

Cambridge Elements

Elements of Improving Quality and Safety in Healthcare

edited by

Mary Dixon-Woods,* Katrina Brown,* Sonja Marjanovic,†
Tom Ling,† Ellen Perry,* Graham Martin*, Gemma Petley*,
and Claire Dipple*

**THIS Institute (The Healthcare Improvement Studies Institute)*

†RAND Europe

HUMAN FACTORS AND ERGONOMICS

Mark Sujan¹ and Laura Pickup²

¹*University of York*

²*LP Human Factors*

THIS.Institute

The Healthcare
Improvement
Studies Institute



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press & Assessment
978-1-047-75601-3 — Human Factors and Ergonomics
Mark Sujan , Laura Pickup
Frontmatter
[More Information](#)



CAMBRIDGE
UNIVERSITY PRESS

Shaftesbury Road, Cambridge CB2 8EA, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

Cambridge University Press is part of Cambridge University Press & Assessment,
a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of
education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781047756013

DOI: 10.1017/9781047755993

© THIS Institute 2026

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, with the exception of the Creative Commons version the link for which is provided below, no reproduction of any part may take place without the written permission of Cambridge University Press & Assessment.

An online version of this work is published at doi.org/10.1017/9781047755993 under a Creative Commons Open Access license CC-BY-NC-ND 4.0 which permits re-use, distribution and reproduction in any medium for non-commercial purposes providing appropriate credit to the original work is given. You may not distribute derivative works without permission. To view a copy of this license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0>

When citing this work, please include a reference to the DOI 10.1017/9781047755993

First published 2026

A catalogue record for this publication is available from the British Library

*A Cataloging-in-Publication data record for this Element is available
from the Library of Congress*

ISBN 978-1-047-75601-3 Paperback

ISSN 2754-2912 (online)

ISSN 2754-2904 (print)

Cambridge University Press & Assessment has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

For EU product safety concerns, contact us at Calle de José Abascal, 56, 1º, 28003 Madrid, Spain, or email eugpsr@cambridge.org

Every effort has been made in preparing this Element to provide accurate and up-to-date information which is in accord with accepted standards and practice at the time of publication. Although case histories are drawn from actual cases, every effort has been made to disguise the identities of the individuals involved. Nevertheless, the authors, editors and publishers can make no warranties that the information contained herein is totally free from error, not least because clinical standards are constantly changing through research and regulation. The authors, editors and publishers therefore disclaim all liability for direct or consequential damages resulting from the use of material contained in this Element. Readers are strongly advised to pay careful attention to information provided by the manufacturer of any drugs or equipment that they plan to use.

Human Factors and Ergonomics

Elements of Improving Quality and Safety in Healthcare

DOI: 10.1017/9781047755993
First published online: June 2026

Mark Sujan¹ and Laura Pickup²
¹*University of York*
²*LP Human Factors*

Author for correspondence: Mark Sujan, mark.sujan@york.ac.uk

Abstract: Human Factors and Ergonomics (HFE) is a discipline concerned with designing interactions in sociotechnical systems to improve both system performance and human well-being. This Element introduces the core principles of HFE, tracing its development from multidisciplinary efforts to solve practical problems in military operations during the Second World War to its current application in healthcare improvement. The Element acknowledges the growing role of HFE in areas such as the design of the physical environment, medical device design, learning from patient safety incidents, and safety investigations. A critical reflection highlights persistent challenges, including conceptual ambiguity, structural and practical barriers to HFE integration, and the need for both a stronger evidence base and a compelling business case. The Element concludes by identifying future priorities for advancing HFE in healthcare, including continuing professional development and career pathways, embedding HFE in regulation and policy, and adopting evaluation approaches suited to complex systems. This title is also available as open access on Cambridge Core.

Keywords: human factors, ergonomics, systems thinking, patient safety, sociotechnical systems

© THIS Institute 2025

ISBNs: 9781047756013 (PB), 9781047755993 (OC)
ISSNs: 2754-2912 (online), 2754-2904 (print)

Contents

1	Introduction	1
2	What Do We Mean by Human Factors and Ergonomics?	1
3	Human Factors and Ergonomics in Action	9
4	Critical Reflection on Human Factors and Ergonomics as an Approach to Healthcare Improvement	20
5	Conclusions	26
	Further Reading	27
	References	31