperable. With this information Albert was quickly moved from the floor to the bed, where an abdominal assessment revealed a large pulsatile mass, and although radial pulses were still palpable, there were no detectable femoral pulses. This new information significantly changed the working diagnosis to a probable dissection of the aortic aneurysm (Jarvis, 2015).

Both sepsis and dissection of the aorta are life threatening conditions. Sepsis has a mortality of around 10% (Singer et al, 2016) but can be treated aggressively to improve outcomes (NICE, 2017). Aortic dissection has a mortality of around 50% even after surgical repair (NICE, 2009) however Albert had already been told that his aneurysm was inoperable. During assessment his blood pressure dropped to 55/30 mmHg and he was now only responding to pain. Based on the information that his AAA was inoperable, I decided that although sudden, this was now a palliative care situation. I explained to Albert’s wife that any treatment would ultimately be futile,

and I felt it would be more appropriate and dignified to allow him to die peacefully at home. Although visibly distressed, she agreed. Albert was made comfortable in bed, and his wife was encouraged to sit with him as he passed away. Sheffield et al (2016) found that a holistic approach to care is a key factor in decisions by paramedics not to transport patients

The phrases ‘clinical reasoning’, ‘clinical judgement’, ‘clinical decision making’ and ‘critical thinking’ are often used interchangeably (Shaban, 2005). However, convention suggests that clinical reasoning is the stage in which clinicians gather and process information, clinical decision making refers to the diagnosis or treatment plan (Levett-Jones et al, 2010) and critical thinking is the cognitive ability needed to perform this (HEE, 2017). Levett-Jones et al (2010) promote a clinical reasoning cycle which organises information gathering and processing into eight logical steps. First, initial information about the patient and presenting complaint must be sought. In Albert’s case, this appeared to simply be an 80 year old male who had fallen. After this, more information must be gathered; history of the presenting complaint, past medical history, vital signs and results of investigations. It was during this stage that Albert’s vital signs alerted me to the severity of his condition. Once sufficient information was gathered, the next stages in the cycle are to process it and identify the problem. Here, because vital information about Albert’s health history had not been identified, an error was made, and the initial impression of sepsis was formed. Once a problem is identified, the cycle then encourages users to establish treatment goals and act. For Albert, with the mistaken impression of sepsis, treatment goals would have been aggressive management and rapid transport to hospital.

The boundaries between each stage are not clear cut, and clinicians often combine stages or move back and forth between them to assimilate enough information before a decision is reached (Levett-Jones et al, 2010). This appears to be what happened in the case presented. When Albert's wife revealed that he had an inoperable AAA, the reasoning cycle moved back to the stage where information is collected and processed, and this time allowed correct identification of his problem; not sepsis but dissection of his aneurysm. Now, treatment goals were very different. Mortality from AAA rupture has long been known to be certain without surgical repair (Johanssen & Swedenborg, 1986), and this instance was known to be irreparable. Knowing death was both inevitable and imminent (Wahlberg & Goldstone, 2017), a plan had to be made which was both appropriate and compassionate.

The classical or normative decision-making paradigm (Edwards, 1954; Hammond, 1955) describes a situation with a clearly defined problem where all possible alternatives are known, and the optimum outcome is chosen. It has been used in healthcare settings although Chapman & Sonnenberg (2000) argue this may not fit well with unpredictable environments or critical situations. Most studies of heuristics and bias in clinical decision making are based on hypothetical situations (Blumenthal-Barby & Krieger, 2014) which lends some doubt to the external validity of these findings. A systematic review by Saposnik et al (2016) concludes that in reality these theories have little practical application. In contrast, 'naturalistic' decision making describes making decisions in reality rather than in hypothetical situations (Harencarova, 2017). Paramedics often have to make decisions on scene without access to other opinions as would be easily available in a hospital setting (O'Hara et al, 2015). These decisions, which are heavily influenced by individual

competence and confidence, may result in paramedics being disproportionately risk averse, as non-conveyance is often seen as risky for both patient and paramedic (O'Hara et al, 2015).

Rasmussen (1983) developed a 'Skills, Rules, Knowledge' model of decision making which encompasses three discrete levels of performance. This model suggests that in the first instance a person will use learnt sensorimotor skills to tackle a problem, but if this is insufficient, they will then apply rules or protocols. The third level, knowledge based behaviour, is activated when neither appropriate learnt skills nor rules are available. In Albert's case, it could be argued that the physical assessment (Jarvis, 2015) constituted the motor skills, but while this offered a diagnosis it left insufficient information to solve the problem. Had he already been in cardiac arrest, then clinical practice guidelines (Joint Royal Colleges Ambulance Liaison Committee, 2017) would provide a protocol for resuscitation or Recognition of Life Extinct (ROLE) dependent on circumstances, although Eccles & Grimshaw (2000) argue that protocols may cause increased problems as they offer a single solution to a complex problem. However, the decision around Albert's treatment was not covered by these guidelines so knowledge of his condition was drawn upon, supported by the information from his wife to make a judgment in his best interests. Vincent (2002) proposes that human errors in decision making can be attributed to a combination of skills-based, rules-based or knowledge-based failures.

