



**Lactation
Management
Self-Study Modules
Level I**

**Fourth Edition
2014**

**Edited for Wellstart International
by
Audrey J. Naylor, MD, DrPH
and
Ruth A. Wester, BA, RN, PNP**



Cite as: Wellstart International (2013) *Lactation Management Self-Study Modules, Level I, Fourth Edition*, Shelburne, Vermont: Wellstart International.

Copyright © 2013 Wellstart International

The First and Second Editions of this document were developed with support of The Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services. Under no conditions may any part of these First or Second Editions be sold by anyone other than Wellstart International or the Department of Health and Human Services of the United States. Permission from Wellstart is required to reproduce or translate these First and Second Editions document in part or in full.

The Third Edition (Revised) and the Fourth Edition of the document was developed entirely by Wellstart International. Permission from Wellstart is required to reproduce these editions in part or in full. Wellstart intends these documents to be available at low (production and shipping costs only) or no cost. Permission is also required from Wellstart International to charge for these documents or any part thereof by anyone other than Wellstart International.

Wellstart International also welcomes requests to translate this Fourth Edition in part or in full but permission must be granted by Wellstart before such translation is undertaken as well as before any translated version is published or distributed.

Information regarding ordering copies and permission to reproduce or translate may be obtained from:

Wellstart International
E-mail: info@wellstart.org

*This **Fourth Edition of the Wellstart International Self-Study Modules, Level I** may be downloaded without charge from the Wellstart Web site: www.wellstart.org*

Wellstart International is nonprofit organization (501)(C)(3) and is compliant with the International Code of Marketing of Breastmilk Substitutes.

Dedication

This Edition of Wellstart International's Lactation Management Self-Study Modules, Level 1 is dedicated to all of the mothers, fathers and families who are raising the next generation of the world's citizens. Whether they live in urban or rural settings, developed or developing nations, are rich or poor, they deserve our respect and well prepared services and support at all times.

*We are guilty of many errors and faults,
but our worst crime is abandoning the children,
neglecting the foundation of life. Many of the
things we need can wait. The child cannot.
Right now is the time his bones are being formed,
his blood is being made and his senses
are being developed. To him we
cannot answer 'tomorrow'.
His name is Today.*

Gabriele Mistral

Section I

Contents

Section I

About Wellstart
About the authors
Acknowledgements
Foreword
Faculty Guide

Section II: Pre-test

Without answers
With answers

Section III: Self-Study Modules

Module One

Breastfeeding: A Basic Health Promotion Strategy in Primary Care

Objectives
Introduction: Case Exercise
Human Milk Composition
Importance of Breastfeeding and Risks of Not Breastfeeding
Current Recommendations for Breastfeeding
The Breastfeeding Decision
Concerns, Controversies, and Contraindications
Prenatal Counseling Questions
Community Resources
Conclusion
References

Module Two

Basics of Breastfeeding: Getting Started

Objectives
Introduction: Case Exercise
Anatomy
The Physiology of Milk Secretion
Getting Together: Position and Attachment
Evaluation of a Breastfeed
Length (Duration) and Frequency of a Feeding
Anticipatory Guidance
Early Hospital Routines
International Code of Marketing of Breastmilk Substitutes
Discharge Planning
Conclusion

References

Module Three

Common Breastfeeding Problems

Objectives

Introduction

Common Problems

Case #1 : Inverted Nipples

Case #2 : Sore Nipples

Case #3 : Engorgement

Case #4 : Obstructed Lactiferous Duct

Case #5 : Mastitis

Case #6: "Not Enough Milk"

Case #7 : Jaundice in the Breastfed Baby

Breastfeeding the Infant with Special Medical Problems

Late Preterm Infants

Maternal Medical Problems

Breastfeeding During Emergency Situations

Contraception during Breastfeeding

Separation of Mother and Infant

Resources

Conclusion

References

Section IV: Post-Test

Without answers

With answers

Section V: Annexes

- A. Highlights
- B. Acceptable Medical Reasons for Use of Breast-milk Substitutes
- C. Infant Feeding in Emergency Situations
- D. Ten Major Provisions of the International Code of Marketing
- E. ABM Protocol #8: Storage of Human Milk
- F. Guidelines for Hand Expression
- G. Web Sites of Interest
- H. Alphabetic Listing of References
- I. Additional References Suggested by Reviewers for the 4th Edition

About Wellstart International ...

Wellstart International is a nonprofit organization with (501) (C) (3) tax deductible status. It was launched originally as the San Diego Lactation Program (SDLP) in 1979-1980. Initially the SDLP was within the Department of Community and Family Medicine of the University of California San Diego Medical School and was a component of the perinatal services and teaching of the University of California San Diego Medical Center. In 1983 with funding from the United States Agency for International Development (USAID) SDLP added an international faculty education and development program, The Lactation Management Education Program (LMEP). The program design included bringing multidisciplinary, leadership level teams of health care providers (OB, Pediatricians, Family Practitioners, Nurses, Nurse Midwives and Nutritionists) from teaching hospitals from several countries together for 3 weeks of lactation management education and skill development and 1 week of planning a program that they would undertake upon returning home. A follow-up visit was provided to their home site at the invitation of the team sometime after their program was underway. The conversion of the SDLP to an independent nonprofit organization, Wellstart International, and a move to a nearby but separate location occurred in 1985.

