

MATERNAL-FETAL EVIDENCE BASED GUIDELINES THIRD EDITION



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MATERNAL-FETAL EVIDENCE BASED GUIDELINES

SERIES IN MATERNAL-FETAL MEDICINE

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*To Paola, Andrea, Pietro, Mamma, and Papá,
For giving me the serenity, love, and strength at home now, then,
and in the future to fulfill my dreams and spend my talents as best as possible.*

To all those who loved the first and second editions

*To my mentors and to my mentees who have been so passionate
and supportive about these books*

To the health of mothers and babies

And—as I often toast—to the next generation!

Introduction

Welcome to the third edition of our evidence-based books on obstetrics and maternal-fetal medicine! I am indebted for your support! I can't believe how much praise we have gotten for these companion volumes. Your words of encouragement have kept me and all the collaborators, past and present, going now for well over a decade (we are indebted to contributors to previous editions of this text for their work). It has been extremely worthwhile and fulfilling. You are making me happy! In return, I hope we are helping you and your patients toward ever better evidence-based care of pregnant women and their babies and, therefore, better outcomes. Indeed, maternal and perinatal morbidities and mortalities throughout the world are improving.

To me, pregnancy has always been the most fascinating and exciting area of interest as care involves not one, but at least two persons—the mother and the fetus—and leads to the miracle of a new life. I was a third-year medical student when, during a lecture, a resident said, “I went into obstetrics because this is the easiest medical field. Pregnancy is a physiologic process, and there isn't much to know. It is simple.” I knew from my “classical” background that “obstetrics” means to “stand by, stay near,” and that indeed pregnancy used to receive no medical support at all.

After more than 25 years of practicing obstetrics, I now know that although physiologic and, at times, simple, obstetrics and maternal-fetal medicine can be the most complex of the medical fields: Pregnancy is based on a different physiology than for nonpregnant women, can include any medical disease, require surgery, etc. It is not so simple. In fact, ignorance can kill—in this case, with the health of the woman and her baby both at risk. Too often, I have gone to a lecture, journal club, rounds, or other didactic event to hear presented only one or a few articles regarding the subject without the presenter reviewing the pertinent best review of the total literature and data. It is increasingly difficult to read and acquire knowledge of all that is published, even just in obstetrics, with about 3000 scientific manuscripts published monthly on this subject. Some residents or even authorities would state at times that “there is no evidence” on a topic. We indeed used to be the field with the worst use of randomized trials [1]. As the best way to find something is to look for it, my coauthors and I searched for the best evidence. On careful investigation, indeed there are data on almost everything we do in obstetrics, especially on our interventions. Indeed, our field is now the pioneer for numbers of meta-analyses and extension of work for evidence-based reviews [2]. Obstetricians are now blessed with lots of data and should make the best use of it.

The aims of this book are to summarize the best evidence available in the obstetrics and maternal-fetal medicine literature and make the results of randomized controlled trials (RCTs) and meta-analyses of RCTs easily accessible to guide clinical care. The intent is to bridge the gap between knowledge (the evidence) and its easy application. To reach these goals, we reviewed all trials on effectiveness of interventions in obstetrics. Millions of pregnant women have participated in thousands of properly conducted RCTs. The efforts and sacrifice of mothers and their fetuses for science should be recognized at least by the physicians' awareness and understanding of these studies. Some of the trials have been summarized in more than 600 *Cochrane* reviews with hundreds of other meta-analyses also published on obstetrical topics (Table 1). All of the *Cochrane* reviews, as well as other meta-analyses and trials in obstetrics and maternal-fetal medicine, were reviewed and referenced. The material presented in single trials or meta-analyses is too detailed to be readily translated to advice for the busy clinician who needs to make dozens of clinical decisions a day. Even the *Cochrane Library*, the undisputed leader for evidence-based medicine efforts, has been criticized for its lack of flexibility and relevance in failing to be more easily understandable and clinically readily usable [3]. It is the gap between research and clinicians that needed to be filled, making sure that proven interventions are clearly highlighted and are included in today's care. Just as all pilots fly planes under similar rules to maximize safety, all obstetricians should manage all aspects of pregnancy with similar, evidenced-based rules. Indeed, only interventions that have been proven to provide benefit should be used routinely. On the other hand, *primum non nocere*: interventions that have clearly been shown to be not helpful or indeed harmful to mother and/or baby should be avoided.

