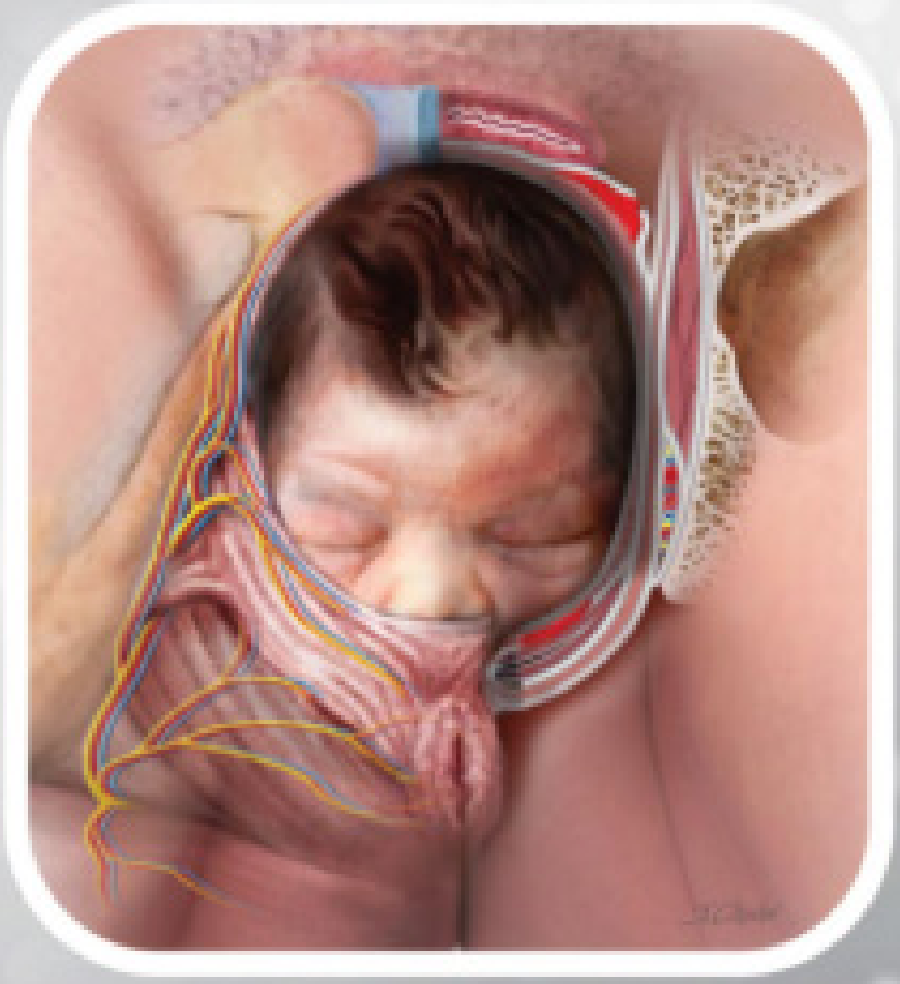
OGSM

Handbook of
OBSTETRIC EMERGENCIES



Authors:
Gunasegaran Rajan
Muniswaran Ganeshan
Tang Boon Nee
Thanremalai Jeganathan

Illustrated by Joe Chiwan

ICOE

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Authors:
Gunasegaran Rajan
Muniswaran Ganeshan
Tang Boon Nee
Thanemalai Jegganathan

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FOREWORD

It is a great pleasure for me to write a foreword for the 'Handbook of Obstetric Emergencies' which is the core curriculum of the 'Intensive Course in Obstetric Emergencies training program' conducted by the Obstetrical and Gynaecological Society of Malaysia (OGSM). I congratulate the authors for synthesising this book based on their experience from September 2014 when they piloted the first course and after training 790 health personnel from different countries in the region. The authors have considered the feed-back from the participants to make it easier to understand. The contents of this book are tailored to train the healthcare worker to tackle many antenatal, intrapartum and postpartum emergencies. Years of clinical experience, research and teaching track record of the four principal authors have been supplemented by evidence based guidelines in producing the different chapters. Each chapter has a distinct style starting with an introduction followed by setting goals, definitions, do's and dont's.