A primary objective of LMEP was to create a “cascade” of skilled and knowledgeable leaders in medical, nursing and nutrition education that could make needed changes in their curriculum as well as the services provided to mothers and babies that would promote successful breastfeeding. The program was considered quite successful and in the 15 years of continuation, 655 health care providers from 55 countries (including the United States) became Wellstart Associates. A follow-up study of 40 of these Associates undertaken at the request of UNICEF in 2003 suggested that the program through the cascade of training approach, had changed the care given to mother-baby pairs in hundreds of hospitals, modified curriculum in a significant number of professional training programs, contributed to hundreds of thousands of secondary training events and contributed to the global expertise regarding lactation management.

Since 1985, Wellstart, as an organization or through staff participation has also been very active and influential in many global events related to the protection, promotion and support of optimal infant and young child feeding. These include the development of the “Ten Steps”, Innocenti Declaration of 1990 and 2005, WABA and World Breastfeeding Week, The Baby Friendly Hospital Initiative, The United States Breastfeeding Committee and the development of the Academy of Breastfeeding Medicine. As will be further described in the foreword, Wellstart also has considerable experience in developing a number of useful teaching techniques and tools.

Also since the conversion of the SDLP to Wellstart International in 1985, the organization has maintained an office in California but has had additional offices in Washington DC, and Cairo, Egypt. At the present time administrative tasks are carried out in California and programmatic activities are planned and coordinated in Vermont.

About the Editors....

Audrey Naylor

Audrey Naylor, President and CEO of Wellstart International is a board certified pediatrician with additional training in infant development, maternal and child health and epidemiology. In addition to receiving a degree in Medicine from the University of California Los Angeles School of Medicine, she also holds a DrPH in Epidemiology (with a major focus on perinatal care) from UCLA School of Public Health. She has a lifetime professional interest in maternal, infant, and family health promotion, preferring to prevent rather than treat disease.

In 1985, with Ruth Wester, she co-founded, Wellstart International, a nonprofit organization established to educate health care providers (medical and nursing students as well as perinatal specialty residents), in the “why and hows” of optimal infant and young child feeding. She has been instrumental in both international efforts as well as those focused primarily in the United States to promote breastfeeding as the normal way to feed infants and young children.

She is a founding member of the Academy of Breastfeeding Medicine, the World Alliance of Breastfeeding Action, the United States Breastfeeding Committee and the Section on Breastfeeding of the American Academy of Pediatrics. She is also an experienced medical school educator and has been a member of several medical school faculties including Ohio State University College of Medicine, The University of Southern California School of Medicine, The University of California San Diego School of Medicine and The University of Vermont College of Medicine where she is currently a Clinical Professor of Pediatrics (Voluntary, part-time).

Ruth Wester

Ruth Wester, Vice-President of Wellstart International is a registered nurse with extensive experience in both inpatient and outpatient pediatric nursing. She also was the Head Nurse of the Marion Davies Pediatric Clinic, a highly regarded teaching and service clinic at UCLA. While serving UCLA, she accepted an opportunity to train as a pediatric nurse practitioner (PNP) and subsequently served the clinic as both the Head Nurse as well as a PNP.

In 1978, she accepted a position as the normal newborn discharge nurse and Assistant Professor of Pediatrics at UCSD Medical Center in San Diego and began to instruct medical students and residents about breastfeeding and lactation management. With Dr. Naylor, she co-founded Wellstart International and has provided service to many thousands of breastfeeding families and taught lactation management to medical and nursing students as well as residents and faculty all over the world. She is an expert in the field of lactation management education.

Acknowledgements

First Edition, 2000

A First Edition is always the inspiration of all future editions. The creation and development of the First Edition of the Wellstart International Lactation Management Self-Study Modules, Level I in 2000 would not have been possible without the input and effort of a number of talented people. We would like to express our continuing gratitude to the following individuals who assisted with that document:

Eyla Boies, MD, Clinical Associate Professor of Pediatrics, University of California, San Diego
Elizabeth Creer, RN, FNP, MPH, Wellstart International faculty
Pamela Deak, MD, Division of Obstetrics and Gynecology, University of California, San Diego
Donata Eggers, BS, RD, Instructor, Department of Pediatrics, Southern Illinois University
Stephanie Gabela, MPH, RD, Wellstart International faculty
Helen Moose, MS, CNM, Instructor, Department of Family and Community Medicine, Southern Illinois University
Victoria Nichols-Johnson, MD, Associate Professor, Division of General Obstetrics and Gynecology, Southern Illinois University
Janine Schooley, MPH, Wellstart International, Project Manager
Kirsten Searfus, MD, Assistant Professor, Division of Family Medicine, University of California, San Diego
Kim Solis, Wellstart International Assistant Project Manager
Yvonne Vaucher, MD, MPH, Clinical Professor of Pediatrics, Division of Neonatal/Perinatal Medicine

In addition, the medical students from Southern Illinois University and University of California, San Diego and nursing students at St. John's College in Springfield, Illinois deserve thanks for their useful feedback.

