

# Practice Guidelines for Audiologists and Speech-Language Therapists in Early Communication Intervention

## The South African Speech-Language-Hearing Association Ethics and Standards Committee 2017

---

### 1. Introduction

The new guidelines are an update of and replace the *Guidelines for audiologists and speech-language therapists working in Early Communication Intervention* (SASLHA, 2011a).

Infants and young children in South Africa continue to be at an increased risk of neurodevelopmental impairment due to the high prevalence of preterm birth, low birth weight (14.7% according to Pattinson, 2013), birth asphyxia and birth trauma (6.92 per 1000 births in rural hospitals and 6.5 per 1000 births in urban hospitals, Velaphi and Pattinson 2007), fetal alcohol spectrum disorder [FASD] (the highest in the world according to the Foundation of Alcohol Related Research [FARR], 2016), mother-to-child transmission of HIV, permanent childhood hearing loss, cerebral palsy, autism spectrum disorder (ASD), and more.

These conditions may be exacerbated by their families' poverty and limited access to early intervention. The needs of a growing population of orphans and vulnerable children (OVC) have recently come under the spotlight, requiring audiologists and speech-language therapists to assume their roles and responsibilities on the team to provide comprehensive services to them. The new Early Communication Intervention guidelines call for an increased awareness of the effects of poverty on early communication and language development and the subsequent risk of learning difficulties at school and throughout life. 'Poverty is the greatest attack on human dignity' (Mandela, 2003). Poverty touches the core existence and future of infants and young children. For at-risk infants, poverty can be the cause and the consequence of disability (Alant & Lloyd, 2005). Early Communication Intervention can make a significant difference if children are identified early and when intervention can be provided with the full participation of parents or caregivers. Due to the advantage of neuroplasticity, early intervention is the most effective form of treatment by audiologists and speech-language therapists.

#### 1.1 Early Communication Intervention as transdisciplinary collaboration between audiologists and speech-language therapists

Early Communication Intervention is a transdisciplinary practice where audiologists and speech-language therapists not only share roles, but each discipline also contributes uniquely to services directed at families with infants and preschool children with feeding and swallowing difficulties, hearing loss and disorders, emerging communication and language impairment, or those who are at risk of developing difficulties in these areas.

The critical importance of early auditory system stimulation, infant-directed and child-directed speech, and responsive communication interaction for language development is best understood by audiologists and speech-language therapists. Both professions may be involved in screening and identifying infants with hearing loss and risk conditions for communication and language impairment, early feeding difficulties and dysphagia, and educating and supporting parents, but

diagnostic assessments are discipline specific. Audiologists take responsibility for the diagnosis and ongoing monitoring of hearing loss and auditory system disorders, while speech-language therapists assess and diagnose emerging communication and feeding disorders. Treatment of dysphagia and language impairment without hearing loss are the main responsibility of speech-language therapists, but ongoing auditory re/habilitation of young children with auditory related conditions is a shared role between the two professions.

Audiologists and speech-language therapists should create opportunities for knowledge and skills sharing between the two professions in order to promote, establish and advance Early Communication Intervention services in the communities where they work. Such collaboration may lead to an enriched understanding of the clinician's own role, expansion of this role to understand more about the other profession, sharing of knowledge, and finally, release and support of the wide array of professional roles and functions, which should be fulfilled in Early Communication Intervention (King et al., 2009).

The shared professional roles may include raising awareness of the effects of ototoxic medication and other addictive teratogens, such as drugs, alcohol and smoking on prenatal life (FARR, 2016); the value of good nutrition, which includes breastfeeding during the first 1000 days of a child's life (initiated by UNICEF), and beyond. Roles expand to the promotion of safe and enriched environments for optimal early childhood development; avoidance of TV watching for children under two years and judicious exposure thereto later in childhood (American Academy of Pediatrics, 2011); reduction of background noise as an interference to listening skill development and vocabulary acquisition in infants and young children (McMillan & Saffran, 2016). Both professionals are involved in direct intervention with families and their infants, community-based early intervention programmes and advocacy efforts to raise public awareness of the desirability to start intervention when feeding difficulties and risks of hearing and communication impairment are present in newborns and infants.

## **1.2 Advances in Early Communication Intervention in South Africa**

A nation-wide movement toward early intervention in South Africa was advocated in previous guidelines (Louw, 1997; SASLHA, 2011a) and much progress has been made during the past 20 years. Provincial and national government initiatives are focusing on Early Childhood Development (Child Gauge, 2013; Department of Education, 2008), but limited attention is given to early intervention. The initiatives and conferences of the Gauteng Department of Health Early Childhood Intervention Workgroup are welcomed. Audiologists and speech-language therapists are increasingly providing early intervention services in public hospitals, clinics, communities and private practices. The efforts of community-service audiologists and speech-language therapists to establish early communication intervention, especially in rural hospitals and clinics, are commendable. There is an urgent need to increase coverage of early communication intervention services to all, within the reach of all communities and families.