There are 26 chapters spanning 300 pages. The book starts with a chapter dedicated to maternal mortality – the very motive behind the book i.e. to avoid such events. The antecedents of deaths are maternal collapse and shock in pregnancy and they are tackled in different chapters. This is followed by medical emergencies that can cause morbidity or mortality to the mother or the fetus/ new-born. The complications of late mid trimester surgical terminations, pre-eclampsia, eclampsia, venous thrombosis and sepsis are covered well. Detailed description of intrapartum complications of cord prolapse, shoulder dystocia, uterine rupture, retained placenta, uterine inversion, genital tract trauma, complicated caesarean section and resuscitative hysterotomy and adherent placenta and postpartum hysterectomy are well described.

The common obstetric interventions we face on daily basis such as induction of labour of high risk pregnancies, vaginal birth after previous caesarean section, intrapartum surveillance, vaginal breech delivery, operative vaginal delivery and vaginal delivery of twins are explained in detail and the chapters are well-illustrated.

The best outcome in maternity care is not only based on knowledge and technical skills. There are other ingredients such as non-technical skills of team management, communication, mother transfer, organised training in obstetric emergencies on a regular basis and maintaining quality and safety in a busy unit. These important topics are well 'taught' and is a unique feature in this book that is not found in other similar text books or training manuals.

The illustrations or figures and photographs in each chapter have been carefully selected and the text well laid out to make it easy to read. One could virtually keep the book by the side and learn how to do a procedure without much help i.e. a simplified book for self-learning. This book is recommended reading for all healthcare providers who are involved in maternity care and is a great course manual for those who wish to train personnel in obstetric emergencies.

Sir Sabaratnam Arulkumaran
PhD DSc FRCS FRCOG
Professor Emeritus of Obstetrics & Gynaecology
Past President RCOG (2007-2010); BMA (2013-2014); FIGO (2012-2015)

PREFACE

This handbook of Obstetric Emergencies is aimed at bridging the gap between detailed knowledge and practical application in clinical practice. It started as an effort by the senior team of ICOE (Intensive Course in Obstetric Emergencies) trainers to prepare brief handouts to the participants during the ICOE. However, the project evolved into a full handbook when the team realised that there was still a need for a user-friendly, illustrated and handheld handbook for obstetric emergencies. Thereafter, additional chapters were added, beyond the lectures covered in the ICOE.

One could argue as to the relevance of a written book in this day and age when information is so readily available via electronic means. To this, we as the authors felt very strongly that there is still the magic of holding a book, turning its pages, highlighting important information and revisiting the contents.

While we contemplated inviting several local experts to contribute chapters to this handbook, we decided to keep the contributors small and to utilise the existing ICOE trainers. This decision was made so as to ensure that this handbook's flow and structure were kept true to the ICOE themed ethos.

Our goal for this handbook is for it to be immensely useful to all healthcare professionals who practice obstetrics. The style has been kept simple and this should appeal to busy professionals who are frequently on the go. We also make no apology that it is not a textbook, as there are several excellent textbooks and resources already available on obstetric emergencies. Serving as a simple, structured and yet powerful method of providing information, this handbook has been created to empower the practitioner to provide optimal care during emergency obstetric situations.

The authors have taken great care to ensure that the information in this handbook is current and relevant to obstetric emergencies and sourced from leading resources. We have incorporated information from internationally recognised organisations such as the World Health Organisation (WHO) and International Federation of Gynecology and Obstetrics (FIGO) and tailored them to regional practices.