Second Edition, 2005

As is usually the case, the Second Edition was developed on the basis of the content of the First Edition. Several members of the original team of talented people participated in creating the revisions for the second edition. We gratefully thank Yvonne Vaucher, MD, MPH, Clinical Professor of Pediatrics, Division of Neonatal/Perinatal Medicine, University of California, San Diego who encouraged and gave many hours to this effort as well as Kirsten Searfus, MD, Assistant Professor, Division of Family Medicine, University of California, San Diego for their support.

A special thanks also goes to Maria Elena Sandoval, Wellstart International Administrative Manager, for her skill, patience and extra effort in helping to prepare the second edition

Finally, we would like thank Denise Sofka, RD, MPH of the US Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, for her continuing encouragement of Wellstart International and of the preparation of both the first and second editions of this teaching tool.

Third Edition, 2009

In planning for a Third Edition of Wellstart's Self-Study Modules, Level I, it was important to assure that the information was both current and useful internationally. Thus to prepare this edition the second edition was carefully reviewed for suggestions, corrections and international relevance by an outstanding team of 30 volunteer reviewers and contributors from all over the world. The following list includes these colleagues who have significant teaching experience in medical, nursing and pharmacy schools and residency training programs and/or provide service to breastfeeding mothers and babies around the world. Many are Wellstart Associates (*) or faculty members who taught in Wellstart International's Lactation Management Education Faculty Development Program (**).

Phillip Anderson, D.Pharm **
 Health Sciences Clinical Professor UCSD Skaggs School of
 Pharmacy and Pharmaceutical
 Science, San Diego, California, USA

Nadia Badwarl, MD*
 Professor of Pediatrics, Cairo University, President of Arab Network for Quality
 Assurance in Higher Education, Cairo,
 Egypt

Eyla Boies, MD**
 Clinical Professor of Pediatrics, UCSD
 School of Medicine
 Medical Director of Premature Infant Nutrition Clinic, San Diego, California,
 USA

Carmen Casanovas, MD, MPH* Technical Officer NHD/NPL World Health Organization Geneva,
 Switzerland

Judy Canahuati, MPH,*
 Nutrition and HIV Advisor, Office of Food for Peace, United States Agency for International Development
 Washington, D.C. USA

Wirapong Chatranon, MD*
 Professor Emeritus (Pediatrics), Faculty of Medicine, Siriraj Hospital, Mahidol University
 Former Senior Consultant for Implementing BFHI, UNICEF for Asia, and
 Pacific Region, Bangkok
 Thailand

Sarah Coulter-Danner, RN, CNM, CPNP Adjunct Faculty, Department of
 Nursing, Salish Kootenai College,
 Pablo MT, Former Chairperson, Department of Nursing, Oglala Lakota College, Pine Ridge, SD,
 USA

Patrice DeMarco, RN
 Lactation Consultant
 Fletcher Allen Health Center, Burlington, Vermont
 USA

Lawrence Gartner, MD **,
 Professor Emeritus, Departments of Pediatrics and OB/GYN, University of
 Chicago, President of MedWord
 Valley Center, California, USA

Angela Gatzke-Plaman, MD
 Resident in Family Practice, University of Vermont College of Medicine, Burlington,
 Vermont,
 USA

Veronica Gomez, MA,*
 Breastfeeding Program Manager, Ghana Health Service, Accra,
 Ghana

Tom Hale, RPh, PhD
 Professor, Department of Pediatrics, Texas Tech University Health Sciences
 Center, School of Medicine
 Amarillo, Texas USA

Zeinab Heada, MD,*
 Component Manager, RH/HIV, Care International, Cairo,
 Egypt

Elisabet Helsing, PhD**
 Former Regional Adviser, WHO Regional Office for Europe, Copenhagen and Senior
 Adviser, Norwegian Board of Health, Oslo,
 Norway

Elizabeth Hunt, MD
 Clinical Associate Professor and Newborn Hospitalist
 Department of Pediatrics University of Vermont
 Burlington, Vermont USA

Rose Kast, RN,
 President Momma's Pumps
 Carlsbad, California,
 USA

Ruth A. Lawrence, MD**
 Professor of Pediatrics, Obstetrics and Gynecology, Department of Pediatrics, University of
 Rochester School of Medicine and Dentistry
 Rochester, New York, USA