Klein et al (1993) formulated a 'Recognition-Primed' decision making model, which relies on the recognition of a situation followed by the identification of an appropriate response. Although developed with and for firefighters, Harencarova (2017) posits

that it is equally applicable to the unpredictable world of pre-hospital care. This model highlights that experience is used, possibly more than analysis, to inform decisions. Paramedics from student through to advanced level showed not only that they can use, but that they prefer rational decision making (Jensen et al, 2016). Stanovich & West (2014) counter that while most clinicians would like to believe they use critical thinking to analyse a problem and reach a solution, there is strong evidence to suggest that most decisions are made by rapid pattern recognition. In Albert's situation, diagnosis of his life-threatening aortic dissection was made using pattern recognition. The potential responses were to treat him aggressively and transport rapidly to hospital; to wait for the inevitable cardiac arrest and begin resuscitation; or to take a holistic approach, considering not only Albert but his wife, too, and allow him a natural death. Knowing that his AAA had already been deemed inoperable meant that treatment and transport would offer no benefit, and that attempted resuscitation of cardiac arrest would be futile (Wahlberg & Goldstone, 2017). It was not clear whether any advance care plan or directive had been discussed with Albert and his wife, however discarding the first two responses left only one course of action.

Kahneman (2011) proposed a dual processing theory of cognitive thinking. In this theory, system one, or fast thinking is intuitive and relies on pattern recognition and individual bias whereas system two, or slow thinking, is more deliberate and requires more effort and attention. Under increased cognitive load or emotional burden, system two thinking may fail and revert back to system one (Kahneman, 2011). Allan (2017) posits that although system one thinking can correctly make life or death decisions based on limited information, it is inherently prone to error as it relies on

mental shortcuts. Kahneman's theory may be considered flawed, however, as it is based on an analysis of responses to reasonably complex numerical problems (Tversky & Kahneman, 1981), and does not appear to take into account that numeracy itself requires learning using system two thinking before it becomes intuitive and could be considered system one. In Albert's situation, the initial impression of sepsis was likely system one thinking, recognising a pattern of hypotension, tachycardia and hypothermia. However, this impression was wrong as it was made without sufficient information. Once further information became available regarding Albert's AAA, system two thinking allowed a more analytical approach, deciding to perform a focused assessment to reach a better diagnosis, then using clinical judgement to support a more holistic, patient-centred outcome.

Cognitive bias and personality traits create mental shortcuts, heuristics, which influence the way people think and act, and have been shown to be associated with errors in diagnosis and management (Saposnik et al, 2016) so must be considered in the context of clinical decision making. The anchoring effect describes a situation where the original impression overrides the decision-making process and adjustments are not made when presented with new information (Tversky & Kahneman 1981). Wendt & Tyson (2018) state that anchoring bias was identified in many studies of error in clinical judgement, however Spaanjaars et al (2015) found that greater knowledge and experience in the individual clinician reduced anchoring bias.

Confirmation bias is a state of mind where we are more likely to accept, even actively seek out ideas that fit our preconceptions, and ignore evidence to the

contrary (Howard, 2019). In Albert's case, an assumption of sepsis was made and subsequent history taking attempted to confirm this before realising an error had been made. Similarly, availability heuristic sets out how the probability of reaching a diagnosis is based on how easily that diagnosis is reached (Braga et al, 2015). Richie & Josephson (2017) describe how doctors who have cared for patients with sepsis will predict future patients to be at higher risk of this condition.

King (2019) suggests that the 'curse of knowledge' affects most professionals at some point during their career, when they realise that their understanding is not shared by all. It seemed obvious to the clinical staff present with Albert that morning that he could not be resuscitated, as all understood the pathophysiology behind his AAA. His wife, however, did not share that knowledge, and so for her, the information had to be communicated in a way that she could understand. The framing effect alludes to the theory that the way outcomes are presented may often result in different choices being made (Fu et al, 2017). When the situation was explained to Albert's wife, she was reminded that his aneurysm was inoperable and a natural, dignified death was deliberately framed in a positive way, leading her to accept the recommendation not to attempt resuscitation.

Outcome bias (Sezer et al, 2016) refers to the tendency for others to judge a decision based solely on its outcome, rather than on the preceding decision-making process. I was aware that when documenting this case, it would appear that a patient had simply been allowed to die without treatment, which would raise questions about not only my practice but that of my crewmate and student, too. This

had to be taken into consideration but we were confident that with a detailed patient record we could justify our actions.

