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978-1-009-47015-5 — The Anaesthesia Science Viva Book
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The Anaesthesia Science Viva Book

The Anaesthesia Science Viva Book

FOURTH EDITION

Clinical Science as Applied to Anaesthesia, Intensive
Therapy and Chronic Pain
A Guide to the Oral Questions

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CAMBRIDGE
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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

103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

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

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www.cambridge.org

Information on this title: www.cambridge.org/9781009470155

DOI: 10.1017/9781009470148

First edition © Greenwich Medical Media 2004

Second edition © Simon Bricker 2009

Third edition © Simon Bricker 2017

Fourth edition © Simon Bricker 2025

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When citing this work, please include a reference to the DOI 10.1017/9781009470148

First published 2004

Second edition 2009

Third edition 2017

Fourth edition 2025

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

Library of Congress Cataloging-in-Publication Data

Names: Bricker, Simon, author

Title: The anaesthesia science viva book : clinical science as applied to anaesthesia, intensive therapy and chronic pain : a guide to the oral questions / Simon Bricker ; medical illustrations by Celyn Bricker.

Description: Fourth edition. | Cambridge, United Kingdom ; New York, NY : Cambridge University Press, 2025. | Includes bibliographical references and index.

Identifiers: LCCN 2024054831 (print) | LCCN 2024054832 (ebook) | ISBN 9781009470155 (paperback) | ISBN 9781009470148 (epub)

Subjects: MESH: Anesthesia | Clinical Medicine | Study Guide

Classification: LCC RD82.3 (print) | LCC RD82.3 (ebook) | NLM WO 18.2 | DDC 617.9/6076–dc23/eng/20250118

LC record available at <https://lcn.loc.gov/2024054831>

LC ebook record available at <https://lcn.loc.gov/2024054832>

ISBN 978-1-009-47015-5 Paperback

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To the memory of Dr Lawrence Wilson (1972–2024)
Our colleague, friend and teacher – dearly missed

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Preface to the Fourth Edition

The title of this book has long been an anachronism. It was originally a complementary volume to the *Clinical Anaesthesia Viva Book* (first edition Cambridge University Press, 2001; second edition Cambridge University Press, 2009), and so the name has remained even though the word ‘viva’ has long since disappeared from the examination lexicon. In the digital age, the printed textbook itself risks becoming an anachronism, although some people still find it easier to navigate paper pages rather than scrolling down screens. If you are reading a physical copy of this book, then it may be that you are one such. Given the accelerating march of technology, I wondered if this fourth edition could be written with the help of artificial intelligence (AI). That was until I entered my own name into ChatGPT and read: ‘I am very sorry about the confusion. Dr Simon Bricker is a character in the novel *Bel Canto* by Ann Patchett. He is a Japanese-speaking British diplomat who plays a significant role in the story’s unfolding dynamics.’ You will see how AI is eager to please – the technical term is ‘sycophancy’ – even while getting things substantially wrong, and so the format of the book and its content has remained conventional. It may be that the structured oral itself will shortly become an anachronism given the pressure exerted by the General Medical Council to make all forms of assessment by the Royal Colleges as objective and reliable as possible. Should that be the case, I should hope as before that the information in this book, albeit exam-directed and simplified, would still be of some benefit for your practice of clinical anaesthesia.

Preface to the Third Edition

The syllabus for the Final FRCA exam is dauntingly wide, and a book such as this could never claim to be comprehensive. There are nonetheless a number of subjects which do reappear in the oral part of the exam, and it is some of these core topics that this third edition aims to identify. In previous editions I did make some attempt to second-guess the examiners by suggesting in which direction the questioning might lead. However, the increasingly structured nature of the exam makes this approach less suitable, and so the topics have now been divided into 'core' and 'supplementary' information, including clinical considerations where appropriate. This may not necessarily be the order in which the subject is introduced during the oral, but there should be sufficient information in both these sections to ensure that you pass. The pace of change in medical knowledge is such that it is inevitable that some of the material in this book will date. However, there is usually a lag time before advances in information or changes in practice become incorporated into the exam itself, and so in some instances it may not matter, particularly if you are able to revert to first principles as you give your answers. Although it now extends to more than 500 pages, I would emphasize that this is not an anaesthetic textbook as such, and although some of the topics are dealt with in some detail, there is considerable simplification of what can be very complex areas. There is now much more known, for example, about cell signalling and gene expression than realistically could be encompassed within the short time frame of the viva. So the primary aim of the book remains that of helping you towards success in the exam; yet I would also hope finally that at least some of the information it contains will be of value in your clinical practice once you have left the Final FRCA far behind.