Cecila Muxi, MBA,*
 Nutritionist
 National Program of Infant Health Ministry of Health of Uruguay Montevideo,
 Uruguay

Roxana Saunero Nava, MD*
 Pediatrician, Docente Instructor de pre y post grad Hospital Materno Infantil, Caja
 Nacional de Salud
 Directora Ejecutiva de COTALMA, Secretaria Permanente de Comité Nacional de Lactancia, La Paz,
 Bolivia

Ketevan Nemsadze, MD,*
 Professor, Tbilisi State Medical University, Pediatric Department
 Director of M.Lashvili Children's Central
 Hospital, Tbilisi, Georgia

Victoria Nichols-Johnson, MD, MS,*
 Associate Professor of OB/Gyn, Chief of the Section of Maternal Nutrition and
 Metabolism, Southern Illinois University School of Medicine, Springfield, Illinois,
 USA

Sallie Page-Goertz, MN ARNP* Clinical Associate Professor
 Department of Pediatrics
 Kansas University School of Medicine, Kansas City, Kansas, USA

Marina Rea, MD, PhD*
 Consultant, Instituto de Saude, Saude do Estado de Sao Paulo Sao Paulo,
 Brazil

Clavel Sanchez, MD, MPH*
 Coordinadora de la Comision Nacional de Lactancia Materna, Santo Domingo
 Dominican Republic

Felicity Savage-King, BM, Bch Oxon, FRCPCH, FABM**
 Honorary Senior Lecturer, Institute of Child Health London, Leeds,
 United Kingdom

Wendelin Slusser, MD**
 Assistant Clinical Professor, UCLA School of Medicine, Director of the
 UCLA Breastfeeding Resource Program, Co-Director of the Community
 Health and Advocacy, UCLA Residency Program
 Los Angeles, California, USA

Lisa Stellwagen, MD
 Associate Professor of Clinical Pediatrics, UC San Diego School
 of Medicine, Director of Newborn Service,
 Lactation Director of the SPIN Program, San Diego, California,
 USA

Teresa Toma, MD,*
 Pediatrician Researcher, Instituto de Saude, Secretaria de Saude do Estado de
 Sao Paulo,
 Brazil

Veronica Valdes, MD,*
 Pediatrician, Former Adjunct Associate Professor of Family Medicine at the
 Catholic University and Consultant for UNICEF Chile, Argentina and Uruguay,
 Santiago, Chile

Yvonne Vaucher, MD, MPH
 Professor of Pediatrics and Attending Neonatologist, Director, Infant Special
 Care Follow-Up Program, UCSD School of
 Medicine, San Diego, California, USA

These colleagues have done an outstanding job of helping to assure that this tool is current and international in scope. They have our most sincere and heartfelt thanks.

We also want to thank Alison Blenkinsop, DipHE (midwifery studies), Aldershot, United Kingdom and Andrea Herron, RN, MN, CPNP, San Louis Obispo, California, United States for their additional corrections and suggestions. Their help is greatly appreciated.

Finally, once again, thanks goes to Maria Elena Sandoval for helping to prepare this Third Edition of Wellstart's Lactation Management Self-Study Modules, Level I. Without her dedicated assistance, this tool would probably not have been finished.

Fourth Edition, 2013

In planning for a Fourth Edition of Wellstart's Self-Study Modules, Level I, it was important to assure that the information was up to date and useful internationally. Thus to prepare this edition the third edition was carefully reviewed for suggestions, corrections and international relevance by an outstanding team of 16 volunteer reviewers and contributors from all over the world. The following list of 4th Edition reviewers includes these colleagues who have significant teaching experience in medical and nursing programs and/or provide service to breastfeeding mothers and babies around the world.

Nadia Badwarl, MD*

Professor of Pediatrics, Cairo University, President of Arab Network for Quality Assurance in Higher Education, Cairo, Egypt

Eyla Boies, MD**

Clinical Professor of Pediatrics, UCSD School of Medicine
Medical Director of Premature Infant Nutrition Clinic, San Diego, California, USA

Wirapong Chatranon, MD*

Professor Emeritus (Pediatrics), Faculty of Medicine, Siriraj Hospital, Mahidol University
Former Senior Consultant for Implementing BFHI, UNICEF for Asia, and Pacific Region, Bangkok Thailand

Lawrence Gartner, MD **,

Professor Emeritus, Departments of Pediatrics and OB/GYN, University of Chicago, President of MedWord Valley Center, California, USA

Rose Kast, RN,

President Momma's Pumps
Carlsbad, California, USA

Ruth A. Lawrence, MD**

Professor of Pediatrics, Obstetrics and Gynecology, Department of Pediatrics, University of Rochester School of Medicine and Dentistry Rochester, New York, USA