### *Recent homegrown research in early communication intervention*

There is now increased research in at-risk populations of infants and young children requiring early intervention in South Africa. Examples of recent publications include targeted hearing screening for high-risk neonates (Kanji & Khoza-Shangase, 2012; Khoza-Shangase, Barrat & Jonosky, 2010; Friderichs, Swanepoel & Hall, 2012); neonatal communication intervention training programmes available in different languages (Kritzinger & van Rooyen 2014; Strasheim, Kritzinger & Louw, 2011); a framework for implementing early communication intervention services in primary healthcare (Van der Linde & Kritzinger, 2013); collaboration in early childhood intervention (Kyarkanaye, Dada

& Samuels, 2017); community-based developmental screening (van der Linde et al., 2015a; Van der Linde, Swanepoel, Glascoe, Louw, & Vinck, 2015b); the development of a clinical feeding assessment scale for neonates (Viviers, Kritzingers & Vinck, 2016); feeding in infants with hypoxic ischaemic encephalopathy (Krüger, Kritzingers & Pottas, 2017); breastfeeding skills of late preterm neonates in kangaroo mother care (Pike, Kritzingers & Krüger, 2017); risks associated with suspected dysphagia in NICU-admitted infants in a public hospital (Schoeman & Kritzingers, 2017); and the communication characteristics of special populations of infants and young children, such as fetal alcohol spectrum disorder (De Beer, Kritzingers & Zsilavec, 2010) and young children with visual impairment (Mosca, Kritzingers & Van der Linde, 2015).

Continued research is required to better understand the young populations at risk and how to support culturally and linguistically diverse families best. The goal is to reach entire populations of infants and young children requiring early communication intervention effectively and to ensure sustainable services. We need to know what works best for whom, when and how. Undergraduate and postgraduate students are encouraged to contribute to the growing body of research in Early Communication Intervention in South Africa.

#### *Early communication intervention undergraduate training*

All undergraduate Audiology and Speech-Language Pathology training programmes in South Africa offer Early Communication Intervention training, thereby increasing the two professions' capacity to provide services in public hospitals, primary healthcare facilities, communities, private practice (which may extend to nursery schools, day care facilities and early intervention centres, government and privately funded), preschool programmes of schools for learners with special needs, and university clinics (such as the Clinic for High-Risk Babies [CHRIB] at the University of Pretoria). Universities are encouraged to extend their theoretical and practical training in Early Communication Intervention in undergraduate programmes as Early Intervention is a well-established and effective evidence-based approach.

#### *Early Communication Intervention clinical practice is now supported by increased evidence*

Similar to other areas of audiology and speech-language therapy practice, the shortage of clinicians to provide Early Communication Intervention services to all who require the services remains critical. Early intervention professionals need to redefine their roles and prioritise more primary prevention efforts with communities (Samuels, Slemming & Balton, 2012). The need for community, family and teacher involvement in early intervention is paramount.

The long-term benefits of Early Communication Intervention for a child's development, future education, employment and quality of life are globally recognised (Rossetti, 2001; Schonkoff et al., 2012) and should be acknowledged by all service providers. Early Communication Intervention should be an essential component of every audiology and speech-language department, clinic or practice providing services to young children.

The latest research shows that late emergence of language should not be regarded as a passing phase in toddler development. Research using advanced neuro imaging techniques on young school-age children demonstrates neurobiological evidence of the importance of early expressive language proficiency for later language and literacy functioning (Preston et al., 2010). The significance of these findings is that the long-term residual effects of being a late talker are now supported by evidence of differences in neural circuits underlying speech and print processing of the same child into the school-age years. Neurobiological evidence confirms data from longitudinal studies by Rescorla (2009) which provided behavioural evidence that early delays in expressive language development

can show residual effects even in adolescence. Neurolinguistic differences in school-age children, who showed their emerging language learning disability already in the early toddler period, may currently provide the strongest evidence for the importance of Early Communication Intervention. If intervention can start when the first signs of a communication and language disorder become evident, neural plasticity allows the possibility to ameliorate the long-term impact on a child's language and literacy development.

The challenge ahead is to provide unequivocal evidence in South Africa, as in the United States of America, that Early Communication Intervention services are effective to render sustained developmental, academic and economic benefits to infants, families and communities. Audiologists and speech-language therapists are called upon to engage in local research to expand the field so that national policy guidelines can be developed to formalise Early Communication Intervention services and to establish programmes for primary healthcare, infant and child day care, and preschool education, in all urban and rural communities.

