

## GLOBAL MEDICAL PHYSICS: A GUIDE FOR INTERNATIONAL COLLABORATION

### Review by

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#### I. BOOK DETAILS

##### Global Medical Physics: A Guide for International Collaboration

**Editor:** Jacob Van Dyk

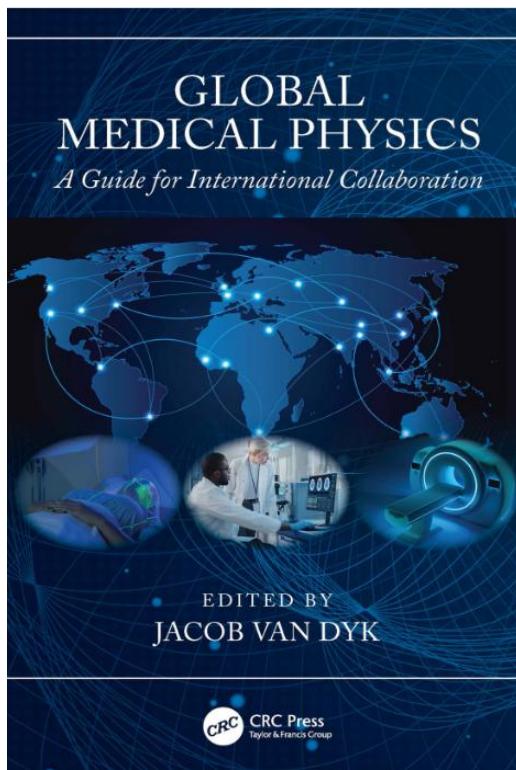
**Authors/Contributors:** Jacob Van Dyk, Francis Hasford, Stephanie A. S., Dario Sanz, Martin Ebert, Mauro Namias, & Robert Jeraj, Laurence Court & William Shaw, Jennifer Dent, Cathyryne Manner, & Katy Graef.

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#### II. REVIEW

##### Introduction

‘Global Medical Physics: A Guide for International Collaboration’ is a remarkable and timely book that captures the essence of what it means to advance healthcare through science, partnership, and shared responsibility. Edited by Professor Jacob Van Dyk and a diverse team of international experts, this volume offers a comprehensive look into the practice of medical physics within the global health framework.

The book is much more than a technical guide; it is a call to action. Through clear, research-based writing, it explores how medical physicists can work together across geographic, cultural, and economic boundaries to improve access to quality healthcare. It discusses the current global disparities in the medical physics workforce, education, technology, and treatment, while providing realistic strategies for overcoming these challenges through meaningful collaboration. The result is a text that is as informative as it is inspiring, offering readers both theoretical understanding and practical direction.

##### Overall Structure and Organization

The book is organized in a clear and logical manner that allows readers to follow the flow of ideas seamlessly. It opens with foundational definitions and concepts, then moves toward more specialized topics such as education, training, ethics, and sustainability. Later chapters explore technology, artificial intelligence, industry partnerships, and the growing importance of equity, diversity, and inclusion in the profession.

Each chapter ends with a summary and a set of thoughtful recommendations, making the book not just informative but also actionable. The content is well-balanced between research and real-world examples, including successful case studies of international projects led by organizations such as the International

Atomic Energy Agency (IAEA), the American Association of Physicists in Medicine (AAPM), and CERN. This balanced design ensures that the book speaks to both academics and practitioners alike.

### Major Insights

One of the greatest strengths of this book lies in its ability to take complex global issues and present them in a clear, accessible way. The authors do not assume prior knowledge of international collaboration frameworks, making the work appealing even to early-career physicists or healthcare professionals venturing into global health for the first time.

The first section establishes a strong foundation by defining what global medical physics means and by providing context for why it matters. The authors introduce essential terms such as “medical physicist,” “collaboration,” and “global north and south,” then use these definitions to explore the realities of working in diverse healthcare systems. The tone of this opening section is inclusive and educational, setting the stage for the multidisciplinary approach that follows.

Chapters dealing with global medical physics issues are particularly enlightening. They shed light on serious disparities in the availability of trained medical physicists and advanced radiotherapy technologies around the world. The inclusion of detailed workforce data and analysis helps readers understand the urgency of addressing these global gaps. The discussion extends beyond identifying problems to proposing realistic pathways for improvement, including the need for harmonized education standards, stronger certification systems, and improved policy support.

An important section of the book focuses on models of collaboration that can help bridge these global divides. The writers offer a framework of strategic steps for establishing partnerships between high- and low-income countries. These include needs assessments, liaison networks, and shared educational and research goals. The authors explore how coordination among international agencies can prevent duplication of efforts and ensure sustainable outcomes. The discussion on turning short-term pilot projects into long-term programs is both practical and insightful, helping readers understand what successful global partnerships truly require.