Roxana Saunero Nava, MD*

Pediatrician, Docente Instructor de pre y post grad Hospital Materno Infantil, Caja Nacional de Salud,
Directora Ejecutiva de COTALMA,
Secretaria Permanente de Comité Nacional de Lactancia, La Paz, Bolivia

Ketevan Nemsadze, MD,* Professor,

Tbilisi State Medical University, Pediatric Department
Director of M.Lashvili Children's Central Hospital, Tbilisi, Georgia

Victoria Nichols-Johnson, MD, MS,* Associate Professor of OB/Gyn, Chief of the Section of Maternal Nutrition

and Metabolism, Southern Illinois University School of Medicine, Springfield, Illinois, USA

Sallie Page-Goertz, MN ARNP* Clinical Associate Professor Department of Pediatrics

Kansas University School of Medicine, Kansas City, Kansas, USA

Marina Rea, MD, PhD*

Consultant, Instituto de Saude, Saude do Estado de Sao Paulo Sao Paulo, Brazil

Felicity Savage-King, BM, Bch Oxon, FRCPCH, FABM**

Honorary Senior Lecturer, Institute of Child Health London, Leeds, United Kingdom

Wendelin Slusser, MD**

Assistant Clinical Professor, UCLA School of Medicine, Director of the UCLA Breastfeeding Resource Program, Co-Director of the Community Health and Advocacy, UCLA Residency Program Los Angeles, California, USA

Lisa Stellwagen, MD

Associate Professor of Clinical Pediatrics, UC San Diego School of Medicine, Director of Newborn Service, Lactation Director of the SPIN Program, San Diego, California, USA

Veronica Valdes, MD,*

Pediatrician, Former Adjunct Associate Professor of Family Medicine at the Catholic University and Consultant for UNICEF Chile, Argentina and Uruguay, Santiago, Chile

Finally, once again, a heartfelt thanks goes to Maria Elena Sandoval for assisting in the preparation of this Fourth Edition. Without her skilled and dedicated assistance, this tool would never have been finished and put up on Wellstart International website.

Audrey J. Naylor, MD, DrPH, FAAP, FABM
President and CEO
Wellstart International
Clinical Professor of Pediatrics (vol. part-time)
University of Vermont College of Medicine

Ruth A. Wester, BA, RN, PNP
Vice-President
Wellstart International

Shelburne, Vermont
June 2013

Foreword

In a series of articles published in Lancet in 2003 it is noted that some 13% of the 9.5 million annual deaths in the world among children under 5 years can be prevented or significantly decreased in severity by breastfeeding exclusively for six months and then adding appropriate nutritious complimentary foods. The majority of these deaths occurred in the less economically developed nations of the world. In addition, breastfeeding is now well accepted as a very effective evidenced based primary health care strategy in developed nations for improving both the immediate health and well being of mothers, infants and children as well as lowering the risk of a significant number of chronic diseases of older children and adults. (Figure 1)