The topics cover the spectrum of obstetric emergencies including complicated caesarean sections, as we feel that today up to a third of deliveries are caesareans. We have also made it more complete by adding chapters and sections on quality and safety in obstetric emergencies, obstetric drills, team management and communication. The photographs, illustrations and QR codes added into the handbook breaks the monotony of the text and also serves to have an impact in acquiring the needed skills. A list for further reading at the end of each chapter has been provided for those who are interested in gaining more in-depth knowledge. To add more value, this handbook also contains checklists, goals, do's, don'ts, take home messages and management algorithms.

As we are aware that there is an increasing use of technology in medical education, an e-version will also be available as a complement to this handbook. With a more interactive, user-friendly format and the use of videos, the e-version will further enhance the readers' learning experience. It also allows for regular updating of information as the field of obstetrics is rapidly evolving.

We believe that the reader will find this handbook a valuable resource that complements existing materials dealing with obstetric emergencies. Our hope is that you are as inspired and enthusiastic as us, to impart these knowledge and skills to your colleagues and work together as a team to move forward and improve women's health, particularly in obstetric emergencies.

THE STORY OF ICOE

The Obstetrical and Gynaecological Society of Malaysia (OGSM) has been running obstetric emergency courses in Malaysia since 2009. Its very first course was the Life Saving Skills: A Course in Obstetric Emergencies and Neonatal Resuscitation, also known as the LSSC. It was developed by the Liverpool School of Tropical Medicine and was supported by the Royal College of Obstetricians and Gynaecologists (RCOG) and the World Health Organization (WHO). The OGSM conducted this course across the country and had a successful run until 2013. During its 5-year run, a total of 753 participants were successfully trained. This course was adopted and modified by the Ministry of Health Malaysia (MOH) that now conducts it across Malaysia on a regular basis training hundreds of doctors and midwives.

The LSSC trainers and its support staff had gained valuable insights into the various mechanisms and challenges involved in conducting a sustainable and professionally run obstetric emergencies course independently. Armed with these invaluable experiences and knowledge, it became clear that the OGSM was now capable of conducting consistent, comprehensive and quality training for doctors and midwives. The goal was to create a course that could be customised in its curriculum to local and regional needs whilst incorporating various cadre of medical professionals. Thereafter **The Intensive Course in Obstetric Emergencies (ICOE)** was conceptualised and created.

ICOE was created with the aim to enhance and maintain skills in handling obstetric emergencies, with a co-ordinated, systematic and multi-professional approach while adhering to guidelines. In its own way, the aspirations was for ICOE to contribute to the reduction of maternal and perinatal morbidity and mortality from obstetric emergencies in Malaysia and the region.

The contents of the ICOE are targeted towards practising obstetricians and midwives. It is a simulation based, hands on course using models of various fidelities together with lectures that incorporates recent updates from various internationally recognised organisations. This adult teaching methodology is enhanced by practising skills using various equipment, participating in workshops and demonstrations. It is structured to emphasise interactive feedback so as to achieve specific objectives.

Piloted in September 2014, ICOE has been successfully conducted in Malaysia and several countries in the Asia Pacific region. It has gained endorsement from the Asia Oceania Federation of Obstetrics and Gynaecology (AOFOG) and continues to receive positive feedback from external quality assessors. The adaptability of the ICOE modules allowed us to conduct abridged versions in Coimbatore and Chennai, India where a total of 130 participants were trained. We have also conducted 'theme based' modules focussing on specific topics such as cardiotocography (CTG), postpartum haemorrhage (PPH) and shoulder dystocia in Bangladesh, Myanmar and Malaysia.

The growing demands of mothers' expectations and the medicolegal climate pose challenges to the practitioners. Inevitably one has to keep abreast with current trends and updates in both knowledge and skills, especially as institutions are increasingly being required to reappraise practitioners. In view of these, we believe that the knowledge and skills transferred to participants during ICOE present a suitable platform for professional development and to meet future challenges.

Evaluation of the course has shown significant impact in improving skills across various categories of staff. To ensure that the ICOE continuously maintains its high standards, annual evaluation of the course by external assessors is in place to assess its quality and long-term impact in obstetrics.

