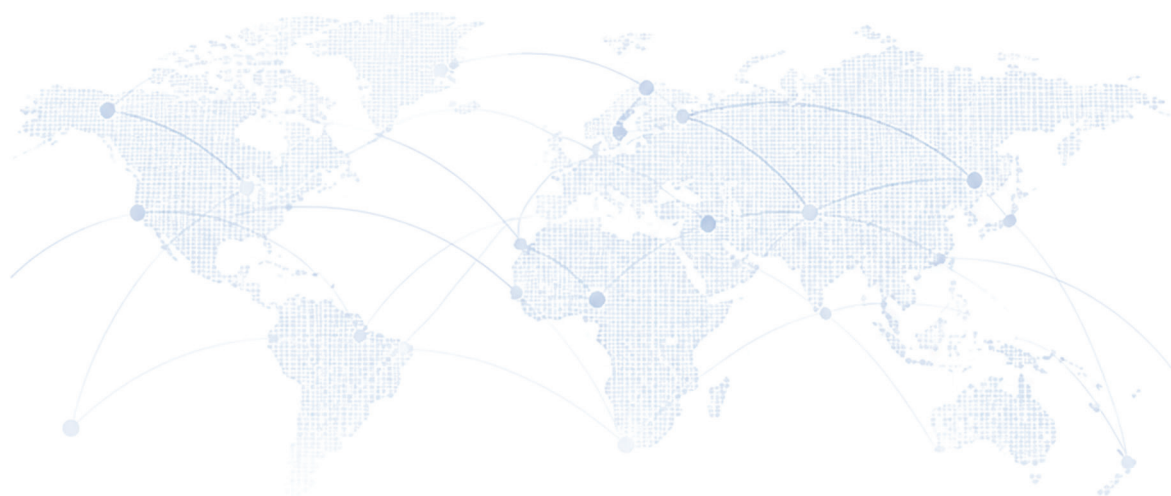




EMERGENCY MEDICINE

CHALLENGES IN THE MIDDLE EAST

First Edition

Edited by

Asaad S. Shujaa

Sameer Alhamid

Nadeem Qureshi



Discover STM Publishing Ltd

Ireland

Copyright © 2026 Asaad S. Shujaa, Sameer Alhamid, and Nadeem Qureshi & Discover STM Publishing Ltd.

All rights reserved. Except as permitted under applicable copyright law, no part of this publication may be reproduced, stored in a retrieval system, transmitted, distributed, or communicated in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, without prior written permission from the copyright holders.

The rights of the editors to be identified as editors of this work have been asserted in accordance with applicable copyright law.

First Edition, 2026

ISBN: 978-0-9957885-2-7

Published by

Discover STM Publishing Ltd
82 Leslie's Arch, Old Quarter
Ballincollig, Cork, P31 RY62
Ireland

Medical Disclaimer

The information contained in this book is intended for educational and professional reference purposes only. It is not intended to replace independent clinical judgment, professional medical advice, diagnosis, or treatment.

Medicine is a continuously evolving field, and standards of care, diagnostic criteria, treatment recommendations, drug information, dosages, contraindications, warnings, and regulatory requirements may change over time. Although the editors, contributors, and publisher have made reasonable efforts to ensure that the information presented is accurate and current at the time of publication, no representation or warranty is made regarding its completeness, accuracy, or continuing validity.

Readers are responsible for verifying relevant clinical information from current authoritative sources, including prescribing information, institutional protocols, professional guidelines, and applicable laws and regulations, before applying any recommendation in practice. Particular care should be taken when prescribing or administering medications, especially in children, pregnant patients, older adults, patients with renal or hepatic impairment, and other special populations.

The publisher, editors, and contributors shall not be liable for any loss, injury, damage, or adverse outcome arising directly or indirectly from the use of, or reliance upon, information contained in this publication. Clinical decisions remain the responsibility of the treating healthcare professional.