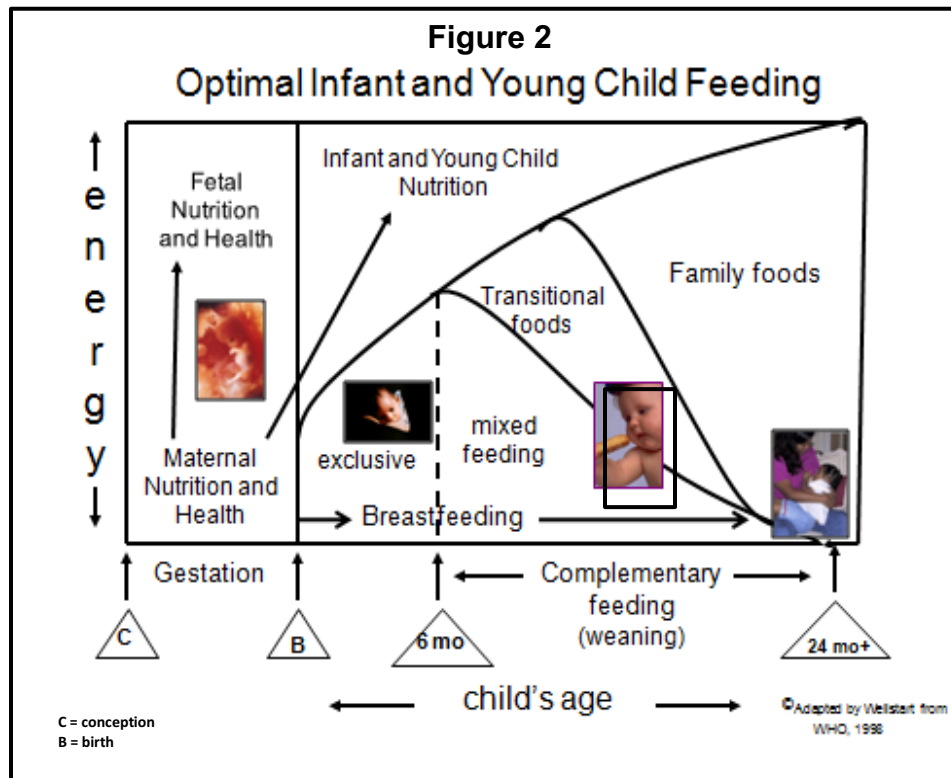
Figure 1

Benefits of Breastfeeding₁

Adapted from Breastfeeding and the Use of Human Milk, Pediatrics, March 2012⁽¹⁾

<u>Condition</u>	<u>% Lower Risk</u>	<u>Breastfeeding</u>	<u>Odds Ratio</u>
Otitis Media	50	Exclusive BF for ≥ 3 or 6 mo	0.50
Recurrent OM	77	Exclusive BF for ≥ 6 mo	1.95
Upper Respiratory tract infect.	63	Exclusive BF for > 6 mo	0.30
Lower Respiratory tract infect	77	Exclusive BF for ≥ 6 mo	4.27
NEC (NICU stay)	77	Preterm infants, exclusive HM	0.23
Gastroenteritis	64	Any	0.36
Obesity	24	Any	0.76
Type 1 diabetes	30	Exclusive BF for > 3 mo	0.71
Type 2 diabetes	40	Any	0.61
Leukemia (ALL)	20	> 6 mo	0.80
Leukemia (AML)	15	> 6 mo	0.85
SIDS	36	Any > 1 mo	

Thus when breastfeeding, a biologically normal reproductive process and way to feed human infants and young children, is supported as a basic component of optimal infant and young child feeding (OIYCF, Figure 2) individual, family and community health can be significantly improved globally.



There are, of course, many influences on achieving OIYCF. Among these are health care providers with knowledge and skill of lactation management and breastfeeding support. Unfortunately many health care providers have only a limited knowledge of this topic. An important reason for this lack of knowledge is that many schools of medicine and nursing as well as nutrition programs have not included lactation management education in their curricula.

Lactation Management Curriculum: A Faculty Guide

In 1985, to assist in meeting this need for curriculum content in lactation management, Wellstart International began providing education and training in lactation management and breastfeeding promotion for both students and faculty of the health professions. In 1999, with funding from The United States Maternal Child Health Bureau of the Health Resources and Services Administration and in collaboration with the University of California San Diego Medical School, Wellstart developed **the *Lactation Management Curriculum: A Faculty Guide for Schools of Medicine, Nursing and Nutrition (LMCG)***, now in its fourth edition.

The LMCG was developed to facilitate the integration of lactation management knowledge and skills into the curriculum of medicine, nursing and nutrition programs. It is a competency based tool and provides guidance in curriculum assessment, content suggestions and resources for three levels of professional responsibility. **Level I** provides basic knowledge needed by all health care providers to be supportive of normal mothers and their healthy full term infants. **Level II** includes more clinical detail for complex situations and is targeted at those who practice one of the perinatal specialties (pediatrics, obstetrics, family medicine, neonatology, etc). **Level**

III is designed for those who will specialize in breastfeeding medicine and will serve as key faculty in leadership positions. (Figure 3)

Content Focus of Modules	Level I Basic Knowledge Needed by All Health Care Providers	Level II Perinatal Care Providers	Level III Breastfeeding Medicine Specialists and Faculty
Module 1 Scientific Basis			
Module 2 Clinical Management			
Module 3 Professional Practice			

Figure 3. Lactation Management Curriculum - Schematic Diagram

Level I

All health professionals regardless of whether or not they specifically provide care for breastfeeding mothers and infants should attain **Level I** knowledge and skills during their initial preparatory (preservice) program. Before entering the practice of their profession, they should have an understanding about the scientific basis for encouraging and supporting breastfeeding, the physiology and basics of clinical management of lactation for normal mothers and newborns and the societal influences on lactation and breastfeeding promotion. They should be able to provide health care that supports breastfeeding initiation and maintenance, and avoids creating barriers. While they need to be aware of the principles of lactation management, they do not necessarily need to attain clinical expertise in the area.

Lactation Management Self-Study Modules, Level I

Though the LMCG achieved considerable success, limitations of available time in a preservice health provider curriculum led to a recommendation by early users that a level I tool be developed that could be completed in a few hours and at a time and place of the student's choosing. With further support from The Maternal Child Health Bureau of the Health Resources and Services Administration, a set of three clinically oriented, competency based, self-study modules was developed to help students achieve **Level I** knowledge. Initially published in 2000, the *Lactation Management Self-Study Modules, Level I* have been revised and updated twice (2005 and 2009) to incorporate important new evidenced based knowledge and skills.

