



## **Program Guide**

### **Newborn Individualized Developmental Care and Assessment Program (NIDCAP)**

**An Education and Training Program for Health Care Professionals**

---

- **NIDCAP Education and Training for Professionals**
- **Consultation and Guidance in NIDCAP Care Implementation and Integration into the Nursery**
- **NIDCAP Nursery Assessment and Certification Program**
- **Establishing a NIDCAP Training Center and Becoming a NIDCAP Trainer**
- **APIB Behavioral Assessment Training**
- **Becoming an APIB Trainer**
- **Becoming a NIDCAP Master Trainer**

Heidelise Als, PhD, 1986, 2000  
©NIDCAP Federation International, 2015  
NIDCAP® is a registered trademark of the NFI, Inc.  
Updated 22 October 2019

**NIDCAP Federation International (NFI)  
Board of Directors 2019-2020**

**Deborah Buehler, PhD, *President***

West Coast NIDCAP & APIB Training Center, San Francisco, California, US (2020)\*

**Dorothy Vittner, PhD, RN, *Vice President***

Carolina NIDCAP Training Center, Raleigh, North Carolina, US (2020)

**Gloria McAnulty, PhD, *Treasurer***

National NIDCAP Training Center, Boston, Massachusetts, US (2020)

**Jean Powlesland, RN, MS, *Secretary***

Children's Hospital of University of Illinois (CHUI) NIDCAP Training Center, Chicago, Illinois, US (2021)

**Fátima Clemente, MD**

São João NIDCAP Training Center, Porto, Portugal (2022)

**Mandy Daly, Dip.H Diet & Nutrition, ACII, DLDU**

Family Representative, Dublin, Ireland (2021)

**Jennifer Degl**

Family Representative, New York, US (2022)

**María López Maestro, MD**

Hospital Universitario 12 de Octubre NIDCAP Training Center, Madrid, Spain (2022)

**Dalia Silberstein, RN, PhD**

Israel NIDCAP Training Center, Kfar Saba, Israel (2021)

**Juzer Tyebkhan, MD**

Edmonton NIDCAP Training Centre, Edmonton, Canada (2020)

**\*Year Board term ends**

**NFI Main Address**

NIDCAP Federation International, Inc.  
P.O. Box 3303  
Woburn, MA 01888 USA

**Contact Numbers and Email Addresses**

Main Number: 1-617-355-8249  
Main Email: [nidcap@childrens.harvard.edu](mailto:nidcap@childrens.harvard.edu)  
Membership Email: [nfimembership@nidcap.org](mailto:nfimembership@nidcap.org)

**Website**

[www.nidcap.org](http://www.nidcap.org)

## Table of Contents

<b>Introduction</b>	<b>4</b>
<b>Background</b>	<b>4</b>
<b>Overview of Specific NIDCAP Training Components and Levels</b>	<b>6</b>
<b>NIDCAP Education and Training of Professionals</b>	<b>7</b>
<b>Consultation and Guidance of Developmental Care Implementation and Integration</b>	<b>13</b>
<b>NIDCAP Nursery Certification</b>	<b>14</b>
<b>Establishing a NIDCAP Training Center</b>	<b>15</b>
<b>APIB — Behavioral Assessment Training</b>	<b>17</b>
<b>Becoming an APIB Trainer</b>	<b>21</b>
<b>Becoming a NIDCAP Master Trainer</b>	<b>22</b>
<b>Literature Cited</b>	<b>23</b>
<b>Further Training Documents Available</b>	<b>24</b>
<b>NIDCAP Required Readings</b>	<b>25</b>
<b>APIB Required Readings</b>	<b>34</b>

## Introduction

Advances in perinatal and newborn intensive care have greatly decreased the mortality rates for preterm newborns and newborns otherwise at high risk for developmental compromise. The challenge confronting healthcare professionals who care for these infants and their families is not only to assure the infants' survival, but to optimize their developmental course and outcome. Through assessment and documentation of infants' competence and behavioral thresholds to disorganization, a better understanding of the developing nervous system may be gained. This in turn may lead to the provision of developmentally appropriate experiential opportunities for the newborn in the hospital setting and the provision of supportive care for the infant's family. Structuring a physical and social environment supportive and nurturant of the individual infant's immature or dysmature nervous system and of the family's sense of competence becomes a critical component of care in the newborn intensive care unit (NICU) and of follow-up care in the home and the community. The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) has been established to provide education and specific training in developmental observation and assessment for health care professionals, who have responsibility for the long- and short-term care of high-risk newborns and preterm infants and their families, and for staff members, who are involved in the implementation of their care on a day-to-day basis. A key focus of the NIDCAP program is the educational and consultative support and assistance to NICU and special care nursery (SCN) settings towards effective delivery of intensive and special care in a neurodevelopmentally supportive, individualized, and family-centered framework. The NIDCAP Federation International (NFI), a not for profit incorporated international professional membership organization, is the agency that safeguards the quality of all training and education in the NIDCAP model. It is the certifying agency for all levels of NIDCAP training.

## Background

The goal of education and training in the developmental approach to care is to bring about a shift from protocol-based to strategic process thinking and from task-oriented to relationship-based care. The developmental approach to care sees infants as active structurers of their own developmental trajectories, supported by the ongoing co-regulation process of infant and parent development. The newborn's three evolutionarily adapted and inherited niches, biologically expected for good-enough development, are the mother's womb, the parents' body and mother's breast, and the family's social group. Preterm newborns unexpectedly have removed themselves from the intrauterine environment and its complex co-regulatory inputs. By virtue of the need for hospital care, they, as well as high-risk fullterm newborns in need of hospitalization, are separated from the expected intimate parent and family environment for prolonged periods. Developmental care takes advantage of the infant's expectation for co-regulatory care and for a close, emotionally attuned and invested relationship. It sees an opportunity for the increased effectiveness of intensive care delivery in supporting the realignment and co-regulation of the newborn and the family. Implementation of intensive care in such a framework requires knowledge and understanding of infant, parent and family development, and of the interplay of the infant's medical issues with the developmental process. In order to achieve multi-disciplinary collaboration in developmental care implementation, appreciation of each of the professional disciplines coming together in the NICU is necessary, as well as understanding of the organizational structures of the hospital and the nursery. Furthermore skill and sensitivity are required in supporting and nurturing infant and family. Professionals in such a complex setting must be committed to further their own personal growth, self-knowledge and emotional maturity. The NFI seeks to provide information, education, and support towards those aspects by provision of reading materials as well as didactic presentations, observation training, and

opportunities for individual and system guidance and consultation. It is the responsibility of each professional who participates in training to create additional opportunities as indicated. It is the responsibility of the leadership in a setting to create opportunities for staff development, as well as enhancement of organizational and physical structures as indicated. NIDCAP training entails systems change. Therefore, the specific training of individuals at a setting occurs only once the setting has developed sufficient leadership support, institutional commitment, and a five-year education, training and staff development plan in order to effectively support the changes in environment and care that are required for the successful implementation of developmental care in the NIDCAP model. Detailed observation and interpretation of the infant's behavior and the formulation of appropriate recommendations constitute care skills taught in specific NIDCAP training.

In the NIDCAP model, specific estimation of each individual infant's current goal strivings is derived from the direct observation of each infant's behavior in the context of ongoing care delivery. The infant's behavior provides the guide for the caregiver to estimate the infant's current strengths and active efforts in catalyzing and structuring his or her own development. Direct observation of the infant's behavior with inference of the infant's own goals provides the basis from which to explore opportunities with the family and with professional caregivers to support the infant's goal strivings and differentiating competencies.

A systematic behavioral observation methodology, referred to as NIDCAP observation, as well as a formal evaluation, the APIB (Assessment of Preterm Infants' Behavior, Als et al., 1982), have been developed to be particularly geared to the understanding of the preterm and otherwise at-risk newborn's behavior. Both methodologies, NIDCAP observation and APIB, are based in the Synactive Theory of Development (Als, 1982) and are designed to specifically document the complexity and sensitivity of the preterm and the at-risk newborn infant by focusing on the interplay of the infant's autonomic, motoric, state organizational, and attentional functioning as the infant interacts with the caregiver and world around the infant.

The results of the systematic observations and formal evaluations provide the basis for the estimation of the infant's current goals, which in turn leads to the consideration of opportunities in support of the infant's development, such as:

1. The structuring of an appropriate physical environment in the NICU for infant and family
2. The timing and organization of medical and nursing interventions appropriate to the individuality of infant and family
3. The support and nurturance of the parents' cherishing of their infant, and of their confidence in caring for and taking pride in supporting their infant's development
4. The coordination in the developmental framework of the care delivered by special service providers such as respiratory therapists, occupational and physical therapists, social workers, nutritionists, early intervention professionals, public health nurses, and others.

The NIDCAP approach lends itself to system-based, process-oriented, attuned and responsive support of individualized developmental care for each infant and family. Results to date show that medical and developmental outcome for infants and competence of parents cared for in such a developmental framework are much improved (Als, 1986; Als et al., 1986; Als et al., 1987; Als et al., 1994; Becker et al., 1990; Becker et al., 1993; Parker et al., 1992; Fleisher et al., 1995; Buehler et al., 1995; Westrup et al., 2000; Kleberg et al., 2000; Kleberg et al., 2002; Als et al., 2003; Als et al., 2004). The APIB (Als, et al., 2005) provides an additional systematic, formal means for assessment of

behavioral functioning of the preterm and otherwise at-risk newborn. In the hands of the professional with advanced background and training in child development and clinical infant psychology, the APIB becomes a diagnostic and prognostic tool, further supporting the caregiver in identifying specific opportunities and issues in complex situations and/or at clinical transition and decision points. Some nurseries aim ultimately to become a NIDCAP Training Center and develop two NFI certified NIDCAP Trainers within their system. NIDCAP Trainers are advanced level experienced Developmental specialists who aside from APIB certification achieve the certification components required for NIDCAP Trainers. These are specified in NFI policy documents and are summarized below. The education, training and support for the developing NIDCAP Trainer is provided by a NIDCAP Master Trainer, who additionally has met all NFI required conditions to qualify for NIDCAP Master Trainer Certification; This includes among others the achievement of APIB Trainer certification. Again the specific requirements for NIDCAP Master Trainers and APIB Trainers respectively are spelled out in the respective NFI Policy documents, and are summarized briefly below. All approved NIDCAP Trainers in Training, certifies NIDCAP Trainers, APIB Trainers and NIDCAP Master Trainers are NFI members. NIDCAP certified professionals may apply for NFI membership with the specific endorsement of their NIDCAP Trainer and the approval by the NFI Board. NFI membership privileges and responsibilities are spelled out in more detail on the NFI website [www.nidcap.org](http://www.nidcap.org)

### **Overview of Specific NIDCAP Training Components and Levels**

Effective developmental care implementation on a nursery-wide basis is the goal of all education, training and consultation provided within the NIDCAP framework. Consultation and training is currently available from 23 NIDCAP training centers, six in the United States of America, one in Canada, thirteen in Europe, one in South America, one in Australia, and one in Israel. Based on extensive experience, moving towards successful delivery of newborn intensive care in a developmental framework is typically a 5-year process. It involves:

- Training of at minimum two NIDCAP Professionals
- Assuring salaried positions (2 FTE) for the NIDCAP Professionals
- Training of a multidisciplinary leadership support team and institutional system support
- Training of a core group of nursing staff
- Development of a parent council
- Development of reflective process and continuing education opportunities.

