

Human factors in paramedic practice—not really about the humans but the system

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Human Factors. Definitely a buzz-word in recent years—and with good reason, as this book clearly demonstrates. *Human Factors in Paramedic Practice* is edited by Gary Rutherford (2020) and provides a fantastic introduction to the discipline of human factors, highlighting some of its main principles and how they relate to paramedic practice. This recently published book is in its first edition and is available in paperback (£29.99) or eBook (£24.99) format. It sits alongside similar publications from the College of Paramedics such as *Practice Education in Paramedic Science* and *Palliative End of Life Care for Paramedics*.

As with other titles in this series, authors contributing to this book are from a wide range of backgrounds, but they have two things in common: a passion for human factors and links to the paramedic profession (to varying degrees)—making them ideally placed to contribute to this pioneering resource. Chapters are short, easy to understand and, on the whole, the book follows a logical flow but chapters can also be read on a standalone basis and this is helpfully supported by reference lists after every chapter. Overall, references are an appropriate mixture of very recent peer-reviewed journal articles and less recent seminal texts when explaining the history of human factors.

The foreword of the book really sets the tone: an impactful patient story by none other than Martin Bromiley, who shares the story of his wife, Elaine,

and drives home the importance of human factors in healthcare practice and research. It made me sit up a little bit taller in my chair to read Martin's statement that 'it has been those who are involved in applying skills in moments where time is in short supply that have embraced human factors thinking the most' (Rutherford, 2020: xiv).

The book starts with a chapter on the 'Introduction to human factors' and then gradually moves towards a more detailed account of the history of human factors and ergonomics, as well as covering important topics such as human error, systems thinking and human-centred design. The middle of the book introduces us to 'The patient: an element of the system', as well as covering important topics such as 'Well-being of the paramedic', situational awareness and learning from events, before closing with an in-depth look into 'Safety culture: theory and practice'.

The opening chapter introduces the reader to lots of new terms and phrases from the world of human factors, which at times feels overwhelming but the authors make a good attempt at explaining and introducing them gradually. Some of the terminology could be made more relevant to paramedics; however, this book is introducing paramedics to the discipline of human factors rather than simply applying a watered-down version of human factors to paramedics. With that aim in mind, the specialist terminology used is probably well placed. One statement I was unsure

about is the authors' assumption that most prehospital providers will have heard of human factors—is this really the case?! Regardless, this book is useful to both prehospital clinicians who have heard of human factors and those who have not. The fundamental message is that paramedic practice is growing in complexity. This book embraces this complexity and seeks to explain one aspect of this: human factors.

Chapters 2 and 3 cover the principles of human factors more in-depth and highlight the authors' increasing scepticism of the word 'human error'. They postulate that those who have picked up this book up seeking to find answers for human/clinical/paramedic error, will instead find that often there is a systemic origin, and the involvement of many more factors than just 'human error'. This is an important message for anyone involved in ambulance service incident investigation or team leader positions, but equally for every prehospital clinician who is in charge of a scene, crew or situation—so essentially everyone at some point! In fact, the applicability of this book extends beyond road staff, as examples come from a broad context, so would be similarly suited to emergency operations or office-based ambulance staff.

The authors also offer a typology of errors, which again could be used for incident investigation, but also to guide individual clinicians' reflective process. The authors surmise that the overarching question to ask is why people did

what they did and why it made sense at the time—‘human error’ may be the starting point but there is a clear need to look beyond the error when reflecting or investigating it. Illustrated by relevant and detailed examples from the prehospital setting, reading about these principles has helped me reframe my own reflections on errors or near-misses. In fact, I now try to reflect on events where things went well in line with the message of SAFETY II embraced in this book: that we need to work backwards from successful events to understand how we can avoid things not going well.

Another interesting topic covered in this book is the idea of ‘participatory ergonomics’, which is the active involvement of working staff in developing and implementing workplace changes. This includes co-design of equipment but also any other changes relating to everyday work. As ambulance staff, I think this is something we can relate to when complaining about how unsuitably narrow a new ambulance model might be or how fiddly a new piece of cannulation equipment is. We tend to throw around comments that these products were made by people who have never been in the back of an ambulance—well, this is exactly what ‘participatory ergonomics’ is about. The authors encourage us to pursue those throw-away comments and strive for an open culture, where participatory ergonomics is commonplace.

Chapter 6 focuses on the patient and, although interesting, I felt like some patient public involvement and patient stories relevant to prehospital care would have brought this chapter alive more. It was interesting to read about patient and illness-related factors that may influence patient participation but, arguably, paramedic-related factors are the ones we are responsible for and can change,

so I do wish that these were elaborated on more. Chapter 7 focuses on wellbeing and is a well written and informative example of how this vitally important topic should be considered in all aspects of paramedic practice.

Chapters 8–10 don’t seem to flow quite as well, and maybe the book is missing an introductory page that summarises and explains the flow of the book beyond what the table of contents page provides. The flow does then become clear further on and the important topics of situational awareness, decision-making and teamwork are covered in detail, often using applicable examples such as staggered arrival times at a cardiac arrest. Again, these chapters highlight the different work of prehospital providers compared with planned teamwork situations, as well as covering the concept of bandwidth and its applicability to prehospital clinicians’ decision-making.

The last chapter introduces us to the terminology of a ‘safety climate’ and provides an insightful description of the different elements of safety culture. ‘Just culture’—as one element of this—is introduced earlier in the book, so it is useful to see how these elements inter-relate. The book ends on a very practical note with ‘safety culture discussion charts’ as an evidence-based resource to aid discussion about safety culture, including high-resolution images of the cards and easy-to-follow instructions.

The old saying that ‘a book is out of date as soon as it is printed’, of course applies here too and is probably especially the case given the COVID-19 pandemic and the resulting changes to the work of healthcare workers in the UK and around the world. However, this just means that the responsibility to apply the principles of this book to the current situation lies with the

reader. I would argue though that the authors have made this as easy as possible by including detailed explanations of the principles of human factors and using (almost) timeless examples from paramedic practice to illustrate their points such as cardiac arrests and major trauma. From my reading experience, it is easy to see how COVID-related examples such as (often rapid and continuously evolving) changes to personal and protective equipment (PPE), patient pathways and logistics upon arrival at hospital, can be interpreted using the human factors principles presented in this book.

As a paramedic working through this pandemic, reading this book has been therapeutic. It has helped me view mistakes and near-misses as more than that. It has taught me to appreciate the wider system at play and helped me to structure my reflections into something that will benefit my future practice—and potentially that of others as well as I embrace the book’s idea of shared learning and understanding.

The chapter on teamwork was invaluable in reminding me to notice and appreciate the unique difficulties we face as prehospital clinicians. I would agree with the foreword by Martin Bromiley OBE, Founder of the Clinical Human Factors Group, that this book is ‘too good for one profession’—but as a paramedic, I am grateful to the authors and editor for pulling it together into a meaningful textbook with the potential to support clinicians to learn from mistakes, firmly establish human factors within the undergraduate paramedic curriculum and revolutionise incident investigations at an organisational level. It may even inspire some paramedics to become specialists in the vitally important and relevant discipline of human factors. **JPP**

Three Key Takeaways

- Paramedic error most often has a systemic origin and involves more than just ‘human error’
- An awareness of the principles of human factors is important for every individual prehospital clinician—not just ambulance service managers, incident investigators or product developers
- Challenge: To see things in clinical practice with fresh eyes and have new ideas for change in order to improve patient safety and staff wellbeing