Table 1 Obstetrical Evidence

More than 600 current <i>Cochrane</i> reviews
Hundreds of other current meta-analyses
More than 1000 RCTs
Millions of pregnant women randomized

Another aim of this book is to make sure the pregnant woman and her unborn child are not marginalized by the medical community. In most circumstances, medical disorders of pregnant women can be treated as in nonpregnant adults. Moreover, there are several effective interventions for preventing or treating specific pregnancy disorders.

Evidence-based medicine is the concept of treating patients according to the best available evidence. Although George Bernard Shaw said, “I have my own opinion, do not confuse me with the facts,” this can be a deadly approach, especially in medicine, and compromise two or more lives at the same time in obstetrics and maternal-fetal medicine. What should be the basis for our interventions in medicine? Meta-analyses of RCTs provide a comprehensive summary of the best research data available. As such, they provide the best guidance for “effective” clinical care [4]. It is unscientific and unethical to practice medicine, teach, or conduct research without first knowing all that has already been proven [4]. In the absence of trials or meta-analyses, lower-level evidence is reviewed. This book aims at providing a current systematic review of all the best evidence so that current practice and education as well as future research can be based on the full story from the best-conducted research, not just the latest data or someone’s opinion (Table 2).

These evidence-based guidelines cannot be used as a “cookbook” or a document dictating the best care. The knowledge from the best evidence presented in the guidelines needs to be integrated with other knowledge gained from clinical judgment, individual patient circumstances, and patient preferences to lead to best medical practice. These are guidelines, not rules. Even the best scientific studies are not always perfectly related to any given individual, and clinical judgment must still be applied to allow the best “particularization” of the best knowledge for the individual, unique patient. Evidence-based medicine informs clinical judgment but does not substitute it. It is important to understand, however, that greater clinical experience by the physician actually correlates with inferior quality of care if not integrated with knowledge of the best evidence [5]. The appropriate treatment is given in only 50% of visits to general physicians [5]. At times, limitations in resources may also limit the applicability of the guidelines but should not limit the physician’s knowledge. Guidelines and clinical pathways based on evidence not only point to the right management, but also can decrease medicolegal risk [6]. We aimed for brevity and clarity. Suggested management of the healthy or sick mother and child is stated as straightforwardly as possible for everyone to easily understand and implement (Table 3). If you find the *Cochrane* reviews, scientific manuscripts, and other publications difficult to “translate” into care of your patients, this book is for you. We wanted to prevent information overload.

Table 2 Aims of This Book

Improve the health of women and their children
“Make it easy to do it right”
Implement the best clinical care based on science
(evidence), not opinion
Education
Develop lectures
Decrease disease, use of detrimental
interventions, and therefore costs
Reduce medicolegal risks

Table 3 This Book Is For

Obstetricians
Midwives
Family medicine and others (practicing obstetrics)
Residents
Nurses
Medical students
Maternal-fetal medicine attendings
Maternal-fetal medicine fellows
Other consultants on pregnancy
Lay persons who want to know “the evidence”
Politicians responsible for health care

On the other hand, “everything should be made as simple as possible, but not simpler” (A. Einstein). Key management points are highlighted at the beginning of each guideline and in bold in the text. The chapters are divided into two volumes, one on obstetrics and one on maternal-fetal medicine; cross-references to chapters in *Obstetric Evidence Based Guidelines* have been noted in the text where applicable. Please contact us (vincenzo.berghella@jefferson.edu) for any comments, criticisms, corrections, missing evidence, etc.