Initial training consists of training in environment and care assessment as well as in depth infant behavioral observation. This training is then integrated into developmental care planning and implementation based on the observations (NIDCAP Professional Certification). All training is embedded in consultation to the NICU regarding environment, developmental team building, developmental care implementation and family inclusion. In addition, formal training for the nursery's developmental care specialists includes training in neurobehavioral assessment (Assessment of Preterm Infants' Behavior, APIB), as well as consultation to the developmental specialists and the multi-disciplinary leadership support team in the facilitation of implementation of developmental care (Developmental Care Specialist Training). A document entitled, "Cost-Effectiveness Analysis of Developmental Care (NIDCAP) in the Newborn Intensive Care Unit," is available from the training centers, and spells out in more detail the process of implementation. Two full-time positions are typically required to effectively support a NICU of between 40 and 50 beds for consistent developmental care growth and sustained implementation.

Following is an overview of the specific training and consultation components involved.

NIDCAP Nursery Development includes NIDCAP education training and certification of NIDCAP Professionals as well as consultation and guidance for implementation and integration of developmental care in to the nursery.

#### ▪ **NIDCAP Education and Training of Professionals**

An important component in the care of the preterm and at-risk newborn infant in the NICU is developmental facilitation of the adaptation from intrauterine to extrauterine environment and the re-establishment of the developmental trajectory in co-regulation with the infant's family. Research is increasingly showing that the preterm newborn is highly reactive to the environment and profits from a developmental approach to the structuring of environment and care. The developmental approach is based on the observation of the environment, the care delivered, and the infant's behavioral communication of current capacities of self-regulation, strivings for the next developmental step, and current disorganization. The information is used to structure environment and care in such a way that the infant's self-regulatory capacity and developmental progression is supported and disorganization is diminished. The goal of the individualized approach to care is to enhance stabilization, modulation, and increasing differentiation of functioning for each infant, in order to provide opportunity for the best possible potentiation of each infant's unique developmental course in the context of the infant's family and the care setting.

Professionals appropriate for the role of Developmental Care Specialist and to guide Developmental Care Implementation in their Nurseries are advanced level professionals including neonatologists, nurses, respiratory therapists, social workers, physical, occupational, and speech and language therapists, nutritionists, psychologists, infant developmental therapists, educators, pediatricians, psychiatrists, neurologists, and other health care professionals with graduate degree preparation or the equivalent leadership experience, who become the professionals specifically responsible for guiding developmentally appropriate care implementation for all infants and their families in the NICU. Additionally those professionals who seek expansion of their developmental observation skills for the purpose of conducting research also may find NIDCAP training useful.

All NIDCAP consultation, education and all training and certification sessions are conducted at the site of the hospital which seeks the training and wished to ultimately implement developmentally supportive care. It would represent a rare exception when training might be conducted at the Trainer's site. Education and specific training consist of the following application steps prior to the arrival of the NIDCAP Trainer:

#### *NIDCAP Training Application Process*

Upon securing the commitment of a NIDCAP Trainer, the nursery seeking training and the designated NIDCAP Professionals-in-Training receive the following documents.

1. Required and Recommended Readings;
2. Nursery Self-Assessment Documents including the *Nursery Self-Assessment Questionnaire* and the *Nursery Assessment Manual and Score Sheet* to be completed by the Nursery Leadership and designated NIDCAP Team. The Nursery Leadership and designated NIDCAP

Team will receive these documents in a NIDCAP Training Leadership Binder to be utilized in support of the Nursery's change over time in the course of the training process.

3. *NIDCAP Professional-in-Training Self-Assessment* to be completed by each NIDCAP Professional-in-Training.
4. *Consultation Documents* including the Consultation and Guidance with Sites and the Consultation and Guidance with Individual NIDCAP Professionals-in-Training.

#### a. Introductory Training

Two days of formal instruction for the key professionals designated by their site to lead the developmental care efforts are offered. These are followed by a day of feedback, planning, and site consultation.

##### Day 1- Didactic Introduction

###### (1) Lecture

An introductory lecture is given by the specific NIDCAP Trainer, explicating the theoretical background and empirical basis for developmental care. For the presentation the following materials are used: A PowerPoint presentation that covers the main topic areas of developmental care background, research and challenges; and selections from a commercially available DVD-series on the brain development of the preterm infant, implementation of developmental care in a NICU, as well as parental and family inclusion and perspectives on the role of the family in the NICU. The set of three DVDs will be available soon from the NFI. The introductory session lasts approximately 3.5 - 4 hours. The NIDCAP Trainer decides on the number of participants.

###### (2) Workshop

The introductory workshop involves discussion of the observation approach, including environment, path to the infant, and care, and the specifics of the observation methodology. Videotaped vignettes and written examples are used. The process of care implementation and change in the NICU is discussed, typically with the use of a PowerPoint presentation. The session typically lasts 3 hours and is restricted to Trainees and a few key leadership personnel. Some training centers combine the lecture and workshop into one full-day workshop session restricted to Trainees only. This is at the discretion of the Trainer.

##### Day 2 — Direct Observation Training (2 Trainees maximum)

###### (1) Direct Observation in the NICU

The path to the infant from hospital entrance to observation of a specific infant before, during, and after a caregiving intervention by the infant's caregiver, typically a nurse, follows, with guidance by the NIDCAP Trainer to see the environment and see and chart the behavior of the infant in interaction with the environment and a caregiver (1,5 – 2 hours).



(2) Write-up of the Observation and Assessment of Environment and Care

This involves discussion of the observation, observation write-up, study of infant's medical chart, specification of the infant's current goals, discussion of implications and recommendations for consideration in structuring environment and care for infant and family and in supporting the caregiving staff in the development of an individualized developmental care plan (4 to 5 hours). Discussion and scoring of the "Profile of the Nursery Environment and of Care Components", Template Manual, Part I (Als et al., 1990 1995 Rev 1997).

Day 3 – Feedback, Planning and Consultation

It is very important to set aside sufficient time on a separate day, typically the third day of the training week, in order to discuss with the Trainees, and in group session with the leadership team, the accomplishments of the training days, review progress on the time line and overall plan for the site's development, and map out the next steps with specific time frames and the necessity to free up the Trainees for their practice and independent study time. Realistic dates for the next formal on-site training session should be planned with consideration of holidays, other NICU and personal obligations etc in order to assure success.

(1) Discussion of Independent Observational Study

Discussion of the independent observational study, as outlined below and expected from the Trainees is an important opportunity and responsibility for the Trainer. Strategy development with the participants for their next steps, and for any additional supports that are deemed helpful, is indicated.

(2) Reflective Guidance, Timeline Development, and Evaluation with Trainees

Guidance to each of the two Trainees and exploration of their strengths and perceived difficulties in accomplishing the training goals, joint formulation of a timeline and planning for resource development are provided; an initially submitted *NIDCAP Professional-in-Training Self Assessment* provides the starting point for discussion. The session is jointly evaluated by Trainees and Trainer.

(3) Reflective Guidance, Timeline Development, and Evaluation with Site Leadership Team

Each training visit should end with a reflective and consultative session with the site's leadership team in order to share and stay aware of training progress, difficulties encountered, timeline adjustments, and/or additional opportunities perceived or realized. Review of progress in terms of the site's self-assessment in the four key areas, environment, infant care, family care and staff care, with the scales as articulated in the Nursery Assessment Manual also should take place at this point. Next steps for the nursery's development are mapped out. Such a session is critical in terms of tracking the nursery's development towards the overriding goal of NIDCAP Training. It is important in terms of time line development for the nursery, as well as training date decisions for the Trainer's next on-site visit.

## b. Independent Observational Study

Independent observation study is accomplished by the Trainees in their respective NICUs and Fullterm Nurseries.

- (1) Observation of a 24-hour course of three different preterm infants' is recommended in order to appreciate the 24-hour flow of events in the respective nursery as they impinge on the infant. These observations may be pieced together in 4- or 6-hour blocks:
  - High Intensive Care
  - Intermediate
  - Close to Discharge
- (2) Observation before, during, and after caregiving of at least five preterm infants at each of the following levels of care is recommended. Each observation is followed by the writing up of the developmental observation, the history, the infant's current goals, and care recommendations (Total: 15 observations):
  - ICU
  - Intermediate
  - Predischarge

Note: All NIDCAP Professionals-in-Training, i.e. NIDCAP trainees, regardless of the level of care delivered by their home base nursery, must arrange for the observation of at least five infants in the intensive care (ICU) phase. For professionals, whose home base nursery is a Level-2 Nursery (Intermediate Care; Step-Down Unit; etc) this may require the setting up of a special relationship with a Level-3 Nursery (Newborn Intensive Care Unit - NICU) in their area. The optimal site would be the NICU from where the Level-2 Nursery receives the highest number of infants.

- (3) Observation before, during and after caregiving and write-up of the observation of at least five well fullterm infants is recommended (Total: 5 observations).
- (4) Observation, before, during, and after caregiving, of three infants under the Trainee's own care, when cared for by someone else; writing of developmental observations and recommendations, subsequent implementation of recommended caregiving modifications when the participant is providing the observed child's care; and re-observation of the success of the recommendations.
- (5) Preparation of a full write-up with history and documentation for submission to the Trainer for feedback. Once judged adequate, see f and g below. Typically training centers require the submission of more than one write-up for review of all Trainees. This is at the discretion of the training center. Once the write-up submitted with full documentation and self reflection is judged appropriate by the Trainer, the next step, namely one or more Work Days, preceding the Advanced Practicum, take place.

## c. Work Days: Guidance and Assessment of Competence

Guidance and Assessment of Competence is accomplished again at the Trainees' nursery. For this purpose one or more work days or a work week is scheduled. The bedside workday(s)

must again be followed by a separate day for feedback, planning and consultation to the individual Trainees as well as to the site.

#### Day 1 – Bedside Work Day(s) (Maximum 2 Trainees)

One or more workdays are scheduled. The Trainer and Trainee perform an observation together and discuss the write-up and recommendations. Some training centers require more than one workday of all Trainees before the Trainee is judged competent to embark on the Advanced Practicum. At maximum two Trainees may participate in a work day bedside observation and discussion.

#### Day 2 – Feedback, Discussion and Planning of Advanced Practicum

The Advanced Practicum (AP) presents the first opportunity for the Trainee to test his or her newly acquired skills in the clinical arena. An AP consists of approximately weekly observations of a very low birthweight infant from admission to discharge and transition to the home environment. Each observation is followed by a formal write-up. Furthermore, the Trainee offers daily support and guidance to the caregiving team and the family, based on the information gleaned from the observation. Since the AP focuses on the NICU from the infant and family's vantage point, it reveals the difficulties and inconsistencies in care implementation that are frequently part of NICU care. The AP may provide a catalyst for change in NICU structures and team work. Therefore it is critically important to plan each Advanced Practicum with great care, and assure that enough safeguards and supports are available and/or will be developed before the Trainee embarks on this key step. It is also important to build into the planning of the AP enough staff time in order to assure sufficient opportunities for meeting and reflection with the members of the care team and with the NICU leadership.