Early Communication Intervention services are available in urban centres, but semi-urban areas, rural towns and small communities have a limited number of Early Communication Intervention clinicians who are employed in a permanent capacity to develop and sustain these services. It has been recommended by numerous authors that the infrastructure and health programmes for women and children provided by primary healthcare facilities offer ideal opportunities to establish Early Communication Intervention programmes (Kathard & Pillay, 2013; Van der Linde & Kritzinger, 2013; Van der Linde et al., 2015a,b).

The current guidelines are intended to stimulate ideas for the expansion of Early Communication Intervention services to all communities in South Africa and to provide direction for best practice. Early Communication intervention is a powerful strategy to make a difference in the lives of families and their infants and young children. Undergraduate and postgraduate student training, continuous professional development activities and research in Early Communication Intervention should be intensified and sustained.

## **2. Key concepts and definitions**

The following concepts and definitions are important to understand the nature of Early Communication Intervention services in South Africa:

### **2.1 Early Communication Intervention**

Early Communication Intervention is distinguished from early childhood intervention and early intervention in that the first refers to services with a specific focus on communication intervention, as advocated by ASHA (2008) and Rossetti (2001). Adequate feeding, hearing and communication abilities are basic to the quality and enjoyment of a young child's health, development, social participation and education. All health, educational and therapeutic programmes directed at infants and young children should therefore include a focus on communication skill development, as language is widely recognised as the strongest predictor of future cognition and academic success in a child.

Audiologists and speech-language therapists may lead Early Communication Intervention programmes, but transdisciplinary teamwork for certain intervention areas should extend further to include different professions. If available and not overburdened, professionals from different disciplines may enrich their own roles with knowledge of Early Communication Intervention functions and exchange certain agreed upon roles. Audiologists and speech-language therapists may

therefore release certain roles, but should provide support and feedback to ensure that Early Communication Intervention goals for specific families, and the overall intervention programme goals, are met.

*Early Communication Intervention* is a term coined at the Department of Speech-Language Pathology and Audiology, University of Pretoria, following the surge of interest in early intervention created by the visits in 1996 and 1998, and publications of the renowned American early intervention specialist, Prof. Lou Rossetti, to the country. Rossetti's publications emphasised the central role of communication skills in early and later child development and its unique contribution to early intervention. The term *Early Intervention* has always been used by ASHA to refer to services rendered by speech-language pathologists to the birth to three-year-old population of infants and toddlers and their families (ASHA, 2008a,b,c). Both *Early Intervention* and *Early Childhood Intervention* are terms used to refer to services rendered by different therapists, special needs educators, healthcare providers and sometimes by medical professionals, to preschool children at-risk or with special needs.

## **2.2 Neonatal communication intervention**

As a result of the unique availability of mothers and infants in the hours and days after birth, before they are discharged and disperse to communities where Early Communication Intervention services may not be accessible, the new-born and neonatal period should be used by audiologists and speech-language therapists for preventative intervention. Information about typical hearing and communication development, attachment, the benefits of breastfeeding and a mother's role in early communication development should be given to mothers of at-risk infants across the spectrum of families, from those with limited to those with sufficient resources.

Another stimulus for the need to provide neonatal communication intervention in South Africa is the high prevalence of infants with low birth weight and preterm birth, often exposed to HIV, and born to families living in poverty (Sanders, Bradshaw & Ngongo, 2010). Kangaroo mother care programmes offer unique access to infants and their mothers in the neonatal period. The availability of mothers who have an increased interest in their infants, as they have been primed by kangaroo mother care, provides a valuable opportunity to start a communication intervention programme. Kangaroo mother care is a form of developmental care in the neonatal period for both high risk and low risk neonates. Kangaroo mother care is an important evidence-based nursing science intervention which audiologists and speech-language therapists must support. The evolutionary reclaimed care pattern by which a neonate is securely carried in an upright position, positioned skin-to-skin between the mother's breasts, offers many benefits to the infant, the mother and family, and South Africa's health system.

Kangaroo mother care is extensively practiced in South Africa as an effective care technique for low birth weight and preterm neonates. Research over the past twenty years consistently showed increased survival of preterm and low birth weight neonates where kangaroo mother care is practiced – in numerous developing and developed countries (Lawn, Mwansa-Kambafwile, Horta, Barros & Cousens, 2010) and in South Africa (Pattinson, Bergh, Malan & Prinsloo, 2006). A neonatal communication intervention programme ideally expands upon the benefits of an existing kangaroo mother care programme, adding unique components such as feeding intervention, hearing protection, carefully graded sensory stimulation and a communication interaction focus. Kangaroo mother care is a vehicle to provide early communication intervention.