References to particular products, devices, medicines, organizations, commercial entities, or services do not constitute endorsement by the publisher, editors, or contributors.

Permissions

All third-party material is reproduced with permission where required.

Publisher website: www.discoverstm.com

TABLE OF CONTENT

Section 1. Health Care Systems

1.1	Emergency Care Systems in the Middle East	1
1.2	Executive Health and Dignitary Medicine.	7
1.3	Challenges in Emergency Health Care System in Egypt	19
1.4	Emergency Medicine in the Private Sector Kingdom of Saudi Arabia.	33
1.5	Privatization of Healthcare in Kuwait.	45
1.6	Healthcare Challenges for Expatriates and Business Travelers in the Middle East	55

Section 2. Hajj Medicine, Disaster Medicine and Pre Hospital Care

2.1	The Pilgrimage to Mecca and Hajj Medicine	66
2.2	Activating Hospital Disaster Plans in Low-Income Countries: The Golden Minutes.	83
2.3	The Turmoil of Turkish Earthquake: Saudi Red Crescent Authority Humanitarian Response.	89
2.4	Emergency Medical Services (EMS) in Saudi Arabia.	96
2.5	Prehospital Care in Middle East with Special Focus on the Kingdom of Bahrain.	107

Section 3. Environmental Medicine

3.1	Overview of Snake Envenoming in Middle East and North Africa (MENA) Region.	121
3.2	Snake, Scorpion and Spider Envenomation in Sudan.	150
3.3	Sand Storms: Their Epidemiology in Middle East and North Africa, (MENA) Saudi Arabia (KSA).	169
3.4	Mild to Sever Heat illnesses and Emergency Treatment in Middle East, Climate Changes and Hajj	181
3.5	Survive the Desert	192
3.6	Diving Medicine in Middle East	205

Section 4. Toxicology

4.1	Substance Use Disorder Patients - "Not a Burden but a Special Population".	211
4.2	How to Develop a Toxicology Service With Limited Financial Support	226
4.3	Street Drugs in Middle East, Review and Update.	234

Section 5. Specific Medical illness in Middle East

5.1	Excluding a life-Threatening Ectopic Pregnancy based on Marital status; Challenging the Current Practice	247
5.2	Pediatric Disorders and diseases	253
5.2.1	Inborn Errors of Metabolism	253
5.2.2	Metabolic disorder	254
5.2.2.1	Sanjad-Sakati	261
5.2.2.2	Adrenal Insufficiency	267
5.2.3	Hematological Disorders	272
5.2.3.1	Sickle Cell Disease Crisis	272
5.2.3.2	Thalassemia	278
5.2.4	Infectious Diseases: Brucellosis	282
5.3	Hematological illness insights: Middle East.	287
5.4	COVID-19 Pandemic: National Health Experience from the Kingdom of Saudi Arabia.	299
5.5	Do-Not-Resuscitate (DNR) for Palliative Patients in Emergency: A Comprehensive Review in the Middle East.	311
5.6	Do Not Resuscitate (DNR) Between Medical Decision and Religion (Islam).	319
5.7	Cancer Pain Management at Emergency Settings and End of Life in The Middle East	327

Section 6. Education and Residency Program

6.1	Emergency Medicine Training in the Middle East.	340
6.2	Emergency medicine Residency program and Education in Iraq Challenges and Opportunities.	349

Section 7. Miscellaneous

7.1	Checks and Balances: Medical Liability Made Easy.	355
7.2	Physician Burnout – Be the Hero not the Victim.	368
7.3	Emergency department designs - things to consider	379
7.4	Aviation Medicine	388
7.5	Artificial Intelligence in Emergency Medicine and Critical Care: Applications and Medico-Legal Implications	396

by the Editor-in-Chief

It is with deep professional pride and a profound sense of responsibility that I present this first edition of *Emergency Medicine: Challenges in the Middle East*. This volume represents the collective effort of dedicated clinicians, educators, and researchers who have devoted their careers to advancing emergency care across one of the world's most diverse and dynamic regions.