NIDCAP Professionals-in-Training, whose home base nursery is a Level-2 Nursery (Intermediate Care; Step-Down Unit; etc), should make every attempt to begin their Advanced Practicum in a Level-3 NICU (Intensive Care Nursery), optimally in the NICU from where the majority of infants are transferred. It is in the best interest of the NIDCAP trainee and of developmental care implementation to forge a strong relationship with such a Level-3 NICU, in order to assure continuity of care for all infants and families transferred to the community Level-2 nursery. In cases, where this creates a difficult inter-institutional situation, which jeopardizes the trainee's learning experience, the trainee may select an in-born infant born at or before about 30 - 32 weeks, or an infant, who was transferred to the Level-2 nursery within about a week from birth. The decision and arrangements around the selection of infant and family for the Advanced Practicum always should be made in interaction with the NIDCAP Trainer, who holds responsibility for the trainee's quality of training and will have insight into the circumstances that pertain to specific trainee situations. *Note:* All trainees must fulfill the Advanced Practicum requirement of a minimum of five observations, the last of which must be a home observation.

It is usually advisable that only one Trainee at a time embark on an AP in a NICU, and the other Trainee(s) support the consistency in care implementation for the family involved in the AP. The completed AP in the form of a bedside binder or Developmental Diary containing the formal write-ups as well as entries by the family and care team, photographs and other items

that chronicle the infant's progress, becomes the property of the family. A copy of the materials together with the Trainee's reflective process documentation and the formal evaluations of the usefulness of the Trainee's support completed by the family and the key team members are submitted to the Trainer, who reviews and evaluates the Trainee's progress, and as deemed appropriate, schedules NIDCAP reliability assessment.

#### Day 3 – Feedback, Planning and Consultation

Depending on the complexity of the site and the number of Trainees involved, a third day for site preparation and leadership consultation and reflection is indicated, in order to prepare and support the next training and nursery growth step supportively.

#### d. Reliability (2 Trainees maximum)

Reliability provides the culmination for an individual Trainee to demonstrate astuteness and thoughtfulness in observation and care planning as well as in systems resource management for the care of an individual infant and family. For a nursery this provides the beginning of true change since now there is a trained and knowledgeable professional, or two professionals, available to work as resource and guide for the staff and leadership and for the families.

#### Day 1 – Bedside Observation Day(s) (Maximum 2 Trainees)

The environment is observed by the Trainer and the Trainee from hospital entrance to the infant's bedside, followed by the observation of the infant before, during, and after a caregiving interaction. Trainer and Trainee make independent written observations, goal specifications, and recommendations for modification of care. Trainer and Trainee compare and discuss their respective observations and recommendations.

In preparation for the next day the Trainee is charged with the responsibility and opportunity to reflect on their journey from introduction to the NIDCAP process to the accomplishments of the reliability session. The Trainee is asked to develop a detailed assessment of their own competencies at this stage, of areas of further development and of supports and next steps that the Trainee is planning or hoping to plan for.

#### Day 2 – Evaluation, Feedback and Planning with Trainees

The Trainer invites the Trainee to reflect on the Trainee's own path to this stage in training and to assess their accomplishments and performance along the way and specifically in the course of the reliability day. The Trainer gives feedback to the Trainee regarding the Trainer's assessment of the Trainee's work and judges the Trainee(s) written products in terms of

- Completeness of observation
- Astuteness of understanding
- Articulation of the infants' strengths, difficulties, and goals in view of the infant's history
- Articulation of the dynamic process of the infants' current developmental issues and steps in the co-regulatory context of the infants' family and the NICU setting

- Conceptual astuteness, pedagogic supportiveness, and effectiveness in formulation of the recommendations offered for consideration
- Accuracy of assessment of environment and care

Trainees may show progress towards reliability and be deemed in need of further practice in observation and articulation, in need of further development of conceptual understanding, or of maturity in generating creativity and growth in those their support addresses. Discussion of the Trainee's and Trainer's assessments is helpful in arriving at next steps. Suggestions are the made by the instructor for the next steps, and time lines are discussed. Further work and/or reliability sessions are scheduled and/or other opportunities for growth and development outlined. Upon completion of the training, when the criteria outlined are satisfied, the participant is awarded a certificate. In the US, some states are also currently awarding CEUs for nurses upon completion of the introductory training, as well as upon completion of Reliability. Application for CEUs typically is the responsibility of the professionals seeking the training.

### Day 3 – Feedback, Planning and Consultation to the Site

Discussion with the site and the key leadership constituencies, as to the Trainees' accomplishments, next steps, and plans for the further development and growth of resources and competencies for the site are discussed. Review of progress in terms of the site's self-assessment in the four key area, environment, infant care, family care and staff care, with the scales as articulated in NIDCAP Nursery Assessment Manual should be repeated at this point. Next steps for the nursery's development are mapped out. Such a session is critical in terms of tracking the nursery's development towards the overriding goal of NIDCAP Training. It is important to celebrate the hard work accomplished while simultaneously engage in the discussion of the dynamic guidance and mentoring nature of this work, which requires the full time presence of the well trained NIDCAP certified professional on site in the nursery, as well as the nursery's leadership in order to promote and maintain growth and progress.

#### ▪ **Consultation and Guidance of Developmental Care Implementation and Integration**

From the outset of planning for developmental care training, site leadership professionals are encouraged to develop a strategic 5-year plan for the comprehensive and systemic integration of developmental care, as articulated in the Nursery Assessment Manual's score points 4 and 5 on the respective scales for the environment, the care of the infant, the family and the staff. Financial and organizational planning for the development of opportunities towards system-wide NIDCAP nursery integration of developmental care as the overall framework and philosophy of care delivery is important. Individual professionals targeted for specific training, as well as their supervisors and directors, are therefore encouraged to review in their settings opportunities supportive of such change that may already exist or may be created and developed. The NIDCAP Trainer will furnish the organizer(s) of the training process at a site with The NIDCAP Nursery Assessment and Certification Program's methodology is designed to guide the site along this process. Support is available to the site from the site's NIDCAP Trainer and NIDCAP Training Center as well as from the Director of the NFI's NIDCAP Nursery Assessment and Certification Program (NNACP). Such support may be in the form of telephone and/or on-site consultation

including assessment of organizational structures and the physical environment; assistance in strategizing and planning next steps of providing information to the setting, e.g., medical and/or nursing grand rounds, neonatology seminars, workshops, in-services, etc.; being available for group and individual meetings with key professionals; assisting in the identification of opportunities for further development of resources; and mapping out timelines appropriate for the setting. As pointed out above, each formal NIDCAP education and training session with individual professionals is embedded in a planning and review and consultation session with those in the leadership and change-agent position at the respective settings. The allocation of telephone and correspondence communication time, as well as on-site meeting time for the organizational strategizing component is important. Following on-site training day and Consultation and Planning Meetings with the individual Trainees, at a minimum, a 3-hour meeting of the Trainer with the on-site organizers and key leadership professionals is an essential component in this process.

The site organizers are furthermore encouraged to define and think through in advance the roles targeted for those professionals and staff members participating in formal NIDCAP training. This is helpful for the Trainer and the participants in training in order to most cohesively map out and support the overall change process. Reflective process consultation a regular basis at minimum for the developmental leaders in a setting is essential. The development of key resource professionals, aside from the developmental specialist and developmental nurse educator, has proven effective. Six or seven advanced level professionals, who represent the key disciplines in the NICU, e.g., neonatology, nursing, respiratory therapy, social work, physical and/or occupational therapy, case managers and neonatal nurse practitioners, and who are respected for their leadership skills, form the developmental resource, nurturance and advocacy team in the setting. This is important in order to integrate the developmental care framework as catalyst of the alliance of medical and nursing care and the dynamic process of infant and family development. An annual site self-assessment with the *Nursery Assessment Manual* is very helpful and strongly recommended in identifying progress, continued challenges, and new opportunities.

A detailed overview, including budget projections, of the NIDCAP training process for nursery-wide implementation of developmental care is available from training centers.

- **NIDCAP Nursery Assessment and Certification Program**

The NIDCAP Nursery Program under the auspices of the NIDCAP Federation International (NFI) recognizes the excellence of a hospital nursery's commitment to and integration of the principles of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) for infants, families, and staff, as well as in terms of the environment. Hospitals and their newborn intensive and special care nursery systems receive NIDCAP Nursery Certification when they demonstrate that they consistently promote best short and long term development of all infants and families in their care, and support their professionals and staff in accordance with the principle of assuring best personal and professional development towards relationship based care implementation. NFI certified NIDCAP Nurseries provide a dynamic environment for the full integration of expert medical and nursing care securely embedded within the active pursuit of mutual respect, caring, nurturance of and collaboration with infants and families, and among all professionals and staff members.

Nurseries eligible to apply to the NFI for NIDCAP Nursery Certification, must be part of a hospital system that, if in the USA, is licensed and accredited by the Joint Commission on the Accreditation of Healthcare Organizations, or if outside of the USA, meets the respective country's accreditation standards. Furthermore, nurseries eligible for certification must provide care to preterm infants under 1500 grams and/or under 30 weeks gestation either from birth on (NICU, Level III Nursery) or in a convalescent mode (Level II Nursery; step-down nursery); and/or provide care for full-term or near full term infants who require intensive or specialized medical care to ensure their survival; and/or provide care for newborns cared for in a hospital setting for various reasons. Such nurseries must employ at least one full-time equivalent (FTE) NFI certified NIDCAP Professional in good standing for the purpose of promoting individualized developmental care. Hospitals with multiple nursery settings may apply for certification for only one or for more than one of their nursery settings. Hospitals are encouraged to apply ultimately for certification for all the nurseries settings in their purview.

The *Nursery Assessment Manual* (Smith et al, 2011) is utilized to evaluate the quality of a nursery's developmental orientation and care implementation. They provide the conceptual framework for the nursery review process. The individual scales are organized into the following four categories that characterize a nursery:

1. Physical Environment of the Hospital and Nursery;
2. Philosophy and Implementation of Care: Infant;
3. Philosophy and Implementation of Care: Family; and
4. Philosophy and Implementation of Care: Professionals and Staff.

The NIDCAP Nursery Program is both a goal and a process. Nurseries that apply for this certification will, through the process of the application, and by their serial self-evaluations, define the areas of their current strengths and areas for future growth. Successful NIDCAP Nursery Certification represents distinction in the provision of a consistently high level of NIDCAP care for infants and their families, as well as for the staff, and as such, is to be commended and celebrated as an inspiration for all.

See the guide (Smith et al., 2011) and the [NFI website](#) for more information.

#### ▪ **Establishing a NIDCAP Training Center**

Once a center has developed the resources and advanced level leadership staff training necessary to provide developmental care, ideally has achieved NIDCAP Nursery Certification, at least has NIDCAP Nursery Certification as its express goal and/or is on its way towards such certification, such a center may consider the establishment of a NIDCAP Training Center. The requirements for moving from a center delivering care in the NIDCAP framework to a NIDCAP Training Center include the commitment to teach, guide, nurture, consult to, and advise professionals from and at other settings.

For this goal, it is necessary to identify and develop a core group of at least two advanced level clinicians, who will become NIDCAP Trainers and will provide such education, training, and consultation for others. The medical and nursing directors of the NICU must be in full support of and in agreement not only with the goals of the NIDCAP approach, but also with the opening of the NICU to professionals from other institutions for the learning process.