Ethical practice is a fundamental part of paramedic registration (HCPC, 2016) and includes specific guidance that registrants must treat patients as individuals, respect their dignity and where possible, involve patients and carers in decisions about their care. Healthcare ethics traditionally teaches two theories. Consequentialism is a framework for decision making based solely on the best outcome for the patient (Dale, 2013) whereas the deontological or 'duty based' approach puts the patient at the heart of the decision making process (Mandal et al, 2016) and encompasses the four pillars of medical ethics: autonomy, beneficence, non-maleficence and justice (Levitt, 2014). A paramedic is required to make justified decisions to initiate or cease treatment (HCPC, 2014). In Albert's situation, using a consequentialist framework (Bond & Firenze, 2019) I decided the best outcome was a peaceful and dignified death, however there was awareness that this may not have been his wife's perception of the situation. Using a deontological framework (Mandal et al, 2016), true autonomy was not possible due to Albert's condition, but his wife was aware of our decision-making process. Beneficence was demonstrated by acting in what was believed to be his best interest, and non-maleficence by opting not to attempt any resuscitation which would have caused injury and ultimately been futile. Dale (2013) suggests that there is often no absolute right answer, and that clinicians may have to use more than one ethical framework along with clinical reasoning to reach a decision.

Conclusion

The case presented outlines a decision not to resuscitate a patient in a situation where it would have been futile. This decision was supported by JRCALC (2017) guidelines, however, was a decision that less experienced clinicians may not have been comfortable making. While most clinicians would like to believe they use critical thinking to analyse a problem and reach a solution, there is strong evidence to suggest that most decisions are made by rapid pattern recognition (Stanovich & West, 2014).

References

Allan, J.A. (2017) Daniel Kahneman's Thinking, Fast and Slow. Abingdon: Routledge.

Blumenthal-Barby, J.S. & Krieger, H. (2014) 'Cognitive Biases and Heuristics in Medical Decision Making: A Critical Review Using a Systematic Search Strategy', Medical Decision Making, 35(4), pp.539-557.

Bonde, S. & Firenze, P. (2019) A Framework For Making Ethical Decisions. Available at: https://www.brown.edu/academics/science-and-technology-studies/framework-making-ethical-decisions (Accessed 21 March 2019).

Braga, J.N., Ferreira, M.B. & Sherman, S.J. (2015) 'The Effects of Construal Level on Heuristic Reasoning: The Case of Representativeness and Availability', Decision, 2(3), pp.216-227.

Chapman, G.B. & Sonnenberg, F.A. (eds) (2000) Decision Making in Healthcare: Theories, Psychology and Applications. Cambridge: Cambridge University Press.

Dale, L. (2013) 'Develop Your Ethical Shadow', Wardround, 6(1), pp.10-11.

Eccles, M. & Grimshaw, J.M. (2000) Clinical Guidelines From Conception to Use. Oxford: Radcliffe Medical Press.

Edwards, E. (1954) 'The Theory of Decision Making', Psychological Bulletin, 51, pp.380-417.

Fu, L., Yu, J., Ni, S. et al (2017) 'Reduced Framing Effect: Experience Adjusts Affective Forecasting With Losses', Journal of Experimental Social Psychology, 76, pp.231-238.

Hammond, K.R. (1955) 'Probabilistic functionalism and the Clinical Method', Psychological Review, 62, pp.255-262.

Harencarova, H. (2017) 'Managing Uncertainty in Paramedics' Decision Making', Journal of Cognitive Engineering and Decision Making, 11(1), pp.42-62.

Health & Care Professions Council (2014) Standards of Proficiency: Paramedics. London: Health & Care Professions Council.

Health & Care Professions Council (2016) Standards of Conduct, Performance and Ethics. London: Health & Care Professions Council.

Health Education England (2015) Advanced Clinical Practice Framework for the West Midlands. Available at: https://www.hee.nhs.uk/sites/default/files/documents/West%20Midlands%20Advanced%20Clinical%20Practice%20Framework.pdf

Health Education England (2017) Multi-Professional Framework for Advanced Clinical Practice in England. Available at: https://www.hee.nhs.uk/sites/default/files/documents/Multi-professional%20framework%20for%20advanced%20clinical%20practice%20in%20England.pdf

Howard, J. (2019) Cognitive Errors and Diagnostic Mistakes. Cham: Springer.

Jarvis, C. (2015) Physical Examination and Health Assessment. 7th ed. Philadelphia: Saunders.

Jensen, J.L., Bienkowski, A., Travers, A.H. et al (2016) 'A Survey to Determine Decision Making Styles of Working Paramedics and Student Paramedics', Canadian Journal of Emergency Medicine, 18(3), pp.213-222.