I have the most fun discovering the best ways to alleviate discomfort and disease. The search for the best evidence for these guidelines has been a wonderful, stimulating journey. Keeping up with evidence-based medicine is exciting. The most rewarding part, as a teacher, is the dissemination of knowledge. I hope, truly, that this effort will be helpful to you, too.

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How to “Read” This Book

The knowledge from RCTs and meta-analyses of RCTs is summarized and easily available for clinical implementation. Relative risks and 95% confidence intervals from studies are quoted sparingly. Instead, the straight recommendation for care is made if one intervention is superior to the other with the percentage improvement often quoted to assess degree of benefit. If there is insufficient evidence to compare to interventions or managements, this is clearly stated.

References: Cochrane reviews with 0 RCT are not referenced, and instead of referencing a meta-analysis with only one RCT, the actual RCT is usually referenced. RCTs that are already included in meta-analyses are not referenced for brevity and because they can be easily accessed by reviewing the meta-analysis. If new RCTs are not included in meta-analysis, they are obviously referenced. Each reference was reviewed and evaluated for quality according to a modified method as outlined by the U.S. Preventive Services Task Force (<http://www.ahrq.gov>):

- I Evidence obtained from at least one properly designed randomized controlled trial.
- II-1 Evidence obtained from well-designed controlled trials without randomization.
- II-2 Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.
- II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments could also be regarded as this type of evidence.
- III (Review) Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

These levels are quoted after each reference. For RCTs and meta-analyses, the number of subjects studied is stated, and, sometimes, more details are provided to aid the reader to understand the study better.

List of Abbreviations

AA	artery-to-artery	ARPV	airway pressure release ventilation
AAN	American Academy of Neurology	ART	antiretroviral therapy
AAP	American Academy of Pediatrics	ART	assisted reproductive technologies
AASLD	American Association for the Study of Liver Diseases	ASA	aspirin
Ab	antibody	ASD	atrial septal defect
AC	abdominal circumference	ASD	autism spectrum disorder
ACA	anticardiolipin antibody	AST	aspartate aminotransferase
ACCM	American College of Critical Care Medicine	ATIII	antithrombin III
ACE	angiotensin-converting enzyme	ATLS	Advanced Trauma Life Support
ACOG	American College of Obstetricians and Gynecologists	ATS	American Thoracic Society
ACR	acute cellular rejection	AV	artery-to-vein
ACR	American College of Rheumatology	AVD	assisted vaginal delivery
ACS	acute chest syndrome	AZT	zidovudine
ADHD	attention deficit hyperactivity disorder	BAD	bipolar disorder
ADP	atopic dermatitis of pregnancy	BCG	bacille Calmette-Guerin
ADR	autonomic dysreflexia	BHI	biphasic human insulin
AED	antiepileptic drug	BIAsp	biphasic insulin aspart
AEDF	absent end-diastolic flow	bid	"bis in die," i.e., twice per day
AEP	atopic eruption of pregnancy	BMI	body mass index
AF	amniotic fluid	BP	blood pressure
AFE	amniotic fluid embolism	BPD	biparietal diameter
AFI	amniotic fluid index	BPD	bronchopulmonary dysplasia
AFP	alpha-fetoprotein	bpm	beats per minute
AFV	amniotic fluid volume	BPP	biophysical profile
Ag	antigen	BPS	biophysical profile score
AGA	appropriate for gestational age	BUN	blood urea nitrogen
AHA	American Heart Association	CAP	community-acquired pneumonia
aHR	adjusted hazard ratio	CBC	complete blood count
AIDS	acquired immune deficiency syndrome	CCAM	congenital cystic adenomatoid malformation
AII	angiotensin type II	CCTG	computerized cardiotocography
AIT	alloimmune thrombocytopenia	CD	cesarean delivery
ALI	acute lung injury	CD	Crohn's disease
ALT	alanine aminotransferase	CDC	Centers for Disease Control
ANA	antinuclear antibodies	CDH	congenital diaphragmatic hernia
APA	American Psychiatric Association	CF	cystic fibrosis
APS	antiphospholipid syndrome	CFC	chlorofluorocarbon
aPT	activated prothrombin time	CFU	colony-forming unit
aPTT	activated partial thromboplastin time	cGH	comparative genomic hybridization
ARDS	adult respiratory distress syndrome	CGRP	calcitonin gene-related peptide
AROM	artificial rupture of membranes	CHB	congenital heart block
		CHD	congenital heart defect
		CHF	congestive heart failure
		CHIPS	Control of Hypertension in Pregnancy Study
		CHTN	chronic hypertension
		CL	cervical length