Demonstrating to Trainees from outside of one's own unit's practices requires special staff support for those who agree that their care be observed by outsiders, as well as special support towards the development of model environments and care delivery at the training site. Specific requirements for the prospective Trainer team members are as follows:

1. NIDCAP reliability
2. APIB reliability
3. Reliability in providing the didactic introduction
4. Reliability in providing direct observation training
5. Bringing independently to reliability at least two Trainees
6. Reliability in providing consultation and guidance to other sites and Trainees

The reliability of the prospective Trainers in providing these components is assessed by NFI certified NIDCAP Master Trainers. At this point NFI certified NIDCAP Master Trainers are H. Als, PhD, National NIDCAP Training Center, Boston, MA, USA; G. Basso, Centro Latinoamericano NIDCAP & APIB, Buenos Aires, Argentina; J. Browne, PhD, PCNS-BC, IMH-E, Australasian NIDCAP Training Centre, Westmead, Australia; D. Buehler, PhD, West Coast NIDCAP and APIB Training Center, San Francisco, CA USA; A. Kleberg, PhD, Karolinska NIDCAP Center, Stockholm, Sweden; and g. Lawhon, RN, PhD, Philadelphia, PA, USA.

To facilitate the consistency in material to be covered in the theoretical preparation, the Master Trainer provides a prospective Trainer and training center is provided by their master Trainer with a basic PowerPoint presentation at cost, which is to be supplemented by the respective center in development. All supplemental training materials must be reviewed and approved by the respective Master Trainer and in case of uncertainty are to be reviewed and approved by the NFI Program Committee and/or its Quality Assurance Advisory Council.

Each training center is expected to develop a minimum of two Trainers, and is led by a center director, who takes ultimate responsibility for the appropriate organization, conduct, and ongoing quality control of training by that site, and for communication with the respective Master Trainer. The center director is typically supported by a NIDCAP Center medical director and a NIDCAP Center nursing director, specifically in agreement to serve the training program, who assure the appropriate interface of the training program with the management of the NICU itself and are available as indicated to nurse managers and medical directors from NICUs interested in or seeking training. Each NIDCAP center is expected to develop its own certificate in keeping with the NFI specifications and to be approved by the Chair of the NFI Program Committee. The NFI President's signature must be included with the signatures of the site's director(s), and the leadership staff of the pertinent disciplines and or department chairpersons of the site's director(s). This serves to assure the official support of the program at the respective site. Examples of certificates are available from the NFI Main Office. The NIDCAP Training Center's director is typically an advanced degree professional, PhD or MD, with a full-time appointment at the respective institution. Participation in the annual NIDCAP Trainers meeting is expected of all Trainers-in-Training, Trainers, Center Directors in Development and Center Directors, in order to maintain up-to-date communications and to discuss developments. A register of Trainees is maintained by each NIDCAP center and entered regularly into the international Training Database, managed by James Helm, PhD. NIDCAP Professional and Trainer certification renewal is established annually under the auspices of the NFI, the NIDCAP training



levels' responsible certifying agency. It is the responsibility of the training center to arrange for and finance the annual certification renewals of its NIDCAP Professionals and Trainers. Guidance and support for quality implementation of all training and care is available through the center's Master Trainer and/or in consultation with the NFI Chair of the Program Committee, which is supported by a Quality Assurance Advisory Council consisting of the NFI's certified NIDCAP Master Trainers. Periodic, preferably annual, training center assessments, which include site assessment and consultation, and Trainer assessment and consultation are recommended and are the Center Director's responsibility. Aside from documentation of site and training self-assessment information, this involves a 3- to 4-day assessment and consultation process at the respective training center. Formal NIDCAP Nursery Certification Renewal, a biannual process, is described more fully on the NFI website, [www.nidcap.org](http://www.nidcap.org), under NIDCAP Nursery.

#### ▪ **APIB — Behavioral Assessment Training**

The APIB is a comprehensive, systematic assessment of the preterm and fullterm newborn, and provides a valuable resource in support of developmental care provision by professionals and families. It is a neurodevelopmental diagnostic instrument for clinicians and developmental consultants in the nursery setting, such as psychologists, neonatologists, neurologists, psychiatrists, developmental pediatricians, and advance practice nurse clinicians. APIB training is a requirement for all those providing formal NIDCAP training. It is highly recommended for all developmental specialists and developmental nurse educators in charge of the facilitation of developmental care. It is furthermore necessary for those who wish to use the APIB as research instrument.

##### 1. Preparation

The examination of preterm and otherwise at-risk newborns requires much skill and preparatory training. The following steps provide suggestions for the necessary background preparation for those who wish to achieve reliability in the APIB. The Trainee first establishes a good liaison and working relationship with the medical and nursing staff of the NICU or Special Care Nursery. Since it is important to also examine fullterm infants on a regular basis, a good working relationship with the fullterm newborn nurseries needs to be established as well. The following steps are recommended:

- a. Participation in daily rounds in the NICU with the medical and nursing staff, in order to gain familiarity with the medical care concerns, terminology, and decision making in this setting. Extensive reading of pertinent literature complements this experience. At least three months of such experience are helpful.
- b. Observation of normal and high-risk deliveries in order to appreciate the newborn period from the parent's and infant's perspective as well as from the perspective of the medical and nursing staffs. Familiarity with obstetric anesthesia procedures and pediatric procedures in the delivery room is indicated. Extensive reading accompanies this experience.
- c. Achievement of competence in the handling of preterm, at-risk, and healthy newborn infants and in the observation of their responses to manipulation. Under the supervision of a primary nurse, the Trainee participates in caregiving activities, such as holding,

diapering, etc., in order to achieve confidence in the handling of infants and in observing infant responses while interacting with the infant.

- d. Observation of several infants in the course of complete 24-hour nursery days. This includes observation of state behavior, movement patterns, autonomic reactions, etc., focusing on the changes in these patterns in the course of various care routines and medical procedures. The prospective examiner observes each infant throughout at least one 24-hour cycle, which can be pieced together in 4-hourly blocks. It is important to be aware of the differences in infant behavior and nursery atmosphere during the often more quiet, past-midnight hours and during the typically more active hours of medical rounds or shift changes. Each nursery has its own rhythm and pattern, of which the Trainee-examiner needs to be aware. The observation of several infants provides awareness of the difference in infants' reactions and strategies in experiencing the nursery.
- e. NIDCAP Professional certification is recommended at this juncture (see above for details).
- f. Experience with the administration of the maneuvers of the APIB is the next step. Expertise in the administration of reflex assessment, the response decrement, and interaction sequences needs to be acquired. Training in the Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1984) and the Prechtl Neurological Examination of the Newborn (Prechtl, 1977) are highly recommended. Supervision and input from a neurologist and neonatologist are also recommended. Practice of the sequence of maneuvers with healthy fullterm newborns is usually the first step until the flow of the examination is fully mastered.
- g. The next step is the assessment of a NICU infant who is judged to be stable and is near discharge. By then, the examiner has studied the manual and training guide carefully and is completely familiar with the sequencing of packages so as to provide the infant with a skilled examination. It is necessary to identify, with the nursing staff, an infant appropriate for examination and an appropriate examination time. The training purpose of performing the examination is discussed with the primary nurse. The nurse or experienced professional should be present during the initial examinations until the examiner feels confident in judging the infant's color changes, respiratory patterns, etc., while handling the infant. This is also important in terms of suggestions such as warming up the examination room in advance, etc. Furthermore, it facilitates the examiner's role definition as assessor of behavior and defines the examiner's limits in respect to nursing and medical practice as appropriate. Five or six stable infants are examined this way. At least one of them is a healthy fullterm infant. After each examination, the examiner scores the exam, even if the examiner has only administered one package or a few items. The scoring process fosters astuteness in observation and in turn systematizes the administration of the examination.

## 2. Introduction Days

The next training step is formal Introduction to the APIB, which is accomplished in a two day session. APIB Introduction occurs at the Trainee's site so that the Trainer may consult to the Trainee regarding site expectations, set-up for examinations and other site-specific parameters,

and interact with the Site's leadership in terms of support required for the Trainee and the Site's expectations regarding APIB use once reliability and certification are established. The introduction days usually last from about 9:00 A.M. to 6:00 P.M. Starting times of the days depend on the feeding schedules of the infants to be examined. On each of the two days the Trainer examines an infant while the Trainee observes. Complete scoring of the APIB is discussed, with opportunity for questions of scoring and administration issues that have arisen in the course of the Trainee's preparation. Maximally two Trainees may participate in the APIB introduction sessions.

### 3. Independent Self-Preparation and Practice; Work Session(s) with the Trainer

After the introduction days, the Trainees examine at least 25 infants, and score each of the examinations in their own nurseries. Five of these infants must be healthy fullterm infants. This preparation is typically a sufficient base for a two or three day Work Session with the Trainer. In the course of the APIB Work Session under the Trainer's supervision and guidance the Trainee examines an infant at least on one of the two trainee work days. As indicated for best progress the Trainer may examine an infant in solidifying administration aspects for the Trainee. Should two Trainees participate in the Workday Session each of the Trainees typically assesses one infant. On such occasions, especially when Trainer and trainees are geographically removed from one another, language may be an issue, and/or the trainees have few resources for education in their settings, a three-day session is productive. This is also the case when a considerable amount of time such as a full year has elapsed between APIB Introduction and Work Days. In such cases the Trainer performs the first examination with explanations and the Trainer and Trainees discuss together the scoring of the examination. On the second and third workday, depending on the Trainee(s)' confidence and level of preparation, Trainer and Trainee(s) score the examinations independently or together. They then discuss administration and scoring questions as they have arisen. Workdays typically are 8 – 9 hour days. After the workdays the Trainees now fine-tune scoring and/or administration further by examination of usually an additional 20 to 25 infants. The preparation necessary depends on the Trainee's background, experience and opportunity and the time allocated to regularly scheduled APIB practice.

Set-up time for an examination with obtaining of staff and parent permission as indicated, and offering of explanation as to the nature of the session, as well as room set-up, typically takes between 2 – 2.5 hours. An examination with a preterm infant typically lasts between 1 and 1 1/4 hours. Early on a novice Trainee requires between 3 and 4 hours for scoring. Feedback to the staff and the parents requires another 0.5 – 1 Hour. That means, the novice Trainee must set aside a minimum of 25 8-hour time blocks of undisturbed time in order to accomplish the preparatory training. The APIB Systems Sheet is the most demanding to score, since it requires the simultaneous attention to five or six subsystems of functioning at any one time in the examination. Once this is mastered, Score Sheets 2 and 3 are usually easier. The examiner may wish to concentrate initially on the Systems Sheet and leave Score Sheets 2 and 3 for last. Then, in a second phase, the examiner may wish to start with Score Sheets 2 and 3 and leave the Systems Sheet until last. In a third phase, the examiner may go back to scoring the Systems Sheet first until both segments are equally familiar to the Trainee. During the self-training and preparation process it is recommended to examine and score only one infant per day. For the skilled examiner, scoring should take approximately 60 minutes, maximally 90 minutes.

A number of Trainees will require more than one APIB Work Session. The Trainer determines when an additional APIB Work Session is indicated before reliability Certification is likely successful.