These modules are particularly focused on the breastfeeding component of optimal infant and young child feeding. Scientific evidence regarding the importance of breastfeeding, a review of the physiology and basic management strategies to support lactation and breastfeeding and solutions to common problems are included. They provide a self-contained unit of basic knowledge that can be utilized by faculty, students, and other health care professionals in a variety of settings. They can be assigned during clinical rotations in pediatrics, family medicine, nutrition, obstetrics, and community health or as an elective course. Each institution can decide where the modules would have the most impact in their curriculum. They can also be used by those already in practice whose professional training did not include these topics or wish to have a review of the basics.

As additional learning tools, pre-tests and post-tests have also been included. Users are urged to take the pretest before beginning a review of the modules and compare their scores with the post test taken after completion of all three modules. Answer sheets have also been provided for both pre-test and post-tests. The answer sheet for the post-test includes a brief explanation of the answer.

For this Edition an annex has been added which provides a number of useful reference documents. These include an updated summary of key clinical points from the Modules called *Highlights, The Ten Steps to Successful Breastfeeding, WHO's 2009 Acceptable Medical Reasons for Use of Breastmilk Substitutes, Infant feeding in Emergencies, Ten key points of The International Code of Marketing of Breastmilk Substitutes and Relevant World Health Assembly Resolutions, How to Store Human Milk (Protocol #8 from The Academy of Breastfeeding Medicine), Guidelines for Hand Expression, Websites of Interest, an Alphabetic Listing of References used in this tool and resources suggested by the reviewers of the 4th edition.*

As was said in the opening paragraph of this Foreword to this Edition of the Self-Study Modules, establishing breastfeeding as a biologically normal reproductive process and way to feed human infants and young children will have a major impact on improving individual family and community health globally. Knowledgeable health care providers are fundamental to achieving this goal and preservice education is the foundation to this knowledge. In order to encourage this "revolution" in preservice education, Wellstart International has made a decision to provide this Edition on its web site as a downloadable teaching/learning tool without charge.

We only ask that users take this opportunity seriously: read the material carefully and assume responsibility for providing the evidence based care that is explained and recommended. Become part of the solution that will help of children and their families survive and live life to the fullest.

References

1. AAP. Policy Statement: Breastfeeding and the Use of Human Milk. PEDIATRICS.129, 3, March 2012
2. Black, RE, Morris, SS, Bryce, J. Where and why are 10 million children dying every year? (2003) The Lancet; 316;2226-2234
3. Horta, BL. Bahl, R, Martines, J, Victora, CG. (2007) Evidence on the long-term effects of breastfeeding: Systematic Reviews and Meta-analyses. WHO, Geneva
4. Ip. S, Chung, M, et al. (2007) Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries. Evidence Report/Technology Assessment No 153. AHRQ Publication No 07-E007. Agency for Healthcare Research and Quality.
5. Wellstart International and the University of California San Diego (1999). Lactation Management Curriculum: A Faculty Guide for Schools of Medicine, Nursing and Nutrition, Fourth Edition. San Diego, California; Wellstart International
6. World Cancer Research Fund/American Institute for Cancer Research (2007). Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective. Washington, DC: AICR, 2007

Faculty Guide

These **Level I** Modules are designed to be used during the beginning of clinical assignments of students of the health professions (i.e. medical, nursing, nutrition) or by those who have not had previous exposure to **Level I** content. They have also been useful as a review of the basics. They can be used as the entire content of a course or as a part of a course. For example, this material may be assigned as part of required clinical experiences in newborn and/or maternal care or as part of an elective or independent study. The manner in which these tools are used is up to the responsible faculty. Faculty are encouraged to incorporate local or regional concerns into the experience of the participants. For example, in some areas of the world, HIV and AIDS are a major concern and may warrant more detailed special attention. Or perhaps the most commonly used human milk substitute is not commercial formula but cow or goat milk requiring appropriate information and comparisons.

Regardless of whether they are used as a course or are part of a course, the Modules can be studied by the users at a time and place most convenient for the user. Though faculty involvement is not required, experience with the first and second editions suggests that users are likely to gain greater knowledge when guided by an interested faculty member. Experience has also indicated that medical students and residents are most responsive when the responsible faculty member and role model is a physician. For nursing students, a faculty member from the school of nursing is most effective.

While the modules can be completed independent of one another, they are best reviewed in sequence. Thus a student may have time to complete Module 1 and later undertake Module 2 and even later, Module 3. A pre-test of knowledge is included before beginning Module 1 as well as a *pre-test with answers* and where an explanation of the answers can be found in the modules. Because many faculty have found it useful to have students take both a pre-test and a post test for comparison with the pre test scores, a post-test as well as a *post-test with the answers briefly explained* is also included following Module 3. In addition, each module has a set of references that can be utilized for selecting assigned readings if so desired by responsible faculty.