Up to December 2017, a total of 790 medical professionals have been trained (see Appendix 1). With the overwhelming and encouraging response from ICOE participants locally and regionally, we continuously endeavour to push the boundaries in improving the learning experience provided by ICOE to its participants.

The journey of ICOE however, is not without its challenges. Besides funding, these include retention and retraining of trainers, lack of secretarial and research support. These challenges push us to strive harder for the continuing success of ICOE.

The ICOE story is just beginning. The increasing request from the region coupled with the passion of the trainers, makes it enticing to want to grow further. However we still need more data analysis to reaffirm our belief that the ICOE is making a difference to childbirth. We may not make it safer every time everywhere but if the ICOE can make a difference sometime somewhere, then it makes the journey all worthwhile.

The Journey of ICOE

ABBREVIATIONS AND ACRONYMS

ACOG	American College of Obstetricians and Gynecologists
AED	Automated external defibrillator
Anti-D	Anti-D immunoglobulin
APO	Acute pulmonary oedema
aPPT	Activated partial thromboplastin time
ARDS	Acute respiratory distress syndrome
ART	Assisted Reproductive Technology
AOFOG	Asia & Oceania Federation of Obstetrics and Gynaecology
BMA	British Medical Association
BMI	Body mass index
BP	Blood pressure
bpm	Beats per minute
BUSE	Blood urea, serum electrolytes
CCT	Controlled cord traction
CEMD	Confidential Enquiry into Maternal Deaths
CNS	Central nervous system
CO	Cardiac output
CPD	Cephalopelvic disproportion
CPR	Cardiopulmonary resuscitation
CTG	Cardiotocograph
CTPA	Computed tomography pulmonary angiogram
CVP	Central venous pressure
CVS	Cardiovascular system
DBP	Diastolic blood pressure
DDI	Decision-delivery interval
DIC	Disseminated intravascular coagulopathy
DVT	Deep vein thrombosis
E. coli	Escherichia coli
ECG	Electrocardiograph
ECMO	Extracorporeal membrane oxygenation
ECV	External cephalic version
e.g.	Example
EOWS	Early Obstetric Warning System
ERCS	Elective repeat caesarean section
ESBL	Extended-spectrum beta-lactamases
FBS	Fetal blood sampling
FFP	Fresh frozen plasma
FIGO	The International Federation of Gynecology and Obstetrics
GAS	Group A streptococcus
GBS	Group B streptococcus
GCS	Glasgow coma scale
GLOWM	The Global Library of Women's Medicine
GSH	Grasp, save and hold
g	Gram
GTN	Glyceryl trinitrate
HDU	High dependency unit
HELLP	Haemolysis, elevated liver syndrome enzymes, low platelet
HIE	Hypoxic-ischaemic encephalopathy
HIV	Human immunodeficiency virus
HPV	Human Papilloma Virus
ICD	International Classification of Diseases
ICU	Intensive care unit
i.e.	That is
IM	Intramuscular (injection)
INR	International Normalised Ratio
IO	Input-output
IOL	Induction of labour
ITP	Idiopathic thrombocytopenic purpura
IU	International Unit
IUD	Intrauterine death
IUGR	Intrauterine growth restriction
IV	Intravenous
IVF	In vitro fertilisation
LFT	Liver function test