#### 4. APIB Professional Certification Session

When the Trainee has accomplished full preparation, the two-day reliability Certification Session as APIB Professional is set up. This usually requires the administration of at least one examination (Day 1) and the scoring of at least two examinations (Day 1 and Day 2) for a Trainee. The Trainee examines the infant, Trainee and Trainer score the examination independently, and then the Trainer discusses the administrative process and the scoring with the Trainee. For two Trainees a two-day reliability session is best set up as follows: Trainee A examines an infant on Day 1, Trainee B and Trainer observe. All three score. The Trainer gives feedback regarding Trainee A's administration of the examination, and discusses the scoring of both Trainees. Trainee A takes the lead in discussion and explanation of scores assigned. On Day 2, Trainee B examines an infant, Trainee A observes; both Trainees and the Trainer score. The Trainer gives feedback regarding Trainee B's administration and discusses the scoring of both Trainees, with Trainee B taking the lead in discussion and explanation of scores given. This gives each Trainee one chance for administration and two chances for scoring, maximizing Trainee and Trainer time. At some instances a three-day Session is set up, especially when the time lag between Work Days and Certification Session is a year or longer. In the three-day Certification Session the Trainer performs the infant examination on the first day and scoring maybe performed in joint discussion. For certification, the successful independent administration of one and scoring of at least two examinations is necessary for each Trainee. When certification is achieved, the APIB Professional Certificate is issued.

Training in clinical report writing on the basis of the APIB is not part of the formal training process provided in this framework and is negotiated on an individual basis. It requires an extensive internship with supervision by the Trainer and depends on the background of the examiner, as well as the purpose and focus of the assessment.

APIB training is set up on an individual basis. APIB Introduction, Work and Certification Sessions must be conducted at the Trainee's Site. This maximizes consultation and support to the Trainee and the Site.

Each APIB training component, Introduction Session, Work Session(s), and Certification Sessions must be followed by one-day schedule of Feedback, Reflective Processing, Planning, and Consultation Session, which must address all trainees and the site leadership. This day is planned in collaboration with the Trainees and the Site's Leadership.

In order to maintain certification, it is advisable to send several sample examination score sheets to the Trainer at decided upon intervals. There are certain built-in checks in the score patterns, which may be used to monitor the ongoing accuracy of scoring. A videotape of an examination with accompanying score sheet may also be helpful. This permits a check on continuing administration and scoring accuracy. This type of long-distance check is set up individually with the Trainer. It requires much Trainer time. Direct recheck of reliability is necessary on a frequency schedule determined by the Trainer, typically on an annual or biannual basis. It is critical to assess

fullterm healthy newborns on a continued basis in conjunction with preterm or otherwise at-risk infants, be it for clinical work or in the framework of research. Otherwise, one's internal standards for the infant's modulation and differentiation of performance easily drift. Reliability requires confidence and expertise in examining and scoring infants of all gestational ages and a wide range of clinical conditions. Annual APIB Professional Certification Renewal is required by the NFI as the APIB Professional certifying agency. This is accomplished by an on-line process.

All NIDCAP Trainers must have achieved APIB Professional certification and must feel confident and have gained expertise in the clinical and as indicated research use of the APIB.

#### ▪ **Becoming an APIB Trainer**

As a NIDCAP Trainer prepares to become a NIDCAP Master Trainer, a basic requirement is that the NIDCAP Trainer first or simultaneously becomes an APIB Trainer. For the initial generation of NIDCAP Master Trainers the NFI adopted the clause that APIB Trainer certification may be acquired after all other Master Trainer requirements have been accomplished, and or an otherwise qualifying NIDCAP Master Trainer may seek the partnership with an established APIB Trainer, who makes the commitment to fulfill the NIDCAP Master Trainer's APIB Training requirements in a timely and responsible fashion.

Preparation:

##### (1) APIB Certification Renewal (2.5 – 3.5 days):

A prospective APIB Trainer first reestablishes APIB Certification in a 2.5-3.5 day APIB session with the Senior APIB Master Trainer (H. Als, PhD, National APIB Training Center, Boston MA USA).

##### (2) Observation of APIB Trainer in Conducting Training Process (Three 3.5-Day Sessions)

Once APIB reliability is re-certified, the APIB Trainer-in-Training observes the APIB Master Trainer's introductory APIB Training Sessions, APIB Work Days, and APIB Certification Sessions as spelled out above under APIB Training, and debriefs with the APIB Master Trainer after each of these 3 day sessions. A three hour time block is typically sufficient per 3-day session for debriefing.

##### (3) APIB Training of Two New APIB Trainees

The APIB Trainer-in-Training introduces two new APIB Trainees to the APIB (3-day session). This is followed by a 3 – 4 hour review and guidance session with the APIB Master Trainer who observed the APIB Trainer-in-Training's APIB Introductory Days. Subsequently the APIB Trainer-in-Training schedules the two APIB Trainees for their Workdays (3-day session). This is again followed by a 3 – 4 hour review and guidance session with the observing APIB Master Trainer. Once the APB Trainer-in-Training schedules the two APIB Trainees for their Certification days (3-day session), the APIB Master Trainer attends and observes and subsequently debriefs and gives feedback and guidance to the APIB Trainer-in-Training. The APIB Trainer-in-Training's two APIB Trainees remain the ultimate responsibility of the APIB Master Trainer; thus, depending of the amount of input and guidance the APIB Master Trainer gave during the APIB training process of the Trainees, the APIB Trainer-in Training may be required to bring two additional Trainees to APIB Certification, now with little to no

direct guidance during the sessions for the Trainees. It is at the discretion of the APIB Master Trainer to judge and assure the independent APIB Trainer competence of the APIB Trainer-in-Training.

The APIB Trainer process thus requires at minimum 21 days of APIB Master Trainer Time, in work with and/or consultation to the APIB Trainer-in-Training.

#### ▪ **Becoming a NIDCAP Master Trainer**

Once a NIDCAP Trainer is also an accomplished APIB Trainer and independently has developed at minimum two level-3 NICUs with their respective NIDCAP certified professionals and the site guidance involved, and has furthermore trained at minimum two APIB Professionals to Certification, who ideally are the leadership NIDCAP professionals in one of the sites that the NIDCAP Trainer has independently developed, then the NIDCAP Trainer qualifies for application to become a certified NIDCAP Master Trainer.

The requirements include developing at least one NIDCAP Training Center successfully from initial NIDCAP certification through NIDCAP Trainer certification of at minimum two developmental care specialists, who apply officially to achieve NIDCAP Trainer certification and whose center applies officially to be certified as NIDCAP Training Center (see above). The NFI must review and approve a NIDCAP Trainer's application to become a certified NIDCAP Master Trainer. The NIDCAP Master Trainer applicant must identify the NIDCAP professionals and the nursery that he or she seeks to bring to NIDCAP Training Center and NIDCAP Trainer status. The respective center and NIDCAP professionals must apply and be approved by the NFI to be admitted to training and establishment of a NIDCAP Training Center respectively. The Master Trainer applicant must secure the availability and commitment of a Senior NIDCAP Master Trainer to guide the Master Trainer-in-Training in the process to become a certified NIDCAP Master Trainer. The Senior NIDCAP Master Trainer observes and guides the NIDCAP Trainer along the process of training two NIDCAP Trainers and a NIDCAP Center to certification. This requires typically three one-week sessions when the Senior Master Trainer is on-site for observation and guidance to the Master Trainer-in-Training, who trains the NIDCAP Trainers-in-Training in the Introduction Training, Workdays, and Certification Days with their respective Trainees. Currently there are four Senior NIDCAP Master Trainers H. Als, PhD, National NIDCAP Training Center Boston, MA, USA, G. Basso, MD, PhD, Centro Latinoamericano NIDCAP & APIB, Buenos Aires, Argentina; A. Kleberg, PhD, Karolinska NIDCAP Center, Stockholm, Sweden, and Joy Browne, PhD, PCNS-BC, IMH-E, Australasian NIDCAP Training Centre, Westmead, Australia.

The cost for the training by a Master or Senior Master Trainer of APIB Trainers, NIDCAP Trainers and NIDCAP Master Trainers respectively is the responsibility of the person seeking the level of training which requires the Master and/or Senior Master Trainer's supervision. The quality of training for the NIDCAP and APIB Trainees involved is the responsibility of the Master Trainer and or Senior Master Trainer respectively, who therefore may be required to co-train, amplify and supplement the training of the Trainer and/or Master Trainer in Training.

Centers with Master Trainers continue to be referred to as NIDCAP and/or APIB Training Centers respectively.

## Literature Cited

- Als H. Toward a synactive theory of development: Promise for the assessment and support of infant individuality. *Infant Mental Health Journal* 1982; 3(4):229-243.
- Als H, Lester BM, Tronick E, Brazelton TB. Toward a research instrument for the assessment of preterm infants' behavior (APIB). In: Fitzgerald HE, Lester BM, Yogman MW (eds.), *Theory and Research in Behavioral Pediatrics*, Vol. 1. New York: Plenum, 1982, 35-63.
- Als H, Lester BM, Tronick E, Brazelton TB. Manual for the assessment of preterm infants' behavior (APIB). In: Fitzgerald HE, Lester BM, Yogman MW (eds.), *Theory and Research in Behavioral Pediatrics*, Vol. 1. New York: Plenum, 1982, 64-133.
- Als H. A synactive model of neonatal behavioral organization: Framework for the assessment and support of the neurobehavioral development of the premature infant and his parents in the environment of the neonatal intensive care unit. In Sweeney JK (ed.), *The High-Risk Neonate: Developmental Therapy Perspectives. Physical and Occupational Therapy in Pediatrics*, 1986; 6(3/4):3-55.
- Als H, Lawhon g, Brown E, Gibes R, Duffy FH, McAnulty G, Blickman JG. Individualized behavioral and environmental care for the VLBW preterm infant at high risk for bronchopulmonary dysplasia: NICU and developmental outcome. *Pediatrics* 1986; 78:1123-32.
- Als H, Lawhon g, Duffy FH, McAnulty GB, Gibes-Grossman R, Blickman JG. Individualized developmental care for the very low-birth-weight preterm infant: Medical and neurofunctional effects. *Journal of the American Medical Association* 272: 853-858, 1994. (Merenstein GB, Editorial, 890-91.)
- Als H, Buehler D, Kerr D, Feinberg E, Gilkerson L. Organizational Structures Assessment: Profile of the Nursery Environment and of Care Components. Template Manual, Part I. Boston: Children's Hospital; 1990 1995 Rev 1997.
- Als H, Gilkerson L, Duffy FH, McAnulty GB, Buehler DM, VandenBerg KA, et al. A three-center randomized controlled trial of individualized developmental care for very low birth weight preterm infants: Medical, neurodevelopmental, parenting and caregiving effects. *J Dev Behav Pediatr* 2003;24:399-408.
- Als H, Duffy FH, McAnulty GB, Rivkin MJ, Vajapeyam S, Mulkern RV, et al. Early experience alters brain function and structure. *Pediatrics* 2004;113:846-857.
- Als H, Butler S, Kosta S, McAnulty G. The assessment of preterm infants' behavior (APIB): Furthering the understanding and measurement of neurodevelopmental competence in preterm and fullterm infants. *Ment Retard & Develop Disab Res Rev* 2005;11:94-102.
- Becker PT, Grunwald PC, Moorman J, Stuhr S. Outcomes of developmentally supportive nursing care for very low birthweight infants. *Nursing Research* 1991; 40:150-155.
- Becker PT, Grunwald PC, Moorman J, Stuhr S. Effects of developmental care on behavioral organization in very-low-birthweight infants. *Nursing Research* 1993; 42:214-220.
- Brazelton TB. *The Neonatal Behavioral Assessment Scale*. Second Edition. Clinics in Developmental Medicine, No. 88, Philadelphia, Lippincott, 1984.
- Buehler DM, Als H, Duffy FH, McAnulty GB, Liederman J. Effectiveness of individualized developmental care for low risk preterm infants: Behavioral and electrophysiological evidence. *Pediatrics* 1995; 96:923-932.
- Fleisher BE, VandenBerg K, Constantinou J, Heller C, Benitz WE, Johnson A, Rosenthal A, Stevenson DK. Individualized developmental care for very low birthweight premature infants. *Clinical Pediatrics* 1995; 34:523-529.