CLIA	Clinical Laboratory Improvement Amendments	ECT	electroconvulsive therapy
		ECV	external cephalic version
CMV	cytomegalovirus	ED	emergency department
CNS	central nervous system	EDC	estimated date of confinement
CPAM	congenital pulmonary airway malformation	EDD	estimated date of delivery (synonym of EDC)
CPAP	continuous positive airway pressure	EDF	end-diastolic flow
CPR	cardiopulmonary resuscitation	EFW	estimated fetal weight
		EIA	enzyme immunoassay
CPR	cerebroplacental ratio	EKG	electrocardiogram
CPS	capsular polysaccharide	ELISA	enzyme-linked immunosorbent assay
CPS	complex partial seizure	EM	electron microscopy
CRF	chronic renal failure	EM	expectant management
CRI	chronic renal insufficiency	EN	enteral nutrition
CRL	crown-rump length	EPCOT	European Prospective Cohort on Thrombophilia
CS	corticosteroid		Edinburgh Postnatal Depression Scale
CSD	cortical spreading depression	EPDS	
CSE	combined spinal epidural	EPS	extrapyramidal symptom
CSF	cerebrospinal fluid	EPT	expedited partner therapy
CSII	continuous subcutaneous insulin infusion	ERCP	endoscopic retrograde cholangiopancreatography
CST	contraction stress test	ESLD	end-stage liver disease
CT	computerized tomography	ESRD	end-stage renal disease
CT	connective tissue	FAST	focused abdominal sonogram for trauma
CTG	cardiotocography		fetal blood sampling
CTPA	computed tomography pulmonary angiography	FBS	fetal distress
		FD	
CTZ	chemo-receptor trigger zone	FDA	Food and Drug Administration
CVS	chorionic villus sampling		fixed-dose combination
CVS	congenital varicella syndrome	FDC	
		FEV1	forced expiratory volume in one second
D&E	dilation and evacuation		
DAA	direct-acting antiviral agent	FFN	fetal fibronectin
		FGR	fetal growth restriction
DBP	diastolic blood pressure	FHM	familial hemiplegic migraine
DC/DA	dichorionic/diamniotic		
DES	diethylstilbestrol	FHR	fetal heart rate
DHHS	Department of Health and Human Services	FHT	fetal heart tracing
		FISH	fluorescent in situ hybridization
DIC	disseminated intravascular coagulation	FKCG	fetal kinetocardiogram/tissue Doppler echocardiography
DIF	direct immunofluorescence		
DM	diabetes mellitus	FLM	fetal lung maturity
DMPA	depot medroxyprogesterone acetate	FMAIT	fetal maternal alloimmune thrombocytopenia
		FNAIT	fetal and neonatal alloimmune thrombocytopenia
DNA	deoxyribonucleic acid		
DNS	dysplastic nevus syndrome	FOB	father of baby
DPI	dry powder inhaler	FPG	fasting plasma glucose
DPL	diagnostic peritoneal lavage	FPR	false positive rate
		FSBS	fetal scalp blood sampling
DRVVT	dilute Russell's viper venom time	FSE	fetal scalp electrode
DV	ductus venosus	FSI	foam stability index
DVP	deepest vertical pocket	FTS	first-trimester screening
DVT	deep vein thrombosis	FVC	forced vital capacity
DZ	dizygotic	FVL	factor V Leiden
EASL	European Association for the Study of the Liver	g	grams
EBV	Epstein-Barr virus	GA	gestational age
ECDC	European Centre for Disease Prevention and Control	GBS	group B streptococcus
		GBS	Guillain-Barré syndrome
		GDM	gestational diabetes
ECMO	extracorporeal membrane oxygenation	GERD	gastroesophageal reflux disease
EC-MPS	enteric-coated mycophenolate sodium	GFR	glomerular filtration rate
		GHB	gamma-hydroxybutyrate