The Middle East presents a unique and compelling landscape for emergency medicine. It encompasses high-resource Gulf Cooperation Council nations with state-of-the-art trauma centers and sophisticated pre-hospital systems; middle-income countries steadily modernizing their emergency departments and training programs; and nations whose healthcare infrastructure has been severely tested - or, in some cases, dismantled - by prolonged conflict, displacement, and humanitarian crisis. Across this spectrum, emergency care systems serve as the indispensable safety net for acute illness, injury, environmental extremes, mass gatherings, and disasters.

This book systematically explores these realities. It examines the structure and challenges of emergency care systems, the specialized demands of Hajj medicine and disaster response, environmental threats ranging from heat illness and sandstorms to envenomation, the evolving landscape of toxicology, region-specific medical conditions, education and residency training, and critical issues of medical liability, physician wellness, and the ethical intersection of medicine and faith. Throughout, contributors offer both candid analysis of persistent barriers - resource disparities, workforce shortages, data gaps, and the need for stronger governance - and practical frameworks for progress, including the EMIRATES model for integrated emergency management.

Particular attention is given to innovations born in the region: advanced ambulance services, mobile clinics serving refugee populations, technology-enabled response during the annual Hajj, and the growing network of national emergency medicine societies and residency programs. These successes demonstrate what is possible when vision, investment, and clinical excellence converge.

My sincere hope is that this work will serve as both a comprehensive reference and a catalyst. May it inform policy, strengthen training, foster regional collaboration, and ultimately improve the quality and equity of emergency care for the millions of people who depend on these systems every day.

I am deeply grateful to my co-editor, **Dr. Sameer Alhamid**, for his partnership, insight, and unwavering commitment to this project. I also wish to pay tribute to the late **Professor Nadeem Qureshi**, whose scholarship, mentorship, and dedication to emergency medicine in the Middle East remain an integral and enduring part of this volume. A formal dedication to Professor Qureshi appears elsewhere in this book.

To the emergency physicians, nurses, paramedics, and leaders across the Middle East: this book is dedicated to your daily commitment under often extraordinary circumstances. May it support and inspire the continued elevation of our specialty.

Asaad S. Shujaa

Editor-in-Chief, Assistant Professor,
Consultant of Emergency Medicine, ICU, Trauma,
EMS and Disaster Medicine Johns Hopkins Aramco
Healthcare, Weill Cornell Medical College

IN MEMORIAM



Dedicated to the memory of

Professor Nadeem Qureshi



*Co-Editor • Mentor • Inspiration
and steadfast supporter of the vision for this book*

It is with profound respect and deep affection that we dedicate this volume to the memory of Professor Nadeem Qureshi — a distinguished emergency physician, educator, and leader whose vision, generosity, and unwavering support were instrumental in bringing this book to life.

As co-editor, mentor, and constant source of inspiration, Professor Qureshi believed deeply in the importance of documenting and advancing emergency medicine across the Middle East. His wisdom, encouragement, and scholarly guidance shaped both the spirit and the substance of this work.

His contributions to our specialty, and to all who had the privilege of working alongside him, will endure. This book stands as a lasting tribute to his legacy.

May Allah grant him the highest ranks in Paradise and grant his family patience and strength. May his soul rest in eternal peace.

Asaad S. Shujaa, MD, FRCPC, FAAEM

Editor-in-Chief

Emergency Medicine: Challenges in the Middle East • 1st Edition • Discover STM Publishing

In memory of Professor Nadeem Qureshi

Moiz Qureshi¹

There are few things more difficult than trying to summarize the life of a father in words, particularly when his influence extended so far beyond his family.

Professor Nadeem Qureshi was a physician, educator, mentor, pioneer, and above all, a teacher.