- Kleberg A, Westrup B, Stjernqvist K. Developmental outcome, child behavior and mother-child interaction at 3 years of age following Newborn Individualized Developmental Care and Intervention Program (NIDCAP) intervention. *Early Hum Dev* 2000;60:123-135.
- Kleberg A, Westrup B, Stjernqvist K, Lagercrantz H. Indications of improved cognitive development at one year of age among infants born very prematurely who received care based on the Newborn Individualized Developmental Care and Assessment Program (NIDCAP). *Early Hum Dev* 2002;68:83-91.
- Parker SJ, Zahr LK, Cole JG, Brecht M. Outcome after developmental intervention in the neonatal intensive care unit for mothers of preterm infants with low socioeconomic status, *J Pediatrics*, 780-785, 1992.
- Prechtl HFR. The Neurological Examination of the Full-term Newborn Infant. *Clinics in Developmental Medicine*, No. 63. Philadelphia, Lippincott, 1977.
- Smith K, Buehler D, & Als H. NIDCAP Nursery Assessment and Certification Program: Nursery Assessment Manual. 2015. Boston, Mass: NIDCAP Federation International, Inc.
- Smith K, Buehler D, Hedlund R, Kosta S, Als H. NIDCAP Nursery Assessment and Certification Program (NNACP): A Guide to Preparation, Application and Implementation of NIDCAP Nursery Assessment and Certification. 2015. Boston, Mass: NIDCAP Federation International, Inc.
- Westrup B, Kleberg A, von Eichwald K, Stjernqvist K, Lagercrantz H: A randomized controlled trial to evaluate the effects of Newborn Individualized Developmental Care and Assessment Program in a Swedish setting. *Pediatrics* 2000; 105: 66-72.

### Further Training Documents Available

1. Cost-Effectiveness Analysis of Developmental Care (NIDCAP) in the Newborn Intensive Care Unit
2. Nursery Wide Developmental Care Implementation in Newborn Intensive Care Units (NICU)– Recommendations for Training, Education, Staff and Resource Development
3. Outline of NIDCAP Training Process: Joint Guide for Trainers and Site Organizers
4. Guidelines and Suggestions for NIDCAP Trainees, NIDCAP Professionals, NIDCAP Trainers-in-Training, NIDCAP Trainers and Master Trainers, as well as Center Directors
5. Developmental Care Guidelines for Use in the Newborn Intensive Care Unit (NICU)
6. Fee Structure for Training Center



**NIDCAP Required Readings**

*NFI Quality Assurance Committee Approved, October 2, 2009 (Revised September 2012)*

**Theoretical/Conceptual**

Als H, Lester BM, Brazelton TB (1979). Dynamics of the behavioral organization of the premature infant: A theoretical perspective. In Field TM, Sostek AM, Goldberg S, Shuman HH (eds), *Infants Born at Risk*. New York: Spectrum, 173-192.

Als H (1982). Toward a synactive theory of development: Promise for the assessment and support of infant individuality. *Infant Mental Health Journal*. 3, 229-243.

Duffy FH & Als H (1983). Neurophysiological assessment of the neonate: An approach combining brain electrical activity mapping (BEAM) with behavioral assessment (APIB). In TB Brazelton & BM Lester (eds), *New Approaches to Developmental Screening of Infants*. New York: Elsevier North Holland, 175-196.

Duffy FH, Mower G, Jensen F & Als H (1984). Neural plasticity: A new frontier for infant development. In HE Fitzgerald, BM Lester & MW Yogman (eds), *Theory and Research in Behavioral Pediatrics*. New York: Plenum, 2, 67-96.

Als H, Duffy FH, McAnulty G, Badian N (1989). Continuity of neurobehavioral functioning in preterm and full term newborns. In M Bornstein, Krasnegor N (eds), *Stability and Continuity in Mental Development*. Hillsdale, NJ: Lawrence Erlbaum, 3-28.

Als H (1992). Individualized, family-focused developmental care for the very low birthweight preterm infant in the NICU. In SL Friedman & MD Sigman (eds), *The Psychological Development of Low Birthweight Children*. Norwood, NJ: Ablex Publishing, 341-388.

Gilkerson L, Als H (1995). Role of reflective process in the implementation of developmentally supportive care in the newborn intensive care nursery. *Infants and Young Children*. 7, 20-28.

Als H, Gilkerson L.(1997). The role of relationship-based developmentally supportive newborn intensive care in strengthening outcome of preterm infants. *Seminars in Perinatology*. 21, 178-189.

Kinneer, MD & Browne JV (1997). Developmental care in advanced practice neonatal nursing education. *Journal of Nursing Education*. 36, 79-82.

Als H (1999). Reading the premature infant. In Goldson E (ed.) *Nurturing the Premature Infant: Developmental Interventions in the Neonatal Intensive Care Nursery*. New York: Oxford University Press, 18-85.

Philbin MK, Robertson A & Hall JW (1999). Recommended permissible noise criteria for occupied, newly constructed or renovated hospital nurseries. *Journal of Perinatology*. 19(8), 559-563.

VandenBerg K (2007). State systems development in high-risk newborns in the neonatal intensive care unit. *Journal of Perinatal and Neonatal Nursing*. 21(2), 130-139.

Westrup, B (2007). Newborn Individualized Developmental Care and Assessment Program (NIDCAP) - family-centered developmentally supportive care. *Early Human Development*. 83(7), 443-449.

## Research

Als H, Lawhon g, Brown E, Gibes R, Duffy FH, McAnulty GB, Blickman JG (1986). Individualized behavioral and environmental care for the VLBW preterm infant at high risk for bronchopulmonary dysplasia: NICU and developmental outcome. *Pediatrics*. 78:1123-1132.

Grunwald PC & Becker PT (1990). Developmental enhancement: Implementing a program for the nicu. *Neonatal Network*. 9(6), 29-45.

Becker PT, Grunwald PC, Moorman J, Stuhr S (1991). Outcomes of developmentally supportive nursing care for very low birthweight infants. *Nursing Research*. 40,150-155.

Parker S, Zahr L, Cole JG, Brecht M (1992). Outcome after developmental intervention in the neonatal intensive care unit for mothers of preterm infants with low socioeconomic status. *Journal of Pediatrics*. 120, 780-785.

Zahr LK, Parker S & Cole J (1992). Comparing the effects of neonatal intensive care unit intervention on premature infants at different weights. *Developmental and Behavioral Pediatrics*. 13,165-172.

Becker PT, Grunwald PC, Moorman J, Stuhr S (1993). Effects of developmental care on behavioral organization in very-low-birthweight infants. *Nursing Research*. 42(4), 214-220.

Als H, Lawhon g, Duffy FH, McAnulty GB, Gibes-Grossman R & Blickman JG (1994). Individualized developmental care for the very low-birth-weight preterm infant: Medical and neurofunctional effects. *Journal of the American Medical Association*. 272, 853-858 (Merenstein GB, Editorial, 890-91).

Mouradian LE, Als H (1994). The influence of neonatal intensive care unit caregiving practices on motor functioning of preterm infants. *The American Journal of Occupational Therapy*. 48, 527-533.

Buehler DM, Als H, Duffy FH, McAnulty GB, Liederman J (1995). Effectiveness of individualized developmental care for low risk preterm infants: *Behavioral and electrophysiological evidence*. *Pediatrics*. 96, 923-932.

Fleisher BE, Vandenberg K, Constantinou J, Heller C, Benitz WE, Johnson A, Rosenthal A & Stevenson DK (1995). Individualized developmental care for very low birthweight premature infants. *Clinical Pediatrics*. 34, 523-529.

Stevens B, Petryshen P, Hawkins J, Smith B, & Taylor P (1996). Developmental versus conventional care: A comparison of clinical outcomes for very low birth weight infants. *Canadian Journal of Nursing Research*. 28, 97-113.

Petryshen P, Stevens B, Hawkins J, Stewart M (1997). Comparing nursing costs for preterm infants receiving conventional vs. developmental care. *Nursing Economics*. 15,138-150.

Brown LD & Heermann JA (1997). The effect of developmental care on preterm infant outcome. *Applied Nursing Research*. 10(4),190-197.

Heller C, Constantinou J C, VandenBerg K, Benitz W & Fleisher BE (1997). Sedation administered to very low birth weight premature infants. *Journal of Perinatology*. 17, 107-112.

Kleberg A, Westrup B, Wallin L, Lagercrantz H, Wikblad K & Stjernqvist K (1997). Evaluation of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) in a Swedish setting. *Prenatal and Neonatal Medicine*. 2, 366-375.

Becker PT, Grunwald PC & Brazy JE (1999). Motor organization in very low birth weight infants during caregiving: Effects of a developmental intervention. *Developmental Behavioral Pediatrics*. 20, 344-354.

Westrup B, Kleberg A, von Eichwald K, Stjernqvist K, Lagercrantz H (2000). A randomized controlled trial to evaluate the effects of newborn individualized developmental care and assessment program in a Swedish setting. *Pediatrics*. 105, 66-72.

Westrup B, Westas-Hellstrom L, Stjernqvist K, Lagercrantz H (2000). No indications of increased quiet sleep infants receiving care based on the newborn individualized developmental care and assessment program (NIDCAP). *Acta Paediatrica*. 91, 318-322.

Kleberg A, Westrup B & Stjernqvist K (2000). Developmental outcome, child behaviour and mother-child interaction at 3 years of age following newborn individualized developmental care and intervention program (nidcap) intervention. *Early Human Development*. 60,123-135.

Jacobs S, Sokol J & Ohlsson A (2002). The newborn individualized developmental care and assessment Program is not supported by meta-analyses of the data. *Journal of Pediatrics*.140(6), 699-706.

Westrup B, Stjernqvist K, Kleberg A, Hellstrom-Westas L & Lagercrantz H (2002). Neonatal individualized care in practice: a Swedish experience. *Seminars in Neonatology*. 7, 447-457.

Kleberg A, Westrup B, Stjernqvist K, & Lagercrantz H. (2002). Indication of improved cognitive development at one year of age among infants born very prematurely who received care based on the Newborn Individualized Developmental Care and Assessment Program (NIDCAP®). *Early Human Development*. 68, 83-91.

Lawhon g (2002). Facilitation of parenting the premature infant within the newborn intensive care unit. *Journal of Perinatal and Neonatal Nursing*. 16(1), 71-82.