GHTN	gestational hypertension	IUGR	intrauterine growth restriction (synonym of FGR)
GI	gastrointestinal		
GISP	Gonococcal Isolate Surveillance Project	IUPC	intrauterine pressure catheter
GTC	generalized tonic clonic		
GTT	glucose tolerance test	IV	intravenous
GWG	gestational weight gain	IVC	inferior vena cava
HAART	highly active antiretroviral therapy	IVDU	intravenous drug use
HAV	hepatitis A virus	IVF	intravenous fluids
HBsAg	hepatitis B surface antigen	IVH	intraventricular hemorrhage
HBV	hepatitis B virus	L&D	labor and delivery
HC	head circumference	L/S	lecithin/sphingomyelin
HCG	human chorionic gonadotropin	LA	lupus anticoagulant
Hct	hematocrit	LABA	long-acting β -agonist
HCV	hepatitis C virus	LAGB	laparoscopic adjustable gastric banding
HD	hemodialysis	LB	lamellar body
HD	Hodgkin's disease	LBW	low birth weight
HDU	high-dependency unit	LBW	low birth weight (infants)
HELLP	hemolysis, elevated liver enzymes, and low platelet count	LCR	ligase chain reaction
HES	hydroxyethyl starch	LFT	liver function tests
HFA	hydrofluoroalkane	LGA	large for gestational age
HG	hyperemesis gravidarum	LGV	lymphogranuloma venereum
Hgb	hemoglobin	LMP	last menstrual period
HIE	hypoxic-ischemic encephalopathy	LMW	low molecular weight
HIT	heparin-induced thrombocytopenia	LMWH	low-molecular-weight heparin
HIV	human immunodeficiency virus	LR	likelihood ratio
HLA	human leukocyte antigen	LSD	lysergic acid diethylamide
HPA	hypothalamic-pituitary-adrenal	LSD	lysosomal storage disease
HPA	human platelet antigen	LTRA	leukotriene receptor antagonist
HR	heart rate	MA/MC	monoamniotic
HSV	herpes simplex virus	MAC	mycobacterium avium complex
HTN	hypertension	MAOI	monoamine oxidase inhibitor
IAAT	immunosorbent agglutination assay test	MAS	meconium aspiration syndrome
IALE	International League Against Epilepsy	MC/DA	monochorionic diamniotic
IBD	inflammatory bowel disease	MCA	middle cerebral artery
IBW	ideal body weight	MCV	mean corpuscular volume
ICH	intracranial hemorrhage	MD	mean difference
ICP	intrahepatic cholestasis of pregnancy	MDD	major depressive disorder
ICS	immunochromatographic strip	MDI	metered-dose inhaler
ICS	Intensive Care Society	MDI	multiple-dose insulin
ICU	intensive care unit	MDQ	Mood Disorders Questionnaire
IDSA	Infectious Diseases Society of America	MDR	multidrug-resistant
IGRA	interferon gamma-release assay	MFM	maternal-fetal medicine
IH	impetigo herpetiformis	MHC	major histocompatibility complex
IM	intramuscular	MI	myocardial infarction
INR	international normalized ratio	MM	malignant melanoma
IOL	induction of labor	MMF	myco-phenolate mofetil
IPAA	ileal pouch-anal anastomosis	MMR	measles-mumps-rubella
IPV	inactivated polio vaccine	MOM	multiple of the median
ISS	injury severity score	MPA	mycophenolic acid products
IUD	intrauterine device	MRCP	magnetic resonance cholangiopancreatography
IUFD	intrauterine fetal demise	MRI	magnetic resonance imaging
		MRU	magnetic resonance urography
		MSAFP	maternal serum alpha-fetoprotein
		MSH	melanocyte-stimulating hormone