Equally impressive is the book’s deep emphasis on education and training. The authors convincingly argue that education is the cornerstone of sustainable healthcare development. Several chapters highlight the importance of structured residency programs, competency-based curricula, and continuing

professional development (CPD). The section on mentorship (both face-to-face and virtual) provides a powerful argument for global peer-to-peer learning. It reveals how creative approaches, such as virtual mentoring and distance education, can effectively close the training gap in under-resourced countries.

The book also dedicates considerable attention to collaboration with industry and sustainability. It provides valuable insights into how partnerships with industry can help expand healthcare access, especially in low- and middle-income countries. Case studies such as BVGH’s HypoAfrica project illustrate how technology, research, and funding from public-private partnerships can directly improve cancer treatment outcomes. By discussing financial stability, equipment maintenance, and long-term planning, the book highlights the importance of sustainability as a guiding principle in all global medical physics initiatives.

Ethics and advocacy form another essential part of the discussion. The authors emphasize the need for ethical integrity and mutual respect in every collaborative activity. They examine sensitive issues such as colonialism, neocolonialism, cultural differences, and professional safety, all of which remain highly relevant in a global context. The review of ethical frameworks such as beneficence, justice, prudence, and dignity offers readers practical tools for navigating the complex moral landscape of international healthcare work. Moreover, the chapters on advocacy and diplomacy remind medical physicists that effective communication with policymakers, donors, and regulatory bodies is just as important as technical expertise.

Technological innovation also receives thoughtful attention. The book’s exploration of artificial intelligence (AI) is forward-looking and well-grounded in current trends. It discusses how AI and information and communication technologies (ICTs) can revolutionize education, research, and clinical practice globally. At the same time, it cautions readers about challenges related to data privacy, equity, and cultural variation, emphasizing that technology should empower, not replace, human expertise.

In the later chapters, the focus on equity, diversity, and inclusion (EDI) brings a human dimension to the scientific narrative. The authors provide a historical overview of gender and racial imbalances in medical physics and demonstrate how targeted initiatives can create more inclusive professional environments. Programs such as the IAEA’s Marie Skłodowska-Curie Fellowship and Rayos Contra Cancer are

presented as real-world examples of positive change. By connecting inclusivity to innovation and patient outcomes, the book makes a compelling case that diversity is essential to scientific progress.

### **Writing Style and Presentation**

Writing throughout the book is professional yet easy to follow, even for readers outside the medical physics community. The language is clear, concise, and free from unnecessary jargon. Each chapter reads smoothly, maintaining a balance between educational depth and narrative flow. The inclusion of case studies, figures, and well-curated references enhances comprehension and encourages readers to explore individual topics further.

What also stands out is the human-centered tone. The text constantly reminds readers that the ultimate goal of global collaboration is not simply to exchange knowledge or technology, but to save lives and empower communities. This sense of purpose makes the book both emotionally engaging and intellectually rewarding.

### **Strengths and Contributions**

The book's greatest strength lies in its comprehensiveness. It successfully integrates scientific, educational, ethical, cultural, and organizational perspectives into one cohesive volume. It provides clear guidance for medical physicists wishing to engage in international work while offering inspiration to those already involved in global initiatives.

The structure of each chapter, with practical recommendations and well-researched references, makes it a useful manual for teaching, planning, and policy development. The combination of theoretical analysis and evidence-based examples gives the book

both credibility and utility. Furthermore, by framing medical physics as part of a larger global health movement, the editors have positioned the field as an essential force for equitable healthcare transformation worldwide.

### **Conclusion**

'Global Medical Physics: A Guide for International Collaboration' is a landmark publication that sets a high standard for scholarship, leadership, and humanity in the field of medical physics. It succeeds not only as an academic reference but also as a practical guide and a moral compass for engaging in global scientific work.

The book provides a vision of a world where healthcare inequality can be reduced through collaboration, education, and innovation. It encourages medical physicists to step beyond their laboratories and clinics and engage in partnerships that have the power to transform lives.

In simple terms, this is a book that educates, inspires, and empowers. It deserves a place on the bookshelf of every medical physicist, healthcare professional, policymaker, and educator who seeks to contribute to a fairer, more inclusive global health system.

The book is a must-read for all professionals involved in global medical physics, education, and healthcare planning.

### **III. REFERENCE**

van Dyk, J. (2025). *Global Medical Physics: A Guide for International Collaboration*. *Global Medical Physics: A Guide for International Collaboration*, CRC Press (Taylor & Francis Group), 1–226. <https://doi.org/10.1201/9781003527749>