Als H, Gilkerson L, Duffy FH, McAnulty GB, Buehler, DM, VandenBerg KA, Sweet N, Sell E, Parad RB, Ringer S A, Butler S, Blickman JG & Jones KJ (2003). A three-center randomized controlled trial of individualized developmental care for very low birth weight preterm infants: Medical, neurodevelopmental, parenting and caregiving effects. *Journal of Developmental Behavioral Pediatrics*. 24(6), 399-408.

Als H, Duffy FH, McAnulty GB, Rivkin MJ, Vajapeyam S, Mulkern, RV, Warfield S, Hüppi P, Butler S, Conneman N, Fischer C & Eichenwald E (2004). Early experience alters brain function and structure. *Pediatrics*. 113(4), 846-857.

Westrup B, Bohm B, Lagercrantz H, Stjernqvist K (2004). Preschool outcome in children born very prematurely and cared for according to the newborn individualized developmental care and assessment program (nidcap). *Acta Paediatrica*, 93(4), 498-507.

Catelin C, Tordjman S, Morin V, Oger E & Sizun, J (2005). Clinical, physiologic, and biologic impact of environmental and behavioral interventions in neonates during a routine nursing procedure. *Journal of Pain*. 6(12), 791-797.

Wielenga, JM, Smit, BJ & Unk, LK (2006). How satisfied are parents supported by nurses with the NIDCAP model of care for their preterm infant? Newborn individualized developmental care and assessment program. *Journal of Nursing Care Quality*. 21(1), 41-48.

van der Pal SM, Maguire CM, Le Cessie S, Veen S, Wit JM, Walther FJ, Bruil, J (2007). Staff opinions regarding the newborn individualized developmental care and assessment program (nidcap). *Early Human Development*. 83, 425-432.

Kleberg A, Hellström-Westas L & Widström A-M (2007). Mothers' perception of newborn individualized developmental care and assessment program (nidcap) as compared to conventional care. *Early Human Development*. 83(6), 403-411.

Wielenga, JM, Smit, BJ, Merkus, MP & Kok JH (2007). Individualized developmental care in a dutch nicu: Short-term clinical outcome. *Acta Paediatrica*. 96, 1409-1415.

Maguire CM, Veen S, Sprij, AJ, Le Cessie S, Wit JM, Walther FJ, Veen S (2008). Effects of basic developmental care on neonatal morbidity, neuromotor development, and growth at term age of infants who were born at <32 weeks. *Pediatrics*. 121(2), e239-e245.

van der Pal SM, Maguire CM, Bruil J, Le Cessie S, Wit JM, Walther FJ, Veen S (2008). Health-related quality of life of very preterm infants at 1 year of age after two developmental care-based interventions. *Child: Care, Health, and Development*. 34(5), 619-625.

van der Pal SM, Maguire CM, Le Cessie S, Veen S, Wit JM, Walther FJ, Veen S (2008). Parental stress and child behavior and temperament in the first year after the newborn individualized developmental care and assessment program. *Journal of Early Intervention*. 30(2), 102-115.

Kleberg A, Warren I, Norman E, Morelius, Berg, AC, Mat-Ali, Holm, K, Fielder, A, Nelson, N, Hellström-Westas L (2008). Lower stress responses after newborn individualized developmental care and assessment program care during eye screening examinations for retinopathy of prematurity: A randomized study. *Pediatrics*. 121(5), e1267-78.

Wielenga JM, Smit BJ, Merkus MP, Wolf, MJ, van Sonderen L & Kok, JH (2009). Development and growth in very preterm infants in relation to nidcap in dutch nicu: Two years of follow-up. *Acta Paediatrica*. 98, 291-297.

Ullenhag A, Persson K, Nyqvist KH (2009). Motor performance in very preterm infants before and after implementation of the newborn individualized developmental care and assessment programme in a neonatal intensive care unit. *Acta Paediatrica*. 98(6),947-52.

Maguire CM, Walther FJ, van Zwieten PHT, Le Cessie S, Wit JM, Veen S (2009). Follow-up outcomes at 1 and 2 years of infants born less than 32 weeks after newborn individualized developmental care and assessment program. *Pediatrics*. 123(4),1081-1087.

McAnulty GB, Duffy FH, Butler SC, Bernstein JH, Zurakowski D, & Als H (2010). Effects of the newborn individualized developmental care and assessment program (NIDCAP) at age 8 years: Preliminary data. *Clinical Pediatrics*. 49(3): 258-270.

Peters K, Rosychuk R, Henderson L, Cote J, MacPherson C, Tyebkhan J (2009). Improvement of short- and long-term outcomes for very low birth weight infants: Edmonton NIDCAP trial. *Pediatrics*.124, 1009-1020.

Maguire CM, Walther FJ, Sprij, AJ, Le Cessie S, Witt JM, Veen S and for the Leiden Developmental Care Project.(2009). Effects of individualized developmental care in a randomized trial of preterm infants less than 32 Weeks. *Pediatrics*.124, 1021-1030.

## Implementation

Lawhon G (1986). Management of stress in premature infants. In Angelini DJ, Whelan Knapp CM, Gibes RM (eds.), *Perinatal/Neonatal Nursing: A Clinical Handbook*. Boston: Blackwell, 319-328.

Cole JG, Begish-Duddy A, Judan ML & Jorgensen KM (1990). Changing the NICU environment: The Boston Medical Center model. *Neonatal Network*. 9,15-23.

Grunwald PC & Becker PT (1990). Developmental enhancement: Implementing a program for the nicu. *Neonatal Network*. 9, 29-45.

VandenBerg KA (1993). Basic competencies to begin developmental care in the intensive care nursery. *Infants and Young Children*. 6, 52-59.

Als H & Gilkerson L (1995). Developmentally supportive care in the neonatal intensive care unit. *Zero to Three*. 15, 1-10.

Browne JV, VandenBerg K, Ross ES, Elmore AM (1999). The newborn developmental specialist: Definition, qualifications and preparation for an emerging role in the neonatal intensive care unit. *Infants and Young Children*. 11, 53-64.

Sweeney JK, Heriza CB, Reilly MA, Smith C & VanSant AF (1999). Practice guidelines for the physical therapist in the neonatal intensive care unit. *Pediatric Physical Therapy*. 11,119-132.

Philbin MK. (2000). The full-term and premature newborn: The influence of auditory experience on the behavior of preterm newborns. *Journal of Perinatology*. 20, S77-S87.

Ballweg, DD (2001). Implementing developmentally supportive family-centered care in the newborn intensive care unit as a quality improvement initiative. *Journal of Perinatal and Neonatal Nursing*. 15(3), 58-73.

Ross ES & Browne JV (2002). Developmental progression of feeding skills: An approach to supporting feeding in preterm infants. *Seminars in Neonatology*. 7, 469-475.

Robison L (2003). An organizational guide for an effective developmental program in the NICU. *Journal of Gynecological and Neonatal Nursing*. 32, 379-386.

Browne JV (2004). Early relationship environments: Physiology of skin-to-skin contact for parents and their preterm infants. In R.D. White (ed) *The sensory environment of the nicu: Scientific and design-related aspects*. *Clinics in Perinatology*. 31, 287-298.

Smith K, Butler S & Als H (2007). Newborn individualized developmental care and assessment program (nidcap). Changing the future for infants and their families in intensive and special care nurseries. *Italian Journal of Pediatrics*. 33, 79-91.

Lawhon g & Hedlund R (2008). NIDCAP training and education. *Journal of Perinatal and Neonatal Nursing*. 22(2), 133-144.

Ross, ES (2008). Feeding in the nicu and issues that influence success. *American Speech-Language-Hearing Association*. Division 13, 17(3), 94-100.

### **Recommended NIDCAP Readings**

Als H (1986). A synactive model of neonatal behavioral organization: Framework for the assessment and support of the neurobehavioral development of the premature infant and his parents in the environment of the neonatal intensive care unit. In JK Sweeney (ed.), *The High-Risk Neonate: Developmental Therapy Perspectives*. *Physical & Occupational Therapy in Pediatrics*. 6, 3-55.

Duffy FH & Als H (1988). Neural plasticity and the effect of a supportive hospital environment on premature newborns. In JF Kavanagh (ed.), *Understanding Mental Retardation. Research Accomplishments and New Frontiers*. Baltimore: Brookes Publishing Co., 179-206.

Lawhon g & Melzar A (1988). Developmental care of the very low birth weight infant. *Journal of Perinatal and Neonatal Nursing*. 2, 56-65.

Blickman JG, Brown ER, Als H, Lawhon g & Gibes R (1990). Imaging procedures and developmental outcomes in the neonatal intensive care unit. *Journal of Perinatology*. 10(3), 304-306.

VandenBerg KA (1990). Nippling management of the sick neonate in the NICU: The disorganized feeder. *Neonatal Network*. 9, 9-1.

Zahr L, Cole JG (1990). Assessing maternal competence and sensitivity to premature infants' cues. *Issues in Comprehensive Pediatric Nursing*. 14, 231-240.

Hiniker PK & Moreno LA (1994). *Developmentally Supportive Care: Theory and Application*. South Weymouth, Mass.: Children's Medical Ventures.

Als H (1995). The preterm infant: A model for the study of fetal brain expectation. In J-P Lecanuet, NA Krasnegor, W Fifer & W Smotherman (eds), *Fetal Brain Development: A Psychobiological Perspective*. Hillsdale, NJ: Lawrence Erlbaum Associates, 439-471.

VandenBerg KA (1995). Behaviorally supportive care for the extremely premature infant. In LP Gunderson & C Kenner (eds.), *Care of the 24-25 week gestational age infant: A small baby protocol*. Petaluma, Calif: NICU Ink, 145-170.

Browne JV & Smith-Sharp S (1995) The colorado consortium of intensive care nurseries: Spinning a web of support for colorado infants and families. *Zero to Three*. 15, 18-23.

Furman L (1995). Nursing the premature infant. *Zero to Three*. 15, 24-29.

Johnson BH (1995). Newborn intensive care units pioneer family-centered change in hospitals across the country. *Zero to Three*. 15, 11-17.

Lawhon g (1997). Providing developmentally supportive care in the newborn intensive care unit: An evolving challenge. *Journal of Perinatal and Neonatal Nursing*. 10(4), 48-61.

Neu M & Browne JV (1997). Infant physiologic and behavioral organization during swaddled versus unswaddled weighing. *Journal of Perinatology*. 17, 193-198.

Als H (1998). Developmental care in the newborn intensive care unit. *Current Opinion in Pediatrics* 10:138-42.

Sizun J, Ratynski N, & Mambrini C (1999). Implanter un programme individualise de soutien du developpement en reanimation neonatale: pourquoi, comment? *Archives de Pediatrie*. 6, 434-439.

Sizun J, Tran T & Lazartigues A (1999). Peut-on ameliorer le pronostic neuro-intellectuel et comportmental des enfants nes prematurement par une modification de leur environnement? *Archives de Pediatrie*. 6, 7-11.

Neu M, Browne JV & Vojir C (2000). The impact of two transfer techniques used during skin-to-skin care on the physiologic and behavioral responses of preterm infants. *Nursing Research*. 48, 215-223.

Franck LS, & Lawhon g. (2000). Environmental and behavioral strategies to prevent and manage neonatal pain. In KJS Anand, BJ Stevens & PJ McGrath (eds), *Pain Research and Clinical Management* (2nd Revised and Enlarged ed., Vol. 10, pp. 203-216): Elsevier Science BV.