Born in Pakistan, he came to the United States as a foreign medical graduate and trained at Georgetown in Washington, DC. He would go on to become a renowned pediatric emergency physician whose career crossed countries, institutions, and generations. Yet among all of his accomplishments and titles, the one that gave him perhaps the greatest pride was simple: Professor.

Teaching was not merely a component of his career. It was his calling.

Throughout his life, my father devoted himself to advancing pediatric emergency medicine and to improving the care of acutely ill and injured children. He helped to introduce and advance pediatric emergency medicine as a distinct area of specialized care in Pakistan while also becoming deeply involved in the growth of emergency medicine education throughout the Middle East.

He served on the Board of the Emirates Society of Emergency Medicine, participated in numerous scientific and educational committees, contributed to textbooks and academic publications, and dedicated countless hours to conferences, lectures, workshops, and the education of physicians throughout the region. This book, *Emergency Medicine: Challenges in the Middle East*, was another extension of that lifelong mission, and it is profoundly meaningful that he was able to contribute to it as a co-editor.

My father undoubtedly saved countless lives during his career. But the true magnitude of his contribution to medicine can never be measured by the number of patients he personally treated.

It is multiplied through the hundreds - perhaps thousands - of physicians whom he taught.

Every physician who learned from him carried some part of that knowledge forward to his or her own patients. Every trainee whom he encouraged went on to teach others. Every improvement in care that resulted from those lessons extended his impact farther than he could ever have witnessed himself. That is the extraordinary privilege and responsibility of being an educator: a teacher's influence does not end with the student.

His legacy, therefore, lives not only in publications, academic appointments, professional societies, or the programs he helped to develop. It lives in emergency departments across the Middle East and beyond. It lives in the physicians who still remember his lectures, his guidance, his expectations, and his mentorship. Most importantly, it lives in the children and families who received better care because someone, somewhere, had once been taught by Professor Nadeem Qureshi.

For me, his legacy is even more personal.

Medicine was my father's calling, and I had the extraordinary privilege of watching that calling from the closest possible vantage point. I knew him first as my father, but as I entered medicine and ultimately emergency medicine myself, I was blessed to know him in another way as well: as my teacher.

Of the countless physicians fortunate enough to have learned from Professor Nadeem Qureshi, I remain most grateful that I was one of his students.

As a son, there is an indescribable pride in meeting physicians across the world who knew my father before they knew me - people who tell me that he taught them, mentored them, encouraged them, or influenced the physicians they eventually became. Those encounters have

helped me understand that although our family lost a father, an entire community lost a teacher.

There is also comfort in knowing that a teacher never entirely leaves us.

His lessons continue through those he taught. His commitment to education continues through those who now teach the next generation. His pursuit of better emergency care continues through the physicians and institutions he helped to shape. And his belief that knowledge should be shared generously continues in works such as this one.

Our family is deeply grateful to the editors and contributors of *Emergency Medicine: Challenges in the Middle East* for honoring Professor Nadeem Qureshi in these pages and for recognizing his role in bringing this work to fruition.

It is difficult to imagine a tribute more fitting for a man who dedicated his life to teaching than for his memory

to stand at the beginning of a textbook that will continue teaching physicians long after his passing.

May Allah have mercy upon Professor Nadeem Qureshi, forgive him, elevate his rank, and grant him the highest place in Jannah. May every life saved, every physician educated, every lesson passed forward, and every patient cared for because of knowledge he shared remain a source of continuing reward for him.

His work continues through all those he taught.

I am profoundly proud to be his son.

And forever grateful to have been his student.