MTHFR	methylenetetrahydrofolate reductase	NVP	nausea and vomiting of pregnancy
MTX	methotrexate	OB	obstetrician
MVI	prenatal multivitamin	OCT	oxytocin challenge test
MVP	maximum vertical pocket	OCT	oxytocin contraction test
MZ	monozygotic	OGTT	oral glucose tolerance test
n/v	nausea and/or vomiting	OPV	oral live polio vaccine
NA	not available	OR	odds ratio
NA-ACCORD	North American AIDS Cohort Collaboration on Research and Design	OR	operating room
NAAED	North American Antiepileptic Drug	OSA	obstructive sleep apnea
NAAT	nucleic acid amplification test	OTC	over the counter
NAEPP	National Asthma Education and Prevention Program	PAPP-A	pregnancy-associated plasma protein-A
NAIT	neonatal alloimmune thrombocytopenia	PC	platelet count
NAS	neonatal abstinence syndrome	PC	protein C
NBPP	neonatal brachial plexus palsy	PCA	patient-controlled analgesia
NCHS	National Center for Health Statistics	PCI	percutaneous coronary intervention
NEC	necrotizing enterocolitis	PCP	phencyclidine
NG	nasogastric	PCP	Pneumocystis carinii
NHL	Non-Hodgkin's lymphoma	PCR	pneumonia
NICU	neonatal intensive care unit	PCWP	polymerase chain reaction
NIH	National Institutes of Health	PD	pulmonary capillary wedge pressure
NIH	nonimmune hydrops	PDA	peritoneal dialysis
NIS	National Inpatient Sample	PE	patent ductus arteriosus
NNRTI	non-nucleoside reverse transcriptase inhibitor	PEA	pulmonary embolus
NODM	new-onset diabetes mellitus	PEFR	pulseless electrical activity
NOTES	natural orifice translumenal endoscopic surgery	PEP	peak expiratory flow rate
NPH	neutral protamine Hagedorn	PER	polymorphic eruption of pregnancy
NRFHR	nonreassuring fetal heart rate	PET	prophylaxis effective rate
NRFHT	nonreassuring fetal heart testing	PFP	positron emission tomography
NRFS	nonreassuring fetal status	PFT	pruritic folliculitis of pregnancy
NRI	norepinephrine reuptake inhibitor	PG	pregnancy function tests
NRT	nicotine replacement therapy	PG	pemphigoid gestationis
NRTI	nucleoside reverse transcriptase inhibitor	PG	phosphatidylglycerol
NS	nephrotic syndrome	PGL	plasma glucose
NS	normal saline	PGM	persistent generalized lymphadenopathy
NSAIDS	nonsteroidal anti-inflammatory drugs	PI	prothrombin gene mutation
NSCIA	National Spinal Cord Injury Association	PI	protease inhibitor
NST	nonstress test	PICC	pulsatility index
NSVD	normal spontaneous vaginal delivery	PID	peripherally inserted central catheter
NT	nuchal translucency	PK	pelvic inflammatory disease
NTD	neural tube defect	PL	pharmacokinetic
NTDB	National Trauma Data Banks	PIGF	pregnancy loss
NTPR	National Transplantation Pregnancy Registry	PMCD	placental growth factor
		PN	perimortem cesarean delivery
		PNC	parenteral nutrition
		PNM	prenatal care
		po	perinatal mortality
		PP	"per os," i.e., by mouth
		PP-13	prurigo of pregnancy
		PPD	placental protein-13
		PPH	purified protein derivative
		PPHN	postpartum hemorrhage
			persistent pulmonary hypertension of the newborn
		PPI	proton-pump inhibitor
		PPROM	preterm premature rupture of membranes