Morris BH, Philbin, MK & Bose C (2000). The full-term and premature newborn: Physiological effects of sound on the newborn. *Journal of Perinatology*. 20, S55-S60.

Philbin MK, Lickliter R, & Graven S (2000). Sensory experience and the developing organism: A history of ideas and view to the future. *Journal of Perinatology*. 20, S2-S5.

Philbin MK & Klaas P (2000a). The full-term and premature newborn: Evaluating studies of the behavioral effects of sound on newborns. *Journal of Perinatology*. 20, S61-S67.

Philbin MK & Klaas P (2000b). The full-term and premature newborn: Hearing and behavioral responses to sound in full-term newborns. *Journal of Perinatology*. 20, S68-S76.

Evans JB & Philbin MK (2000). The acoustic environment of hospital nurseries: Facility and operations planning for quiet hospital nurseries. *Journal of Perinatology*. 20, S105-S112.

Peters KL (2001). Association between autonomic and motoric systems in the preterm infant. *Clinical Nursing Research*. 10, 82-90.

Ratynski N, Cioni G, Franck L, Blanchard Y & Sizun J (2002). L'observation du comportement du nouveau-ne: une source pertinente d'informations medicales. Titre anglais: The neonatal behavioral observation: a pertinent source of medical informations. *Archives de Pediatrie*. 9(12), 1274-1279.

Sizun J, Ansquer H, Browne J, Tordjman S, Morin J-F (2002). Developmental Care Decreases Physiological and Behavioral Pain Expression in Preterm Neonates. *The Journal of Pain*. 3(6), 446-450.

Sizun J, Dobrzynski M & Ansquer, H (2002). Soins de developpement: quel benefice pour le confort du nouveau-ne: quelle strategie d'implantation? *Medicine Therapeutique Pediatrie*. 5(2), 100-103.

Sizun J, Ratynski N, Gagneur, A & de Parscau L (2002). Evaluation de l'impact medical des soins de developpement. *Archives de Pediatrie*, 9(S2), 109-111.

Mambrini C, Dobrzynski M, Ratynski N, Sizun J & de Parscau L (2002). Implantacion des soins de developpement et comportement de l'equipe soignante. *Archives de Pediatrie*. 9(S2), 104-106.

VandenBerg K (2003). Assessing behavioral organization in Infants. In E Tappero & ME Honefield (eds), *Physical Assessment of the Newborn, 3rd edition*. NICU Ink: Santa Rosa, CA, 209-220.

Gray L & MK Philbin (2004). Effects of the neonatal intensive care unit on auditory attention and distraction. *Clinics in Perinatology*, The sensory environment of the NICU: Scientific and design-related aspects. 31(2), 243-260.

Als H (2004). Individualized developmental care for preterm infants. In RE Tremblay, RG Barr, R De V Peters (eds.), *Encyclopedia on Early Childhood Development [online]*. Montreal, Quebec: Centre of Excellence for Early Childhood Development:1-7. Available at: <http://www.excellence-earlychildhood.ca/documents/AlsANGxp.pdf>.

Als H & Lawhon g (2004). Theoretic perspective for developmentally supportive care. In C Kenner & JM McGrath (eds), *Developmental Care of Newborns and Infants: A Guide for Health Professionals*. St. Louis, MO: Mosby, 47-59.

Gilkerson L (2004). Irving B. Harris Distinguished Lecture: Reflective supervision in infant-family programs: Adding clinical process to nonclinical Settings. *Infant Mental Health Journal*. 25(4), 424-439.



- Sizun J & Westrup B (2004). Early developmental care for preterm neonates: A call for more research. *Archives of Disease in Childhood -- Fetal & Neonatal Edition*. 89(5), F384-389.
- Als H & Butler S (2005). Neurobehavioral development of the preterm infant. In R Martin, A Fanaroff & M Walsh (eds), *Fanaroff and Martin's Neonatal-Perinatal Medicine: Diseases of the Fetus and Infant* (8th ed). St. Louis: Mosby. 2, 1051-1068.
- Browne, JV & Talmi A (2005). Family-based intervention to enhance infant-parent relationships in the neonatal intensive care unit. *Journal of Pediatric Psychology*. 30(8),1-11.
- Gilkerson L & Kopel C (2005). Relationship-based systems change: Illinois' model for promoting social emotional development in part c early intervention. *Infants and Young Children*. 18(4), 349-365.
- Gilkerson L & Ritzler T (2005). The role of reflective process in infusing relationship-based practice into an early intervention system. In KM Finello (ed), *The Handbook of Training and Practice in Infant and Preschool Mental Health*. San Francisco, CA: John Wiley & Sons, 427-452.
- Smith K (2007). Sleep and kangaroo care: clinical practice in the newborn intensive care unit. *Journal of Perinatal and Neonatal Nursing*. 21(2), 151-157.
- VandenBerg K (2007). Individualized developmental care for high risk newborns in the NICU. *Early Human Development*. 83(7), 433-442.
- Als H & Butler S (2008). Newborn individualized developmental care and assessment program (NIDCAP): Changing the future for infants and families in intensive and special care nurseries. *Early Childhood Services*. 2, 1-19.
- Butler S & Als H (2008). Individualized developmental care improves the lives of infants born preterm. *Acta Paediatrica*. 97, 1173-1175.
- Wielenga J M, Smit BJ & Unk KA (2008). A survey on job satisfaction among nursing staff before and after introduction of the nidcap model of care in a level III NICU in the netherlands. *Advances in Neonatal Care*. 8(4), 237-245.
- VandenBerg K & Ross E (2008). Individualized developmental care in the neonatal intensive care nursery. *American Speech-Language-Hearing Association*. Division 13, 17(3), 84-93.
- Vittner D (2009). Reflection strategies in the neonatal clinical area. *Advances in Neonatal Care*, 9, 43-45.
- Hedlund R (2009). Supporting and sustaining the reflective process. *Developmental Observer*. 3(2), 1-5.

**APIB Required Readings** (Approved May 2012)

Abu-Osba YK, Brouillette RT, Wilson SL and Thach BT: Breathing pattern and transcutaneous oxygen tension during motor activity in preterm infants. *The American Review of Respiratory Disease*, 125:382-387, 1982.

Als H: Assessing an assessment. In Sameroff A (ed). Organization and stability of newborn behavior: A commentary on the Brazelton Neonatal Behavioral Assessment Scale. *Monograph of the Society for Research in Child Development*, 43:14-29, 1978.

Als H: Newborn behavioral assessment. In Burns WJ, Lavigne JV (eds.), *Review of Pediatric Psychology*. Vol. 1. New York: Grune and Stratton, 1-46, 1984.

Als H: Self-regulation and motor development in preterm infants. In Lockman J, Hazen N (eds.), *Action in Social Context. Perspectives on Early Development*. New York: Plenum Press, 65-97, 1989. (PDF in two parts)

Als H, Brazelton TB: A new model of assessing the behavioral organization in preterm and fullterm infants. *Journal of the American Academy of Child Psychiatry*. 20:239-263, 1981.

Als H, Butler S, Kosta S, & McAnulty G. The assessment of preterm infants' behavior (APIB): Furthering the understanding and measurement of neurodevelopmental competence in preterm and fullterm infants. *Mental Retardation & Developmental Disabilities Research Review*, 11(1), 94-102, 2005.

Als H, Duffy FH: The behavior of the fetal newborn: Theoretical considerations and practical suggestions for the use of the APIB. *Issues in Neonatal Care*, 1982.

Als H, Duffy FH: The behavior of the premature infant. A theoretical framework for a systematic assessment. In: Brazelton TB, Lester BM (eds.), *New Approaches for Developmental Screening of Infants*. New York: Elsevier North Holland, 153-173, 1983.

Als H, Duffy FH, McAnulty GB: The APIB, an assessment of functional competence in preterm and fullterm newborns regardless of gestational age at birth: II. *Infant Behavior and Development* 11:319-331, 1988.

Als H, Duffy FH, McAnulty GB: Behavioral differences between preterm and fullterm newborns as measured with the APIB system scores: I. *Infant Behavior and Development* 11:305-318, 1988.

Als H, Lester BM, Tronick E, Brazelton TB: Manual for the assessment of preterm infants' behavior (APIB). In: Fitzgerald HE, Lester BM, Yogman MW (eds.), *Theory and Research in Behavioral Pediatrics*, Vol. 1. New York: Plenum, 64-133, 1982.

Als H, Lester BM, Tronick E, Brazelton TB: Toward a research instrument for the assessment of preterm infants' behavior (APIB). In Fitzgerald HE, Lester BM, Yogman MW (eds.), *Theory and Research in Behavioral Pediatrics*, Vol. 1. New York: Plenum, 35-63, 1982.

Brazelton TB: Neonatal Behavioral Assessment Scale. London, Heinemann, 1973. (PDF in two parts)  
APIB Required Readings May 2012 ©NIDCAP Federation International, 2011 ii

Brazelton TB, Nugent JK: The Neonatal Behavioral Assessment Scale. 3rd Ed. *Clinics in Developmental Medicine*, No. 137, New York: Cambridge University Press, 1995.

Casaer P: Postural behavior in newborn infants. *Clinics in Developmental Medicine*. No. 72, Philadelphia, Lippincott, 1979. (PDF in two parts)

Duffy FH, Als H, McAnulty GB: Behavioral and electrophysiological evidence for gestational age effects in healthy preterm and fullterm infants studied 2 weeks after expected due date. *Child Development*, 61, 1271-1286, 1990.

Duffy FH, Als H, McAnulty GB: Infant EEG spectral coherence data during quiet sleep: Unrestricted Principal Components Analysis-Relation of factors to gestational age, medical risk, and neurobehavioral status. *Clinical Electroenceph*, 34, 54-69, 2003.

Ferber SG, Als H, McAnulty G, Paretz H, Zisapel N: Melatonin and mental capacities in newborn infants. *The Journal of Pediatrics*, 159: 99-103, 2011.

Hüppi PS, Schuknecht B, Boesch C, Bossi E, Felblinger J, Fusch C, Herschkowitz N: Structural and neurobehavioral delay in postnatal brain development of preterm infants. *Pediatric Research*. 39:895-901, 1996.

Mouradian L, Als H, Coster W: Neurobehavioral functioning of healthy preterm infants of varying gestational ages. *Dev Behav Peds*, 21, 408-416, 2000.

Precht HFR: The Neurological Examination of the Full-term Newborn Infant. *Clinics in Developmental Medicine*. No. 63, Philadelphia, Lippincott, 1977. (PDF in four parts)

Sell EJ, Figueredo AJ, Wilcox TG: Assessment of Preterm Infants' Behavior (APIB): Confirmatory factor analysis of behavioral constructs. *Infant Behavior and Development*, 18, 447-457, 1995.

Sizonenko S, Borradori-Tolsa C, Vauthay D, Lodygensky G, Lazeyras F, Hüppi P: Impact of intrauterine growth restriction and glucocorticoids on brain development: Insights using advanced magnetic resonance imaging. *Molec Cellul Endocrin*, 254-255:163-171, 2006.

**In addition the following is recommended:**

Peiper, A: *Cerebral Functioning in Infancy and Childhood*. New York, Consultants Bureau, 1963.