Preface to the Second Edition

The emphasis, if not the content, of the Final FRCA science viva is changing. In response to muted criticism that an otherwise good exam has been diminished by a basic science viva that at times seemed to be little more than ‘Primary Lite’, the College has introduced greater clinical focus. This has meant that many of the answers that appeared in the first edition needed some reorientation. Yet, as before, this book’s prime purpose remains to give you a wide range of potential questions presented in a way that is relevant to the exam that you are facing, and organized so that the information is manageable.

As before, the introduction still aims to give you some insight into how the clinical science viva works, together with some revised general guidance as to how to improve your chances of success. The examination questions continue to be divided broadly into the four subject areas of anatomy, physiology, pharmacology and physics, although the increased clinical emphasis can mean that the distinction between the subject areas can be somewhat blurred. The anatomy question on the internal jugular vein, for example, may well include some discussion of the physiology of central venous pressure. Equally, some questions on pharmacology may encompass aspects of physiology with which there is obvious potential for overlap. This means that you may not always find all the necessary information within one single answer, but should find most of it covered in other sections. The basic format of the book remains unchanged, although the content has been updated where appropriate. A new feature of this edition is the inclusion of some illustrations and diagrams which should make the material more accessible.

My family, as always, offered no objection to the project; and, as always, my thanks and love to them for their support. The anatomical drawings were produced by a student who is studying Fine Art at Edinburgh University and who happens to be my eldest son, Celyn. To him are due especial thanks.

Preface to the First Edition

The Final FRCA examination has a daunting syllabus which is tested by a multiple-choice paper, by written short-answer questions, by one oral examination in clinical anaesthesia and finally by another in applied basic clinical science. This book is intended to give you some insight into how the clinical science viva works, along with some general guidance as to how to improve your chances of passing. More importantly it aims to provide you with a wide range of potential questions that contain, nonetheless, a manageable amount of information.

The introduction explains the format of the viva, outlines how the questions are constructed, conducted and marked, and offers some advice about technique. The questions that then follow, which are typical of those that have appeared, are divided broadly into the four areas that the exam is designed to cover, namely applied anatomy, physiology, pharmacology and clinical measurement. One section, titled 'Miscellaneous Science and Medicine', includes a number of subjects which do not fall readily into any of the other categories.

You may notice that there is some overlap in content with the companion volume, *Short Answer Questions in Anaesthesia* (Cambridge University Press, 2002). Where this has happened, I have reworked the answers both to give more detail and to focus the topic more specifically towards the oral part of the exam, but a degree of duplication in one or two of the questions is inevitable.

The answers have been constructed to provide you with enough information to pass the viva, but as I have had to be selective in the detail that has been included, they do not claim to be complete accounts of the subjects. This means that in some areas you may notice various omissions, but none I hope so egregious that your chances of success will be ruined. Each of the questions is prefaced by a short commentary on the relevance (or otherwise) of the subject that is being asked. There follows the body of the answer to the likely areas of questioning. This is presented mainly in the form of bulleted but detailed points which include supporting explanation. These are written in text rather than as lists, because I felt that this format would make the book easier to read. If some of the questions seem long, then it is either because the background information is complex or because they contain enough material for more than one viva topic.

Even in a structured examination, a viva may take an unforeseen course, and so the answers also include some possible directions which the questioning might follow. Although each one is intended to provide background details more than sufficient to allow you to pass, in many cases they are simplified, and it is always possible that some examiners may ask at least part of the question in more depth than can be covered in a book of this size. There are 150 specimen questions in this book, and on the day of the exam you will be asked only 4. Odds of about 40 to 1 or less do not provide a huge incentive for study, but I should hope that at least some of the material would be

Preface to the First Edition

relevant to your anaesthetic practice. The material that is irrelevant, and there is certainly some, may at least prove of some future use as in due course you guide less experienced colleagues through the FRCA.

I promised my family that I would never again succumb to the temptation of writing a book. I lied. To my wife and three boys, therefore, my love and thanks for their unfailing patience and support.