PR	per rectum	SLE	systemic lupus erythematosus
pRBC	packed red blood cells	SLICC	Systemic Lupus International Collaborating Clinics
PRCD	planned repeat cesarean delivery	SNRI	serotonin-norepinephrine reuptake inhibitor
PROM	preterm rupture of membranes	SPTB	spontaneous preterm birth
PS	protein S	SQ	subcutaneous
PS	pulmonic stenosis	SSC	Surviving Sepsis Campaign
PSI	Pneumonia Severity Index	SSKI	saturated solution of potassium iodide
PSV	peak systolic velocity	SSRI	selective serotonin reuptake inhibitor
PT	prothrombin time	STD	sexually transmitted diseases (synonym of STI)
PTB	preterm birth	STI	sexually transmitted infections
PTL	preterm labor	STS	second-trimester screening
PTT	partial thromboplastin time	SUDEP	sudden unexpected death in epilepsy
PTU	propylthiouracil	SVC	superior vena cava
PUBS	percutaneous umbilical blood sampling	SVR	systemic vascular resistance
PUPPP	pruritic urticarial papules and plaques of pregnancy	SVR	sustained virologic response
PUQE	pregnancy-unique quantification of emesis/nausea	TB	tuberculosis
PVR	pulmonary vascular resistance	TBG	thyroid-binding globulin
PW	pulsed wave	TBII	thyroid-stimulating hormone-binding inhibitory immunoglobulin
qd	once a day	TCA	tricyclic antidepressant
qhs	before bedtime	TDD	total daily dose
qid	four times per day	TG	<i>Toxoplasma gondii</i>
QS	quadruple screen	TH	therapeutic hypothermia
RBC	red blood cell	THC	tetrahydrocannabinol
RCT	randomized controlled study	tid	three times per day
RCVS	reversible cerebral vasoconstriction syndrome	TIV	trivalent inactivated vaccine
RDS	respiratory distress syndrome	TMA	transcription-mediated amplification
RDW	red blood cell distribution width	TNF	tumor necrosis factor
REDF	reverse end-diastolic flow	TOL	trial of labor
RI	resistive index	TOLAC	trial of labor after cesarean
RNA	ribonucleic acid	TPO	thyroid peroxidase
ROM	rupture of membranes	TRAb	TSH receptor antibody
ROSC	return of spontaneous circulation	TRALI	transfusion-related acute lung injury
RPR	rapid plasma reagin	TRAP	twin reversal arterial perfusion
RR	relative risk	TSH	thyroid-stimulating hormone
RR	respiratory rate	TSI	thyroid-stimulating immune globulins
RR	risk ratio	TST	tuberculin skin testing
Rx	treatment	TTTS	twin-twin transfusion syndrome
S/D	systolic/diastolic	TVU	transvaginal ultrasound
SAB	spontaneous abortion	U/S (or u/s)	ultrasound
SABA	short-acting β -agonist	UA	umbilical artery
SBP	systolic blood pressure	UC	ulcerative colitis
SC	subcutaneous	UDCA	ursodeoxycholic acid
SCI	spinal cord injury	UFH	unfractionated heparin
SCRN	Stillbirth Collaborative Research Network	UPC	urinary protein creatinine
SD	striae distensae	USPSTF	U.S. Preventative Services Task Force
SDA	strand-displacement amplification	UTI	urinary tract infection
SDP	single deepest pocket	V/Q	ventilation/perfusion
SEE	Syphilis Elimination Effort		
SFDT	Sabin-Feldman dye test		
SG	striae gravidarum		
SGA	small for gestational age		
SIDS	sudden infant death syndrome		
SJS	Stevens-Johnson syndrome		

VAS	vibroacoustic stimulation	VTE	venous thromboembolism
VBAC	vaginal birth after cesarean	VV	vein-to-vein
VC	vital capacity	vWD	von Willebrand disease
VDRL	venereal disease research laboratory	vWF	von Willebrand factor
VEGF	vascular endothelial growth factor	VZIG	varicella zoster immune globulin
VIG	vaccinia immune globulin	VZV	varicella zoster virus
VKA	vitamin K antagonist	WBC	white blood cell
VL	viral load	WHO	World Health Organization
VPA	valproic acid	WIHS	Women's Interagency HIV Study
VSD	ventricular septal defect	XDR	extensively drug-resistant