Johanssen, G. & Swedenborg, J. (1986) 'Ruptured Aortic Aneurysms: A Study of Incidence and Mortality', British Journal of Surgery, 73, pp.101-103.

Joint Royal Colleges Ambulance Liaison Committee (2017) UK Ambulance Services Clinical Practice Guidelines 2016 Including 2017 Supplementary Guidelines. Bridgwater: Class Professional Publishing.

Kahneman, D. (2011) Thinking, Fast and Slow. London: Penguin.

King, T. (2019) ‘The Curse of Knowledge’, Professional Safety, 64(3), p61.

Klein, G.A., Orasanu, J., Calderwood, R. et al (eds) (1993) Decision Making in Action: Models and Methods. Santa Barbara: Praeger.

Levett-Jones, T., Hoffman, K., Dempsey, J. et al (2010) ‘The Five Rights of Clinical Reasoning: An Educational Model to Enhance Nursing Students’ Ability to Identify and Manage Clinically ‘At Risk’ Patients’, Nurse Education Today, 30, pp.515-520.

Levitt, D. (2014) ‘Ethical Decision Making in a Caring Environment: The Four Principles and LEADS’, Healthcare Management Forum, 27(2), pp.105-107.

Mandal, J., Ponnambath, D.K. & Parija, S.C. (2016) ‘Utilitarian and Deontological Ethics in Medicine’, Tropical Parasitology, 6(1), pp.5-7.

National Institute for Health & Care Excellence (NICE) (2009) Endovascular Stent-Grafts for the Treatment of Abdominal Aortic Aneurysms. NICE Technology Appraisal Guidance TA167.

National Institute for Health & Care Excellence (NICE) (2017) Sepsis: Recognition, Diagnosis and Early Management. NICE Guideline NG51.

O'Hara, R., Johnson, M., Siriwardena, A.N. et al (2015) 'A Qualitative Study of Systemic Influences on Paramedic Decision Making: Care Transitions and Patient Safety', Journal of Health Services Research and Policy, 20(S1), pp.45-53.

Rasmussen, J. (1983) 'Skills, Rules and Knowledge: Signals, Signs and Symbols, and Other Distinctions in Human Performance Models', IEEE Transactions on Systems, Man and Cybernetics, 3, pp.257-266.

Richie, M. & Josephson, S.A. (2017) 'Quantifying Heuristic Bias: Anchoring, Availability and Representativeness', Teaching and Learning in Medicine, 30(1), pp.67-75.

Saposnik, G., Redelmeier, D., Ruff, C.C. et al (2016) 'Cognitive Biases Associated with Medical Decisions: A Systematic Review', BMC Medical Informatics and Decision Making, 16(138).

Sezer, O., Zhang, T., Gino, F. et al (2016) 'Overcoming the Outcome Bias: Making Intentions Matter', Organizational Behaviour and Human Decision Processes, 137, pp.13-26.

Shaban, R.Z. (2005) ‘Theories of Clinical Judgement and Decision Making: A Review of the Theoretical Literature’, Journal of Emergency Primary Healthcare, 3(1).

Sheffield, K., O’Meara, P. & Verrinder, G. (2016) ‘Decision Making Processes When Paramedics Refer Patients Away From Hospital: A Scoping Review’, Irish Journal or Paramedicine, 1(1),

Simpson, P., Thomas, R., Bendall, J. et al (2017) ‘‘Popping Nana Back Into Bed’ - A Qualitative Exploration of Paramedic Decision Making When Caring for Older People Who Have Fallen’, BMC Health Services Research, 17(299).

Singer, M., Deutschman, C.S., Seymour, C.W. et al (2016) ‘The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)’, Journal of the American Medical Association, 315(8), pp.801-810.

Spaanjaars, N.L., Groenier, M., van de Ven, M.O.M. et al (2015) ‘Experience and diagnostic anchors in referral letters’, European Journal of Psychological Assessment, 31, pp.280-286.

Stanovich, K.E. & West, R.F. (2014) ‘What Intelligence Tests Miss’, The Psychologist, 27(2), pp.80-83.

Tversky, A. & Kahneman, D. (1981) ‘The Framing of Decisions and the Psychology of Choice’, Science, 211, pp.453-458.

Vincent, C. (ed) (2002) Clinical Risk Management. London: British Medical Journal Books.

Wahlberg, E. & Goldstone, J. (2017) ‘Abdominal Aortic Aneurysms’ in Emergency Vascular Surgery. Berlin: Springer.

Wendt, D.J. & Tyson, G. (2018) ‘Diagnostic Accuracy in Australian Psychologists: Impact of Experience and Endorsement on the Anchoring Effect’, Australian Psychologist, 53, pp.236-242.