The format of the modules provides application of the material by means of short case exercises. The information in the modules and the case exercises will be enhanced by a structured clinical experience such as bedside rounds where students can apply their new knowledge to a realistic setting. A clinical instructor, experienced in lactation management, should help the student carry out the breastfeeding assessment and problem solving steps. If time is available, additional assignments in prenatal clinics, delivery rooms, follow-up clinics, home visits and mother's support groups can also be useful.

Experience with previous editions has indicated that the three modules can be completed within a 6 to 7 hour time frame including reviews of two or three short DVDs or videos. Additional time will be required for the clinical experiences, essential to enhance application of the knowledge to real mother/infant situations. Wellstart does not give CME's. However many hospitals through their educational office have arranged for CMEs to be given for completion of the Self-Study Modules.

Faculty Preparation

Faculty members who will direct or coordinate this self-study learning experience need to work through the modules to become familiar with the content, exercises, and accompanying materials. Ideally responsible faculty who plan to use this tool should be prepared at Level II or III. If faculty do not feel adequately prepared, enrollment is recommended in one of the workshops frequently provided by several organizations including the Academy of Breastfeeding Medicine (ABM), American Academy of Pediatrics (AAP), or other faculty development workshops. For those who will be working with students who intend to pursue certification by the International Board of Lactation Consultant Examiners, the workshops carried out by International Lactation Consultant Association (ILCA) workshops would be helpful. These workshop opportunities are announced by the sponsors on their organizational websites provided in annex G.

Recently the AAP made their Residency Curriculum available on their web site (www.AAP.org/breastfeeding). Much of the material is available without charge, though some recommended items such as training videos/DVDs must be obtained for a fee from non AAP sources. This would also help prepare faculty at Level II. Though the AAP Residency Curriculum material is not intended to be a self-study course, it offers information and tools that can be helpful to someone who is already reasonably knowledgeable.

Teaching Resources

1. Textbooks

It is also recommended that faculty assigned to direct or coordinate an experience using the Wellstart Self-Study Modules, have the following references available. The first three texts are particularly intended for physicians. The reference by Jan Riordan is also very often used in physician training but especially useful in programs focused on nursing students.

- a. American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (2006) *Breastfeeding Handbook for Physicians*. AAP, Elk Grove Village, IL and ACOG, WDC.
- b. Hale, TW. Hartman, PE. (2007) *Textbook of Human Lactation, First Edition*, Amarillo, TX. Hale Publishing, L.P.
- c. Lawrence RA and Lawrence RM (2011) *Breastfeeding, A Guide for the Medical Profession, Seventh Edition*, St. Louis, MO: Mosby, Inc.
- d. Riordan J and Wambach K (2010) *Breastfeeding and Human Lactation, Fourth Edition*, Boston, MA: Jones and Bartlett Publishers, Inc
- e. Walker, M (2014) *Breastfeeding Management for the Clinician: Using the Evidence. 3rd Edition*

2. References

At the end of each of the three modules a list of relevant references for the content of the particular module is provided. These have also been put together as an alphabetized list in the annex included at the end of this tool.

The World Health Organization has developed and made available a “Model Chapter on Infant and Young Child Feeding” for textbooks for medical students and allied health professionals. This material is intended for perinatal health professionals. The chapter can be reviewed and downloaded without charge at the following website:

www.who.int/nutrition/publications/infantfeeding/9789241597494/en/index.html

3. DVDS

Having an opportunity to visualize some of the techniques and skills described in Modules 2 and 3 of this Level I Self-Study tool can be particularly helpful to user of this tool. Several short DVDs regarding immediate breastfeeding at birth and how to assist a new mother-baby couple with achieving an effective, comfortable attachment or latch-on are available. Medical and nursing schools frequently maintain a library of teaching tools and may already have something appropriate in their collections. If that is not the case, faculty responsible for directing a program in which the Self Study Modules will be utilized are urged to consider reviewing and possibly obtaining one or two of the several relevant DVDs that are currently available. Titles and web sites where further information may be obtained include:

- a. *Initiation of Breastfeeding by Breast Crawl*
<http://breastcrawl.org/video.htm>
- b. *Delivery Self Attachment with Dr. Lennart Righard*
www.geddesproduction.com/breast-feeding-delivery-selfattachment.php
- c. *Baby-Led Breastfeeding: The Mother Baby Dance with Christina M. Smiley, MD*
www.geddesproduction.com/breast-feeding-baby-led.php
- d. *Making Enough Milk, the Key to Successful Breastfeeding: Planning for Day One with Jane Morton, MD*
www.breastmilk solutions.com/making_enough.html
- e. *Latch 1,2,3: Troubleshooting Breastfeeding in the Early weeks*
www.healthychildren.cc
(note: to find information regarding this DVD, select “Breastfeeding Information Links” from left hand column)
- f. *Re: Basic Breast Massage and Hand Expression*
<http://www.bfmedneo.com/BreastMassageVideo.aspx>
- g. *Re: Milk banking in Brazil*
www.youtube.com/watch?v=X8KHJvE6AtU