Author detail

Moiz Qureshi¹

1. MD, MBA, FAAEM, FACEP,

Son and student of Prof. Nadeem Qureshi

Editor in Chief

Asaad S. Shujaa MD, FRCPC, FAAEM

Consultant of Emergency Medicine, ICU, Trauma, EMS and Disaster Medicine

Johns Hopkins Aramco Healthcare Center, Saudi Arabia

Associate Editor

Sameer Alhamid, MD, FRCPC, FACEP, FAAEM, EMS
Senior Emergency Medicine Consultant (Eastern Health Cluster)

Head of ED Jubail General Hospital, Jubail, Saudi Arabia

Associate Editor

Prof. Nadeem Qureshi,

Professor of Pediatrics and Emergency Medicine,
Department of Pediatrics, Saint Louis University School of
Medicine, St. Louis, MO, USA

Authors

Saleh Fares Al-Ali

International Federation for Emergence Medicine

Mobarak Al Mulhim

Eastern Health Cluster, Dammam, Saudi Arabia

Gamal Eldin Abbas Khalifa

Consultant in Emergency and Disaster Medicine, President
of the Egyptian Resuscitation Council, Tutor EMDM,
ERC Executive Committee Member, WDEM Board of
Directors, Madison, WI, USA

Sally Wassfi Hammad

Consultant in Emergency Medicine, Fellow Lecturer of
Emergency Medicine, ERC Director and Educator, Member
of the European Resuscitation Council (ERC), Member of
the American Heart Association (AHA), Member of the
Egyptian Medical Society of Echocardiography (EMSE),
Alexandria University, Alexandria, Egypt

Saad Ali Asiri

Dr. Sulaiman Alhabib Medical Group, Al Khobar, Saudi
Arabia

Selma Alqattan

Deputy CEO, Champion General and Rehabilitation
Hospital, Founder of Lifeline UC, Kuwait

Naeem Anwar Toosy

Adjunct Assistant Professor of Clinical Care, University of
Sharjah, Sharjah, United Arab Emirates

Eveline Hitti

Professor of Clinical Specialty, Department of Emergency
Medicine, American University of Beirut Medical Center,
Beirut, Lebanon

Sarah S. Abdul-Nabi

Clinical Assistant Professor, Department of Emergency
Medicine, American University of Beirut Medical Center,
Beirut, Lebanon

Yousef Mohammad Alsofayan

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Sharifah Yousef Albounagh

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Faris Almutairi

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Ahmad Aloudah

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Abulrahman Almutairi

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Majed Alsaihani

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Abdullellah Almutairi

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Fahad S. Alhajjaj

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Jalal M. Alowais

Saudi Red Crescent Authority, Riyadh, Saudi Arabia

Nawfal Algerian

Professor and Consultant of Emergency Medicine and Emergency Medical Services, Medical Referrals Center, Ministry of Health, Riyadh, Saudi Arabia

Professor and Consultant of Emergency Medicine and Emergency Medical Services, King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia

Feras Husain Abuzeyad

Consultant Emergency Medicine, Department of Emergency Medicine, Farwaniya Hospital, Farwaniya, Kuwait

Musa AL-Faifi

Emergency and Medical Toxicology, Armed Force Hospital, Southern Region, Saudi Arabia

Intesar Salih AlKhedir

Sudan Natural History Museum, Toxic Organisms Research Centre, University of Khartoum, Khartoum, Sudan

Manal Siyam

Sudan Natural History Museum, Toxic Organisms Research Centre, University of Khartoum, Khartoum, Sudan

Muhammad E. M. O. Elamin

Consultant Physician & Clinical Toxicologist, National Poisons Information Service (Birmingham unit), Birmingham, UK

Abdulaziz Abdulrahman AlRabiah

Associate Professor of Emergency Medicine, King Saud University, Riyadh, Saudi Arabia

Abdulla Alhmoudi

GME Office, Department of Emergency Medicine, Zayed Military Hospital, Abu Dhabi, United Arab Emirates

Ayesha Almemari

Consultant Emergency Medicine and Critical Care, Shaikh Shakhbout Medical City, Abu Dhabi, UAE

Abdulla Ahmed Abu Eid

Consultant Psychiatrist, "Halek le Hamek"-A Virtual Psychiatry Clinic, Abu Dhabi, UAE

Ammar Humaid Albanna

Consultant Psychiatrist, "Halek le Hamek"-A Virtual Psychiatry Clinic, Abu Dhabi, UAE