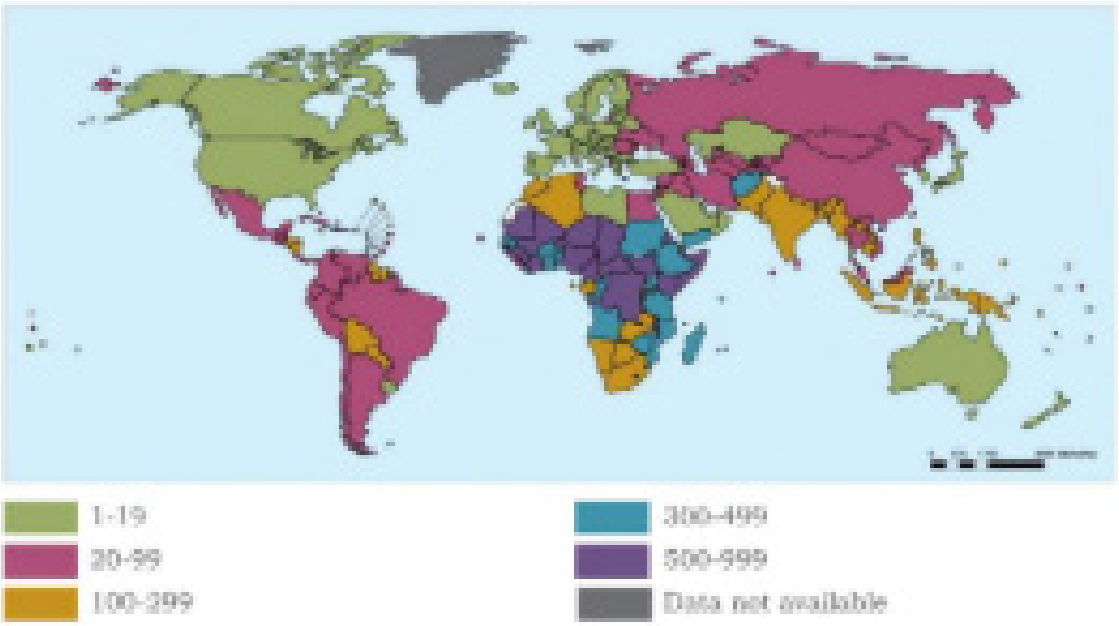
CHAPTER
1

MATERNAL MORTALITY

Introduction

1. In 2015, maternal deaths globally was an estimated 303,000, a significant reduction compared to the 532,000 maternal deaths in 1990.
2. The global maternal mortality ratio (MMR) fell by 44%, from 385 per 100,000 live births in 1990 to 216 per 100,000 live births in 2015.

Figure 1.1: Global maternal mortality ratio for 2015



Estimates by WHO, UNICEF, UNFPA, World Bank Group and United Nations Population Division

Goals

1. To understand the terms and definitions for maternal deaths.
2. To be aware of global trends.
3. To appreciate universal strategies in maternal mortality reduction.

Definitions

Table 1.1: Definitions of maternal deaths

Maternal death	Death of a woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by, the pregnancy or its management, but not from accidental or incidental causes
Direct death	Resulting from obstetric complications of pregnancy, labour and puerperium [includes suicide, puerperial psychosis and postpartum depression]
Indirect death	Resulting from previous existing disease or disease that developed during pregnancy, and not due to direct obstetric causes and aggravated by pregnancy
Fortuitous death (ICD) Coincidental (WHO)	Death from other causes that happen during pregnancy
Late maternal death	Death of a woman from direct or indirect obstetric causes, more than 42 days but less than 1 year after termination of pregnancy

Table 1.2: Other definitions

Maternal mortality ratio	Number of maternal deaths per 100,000 live births
Maternal mortality rate	The ratio of maternal deaths to the women-years of exposure for women aged 15 to 49 years
Proportion of maternal deaths	Proportion of maternal deaths among deaths of women of reproductive age
Proportion of pregnancy-related deaths	Proportion of pregnancy-related deaths among deaths of women of reproductive age
Lifetime risk	The probability of a 15-year-old girl eventually dying from a maternal cause, assuming she is subjected throughout her lifetime to the risks of maternal death as estimated for that country-year
Annual (continuous) rate of reduction	Measure of relative decline per year, defined as: $\log[MMR_{t2}/MMR_{t1}]/(t1-t2)$ where t1 and t2 refer to different years with t1<t2, and MMR is the maternal mortality ratio