Fatema Almansouri

Consultant Psychiatrist, "Halek le Hamek"-A Virtual Psychiatry Clinic, Abu Dhabi, UAE

Hanan Alhajri

Fellow in Cardiovascular Critical Care, McGill University, Montreal, Canada

Lara S. AbduMuaileq

Consultant Emergency Medicine, Dubai Health, Dubai, UAE

Maryam E. Alnuaimi

Consultant Emergency Medicine, Sheikh Khalifa Medical City, Abu Dhabi, UAE

Muez Mohamed Ahmed Siddig Hag Hamad

Consultant Psychiatrist, Mediclinic Hospital - Airport Road, Abu Dhabi, UAE

Sarah Mohammed Bin Hariz

Specialist Emergency Medicine, Shaikh Shakhbout Medical City, Abu Dhabi, UAE

Umma-Kulthum Umar

Specialist Emergency Medicine, Shaikh Shakhbout Medical City, Abu Dhabi, UAE

Sara Nooruddin Kazim

Dubai Academic Healthcare Corporation, Dubai, UAE

Rawan Eskandarani

King Fahad Medical City, Riyadh, Saudi Arabia

Nisreen Hamza Maghraby

Assistant Professor, Consultant, EM/Trauma & Disaster Management, Department of Emergency Medicine, College of Medicine, Imam Abdulrahman bin Faisal University (IAU), Dammam, Saudi Arabia

Abdulaziz S. AlGarni

Assistant Professor of Pediatrics, College of Medicine,
Princess Nourah Bint Abdulrahman University, Riyadh,
Saudi Arabia

Amal A. Yousif

Assistant Professor of Pediatrics, College of Medicine,
Princess Nourah Bint Abdulrahman University, Riyadh,
Saudi Arabia

Osama Y. Kentab

Assistant Professor of Pediatrics, College of Medicine,
Princess Nourah Bint Abdulrahman University, Riyadh,
Saudi Arabia

Afnan Ahmad AlMass

Department of Emergency Medicine, College of Medicine,
Imam Mohammad Bin Saud Islamic University, Riyadh,
Saudi Arabia
Department of Emergency Medicine, Aldiriyah Hospital,
Health Cluster 3, Riyadh, Saudi Arabia

Mohammed Faisal

Consultant Palliative Care and Pain Medicine,
Department of Palliative Care, Cancer Care Center, Johns
Hopkins Aramco Health Care, Dhahran, Kingdom of
Saudi Arabia

Mohammed Faisal Abosoudah

Consultant Palliative Care and Pain Medicine,
Department of Palliative Care, Cancer Care Center, Johns
Hopkins Aramco Health Care, Dhahran, Kingdom of
Saudi Arabia

Hend Mahmood Sayaly

Emergency Medicine Consultant, Head of the Scientific
Council of Emergency Medicine, Emergency Department,
Baghdad Teaching Hospital, Baghdad, Iraq

Abdussalam Alshehri

Prince Mohammed Bin Abdulaziz Hospital, Riyadh, Saudi
Arabia

Amani Mohamed Abdelwahab Elkhalfi

Specialist, Emergency Medicine, Shaikh Shakbout Medical
City, Abu Dhabi, UAE

Shammah Al Memari

Consultant, Family Medicine, NMC Health, Abu Dhabi, UAE

Loui Alsulimani

Disaster Medicine Section, Department of Emergency
Medicine, King Abdulaziz University, Jeddah, Saudi
Arabia

Taha Masri

Disaster Medicine Section, Department of Emergency
Medicine, King Abdulaziz University, Jeddah, Saudi
Arabia

Mohammed Alabdrab Alnabi

Director of Postgraduate Training Program in Critical
Care Medicine in the Eastern Health Cluster, MOH, Saudi
Arabia

Ziad Kh Al-Enizi

College of Law, Al Ain University, Abu Dhabi, UAE