## **2.3 The critical period for effective intervention**

The period from birth to six years is critical to the development of basic listening and communication skills so that more advanced cognitive academic language proficiency may follow. Neural plasticity is at its peak during infancy and the early preschool period, implying that early intervention can positively shape brain development. Intervention should therefore ideally start when congenital risks (as a result of genetic conditions, infections or teratogenic agents during pregnancy), or perinatal risks (as a result of low birth weight and preterm birth, and/or perinatal conditions), are identified in a child. Due to unavailability, inaccessibility or unfamiliarity of early intervention services in South Africa, families may not seek help or may not be referred. Although intervention should start as early as possible, ideally before the child is three years old, families in South Africa should still be afforded the benefits of parent training and support if intervention starts during the later preschool years.

## **2.4 Families as protectors and facilitators of early hearing and communication development**

Families are the only constant in a child's life and family members form the closest attachments with the child. Families guard and enhance hearing and communication development, but require information, training and support to do so when a child experiences developmental difficulties. When families are headed by single parents or caregivers, very young parents, elderly grandparents, chronically ill parents or caregivers who are poorly educated or living in poverty; more support is required from early intervention team members. Early Communication Intervention services are, therefore, directed at parents and caregivers in order to strengthen families to participate actively in intervention processes and make informed decisions about their child. Although a primary-caregiver-centred approach is followed, extended family members, grandparents and daytime caregivers may also be trained to achieve intervention goals.

## **2.5 Young children growing up in poverty**

The close relationship between poverty and disability is well documented (Alant & Lloyd, 2005) and implies that children living in poverty have an increased risk of developing disabilities. Families living in poverty reside in communities with limited resources and rely on overburdened health, social and educational services. The children of these families consequently have a greater susceptibility to conditions such as low birth weight, injury, and exposure to environmental toxins and disease. These conditions have all been identified as predictors of disability status. Once disability is present, poverty has been found to increase the risk of psychosocial and behaviour challenges for children (Msall, Bobis & Field, 2006). The majority of children in South Africa (60%) live in poverty and children in rural areas are more likely to be poor than those living in urban communities (Swanepoel, 2004). Despite adverse circumstances, efforts should be directed at promoting protective factors, such as maternal education and competence, a close bond between the primary caregiver and the child, who does not need to be the biological parent, supportive grandparents, and small family size that foster resilience in young children (Werner, 2000). A special appeal is now made to promote equity in Early Communication Intervention services across South Africa, so that communities where children live in poverty may be better served.

## **3. Relevant legislation**

In government publications, early intervention is mentioned as an effective intervention strategy in the *White Paper on an Integrated National Disability Strategy* (1997), and maternal, child and women's health are priority issues in the *National Health Act* (Department of Health, 2003). Although young children and their mothers are identified as vulnerable groups that require special attention, there are no national policy guidelines on early intervention. There is a need to develop policy on early intervention so that formal structures may be developed and resources may be

allocated to establish accessible early intervention services in the health sector and preschool education system. Encouragingly, a growing focus is being placed on early childhood development.

The Department of Basic Education (2015) recognises the potential of early intervention and stimulation of young children, as “The early years are critical for the acquisition of skills and concepts laying the foundation for lifelong learning. These include acquisition of language, perception and motor skills required for learning to read and write. It’s our collective responsibility to invest in ECD.” The Department (2015) highlights that there is an extensive body of evidence that effective early childhood development improves cognitive scores and learning outcomes at school.

The National Strategy on Screening, Identification, Assessment and Support [SIAS] (Department of Education, 2008) focuses predominately on school aged children; however, early intervention is encouraged. The SIAS highlights that learning occurs in the home, community, and within formal and informal settings and structures. Furthermore, parents are central role players during early development and they need to be empowered to take informed decisions about accessing programmes and support for their children while they become the primary providers of this support. Collaboration among service providers and parents is the cornerstone of establishing an integrated and caring society. Child Gauge (Albino & Berry, 2013) states that global evidence is increasingly demonstrating that quality early childhood development interventions provide both immediate and long-term benefits for children and communities, and this strengthens the rationale for effective and sustained investment.

#### **4. Principles of Early Communication Intervention services**

The four key principles as stated by ASHA (2008b:2-17) reflect the current consensus by leading experts as best practice in early intervention. These guiding principles are recognised as universal, comprehensive and endorsed by SASLHA. In summary, Early Communication Intervention services therefore are:

- Family centred, culturally and linguistically responsive
- Developmentally supportive and promote children’s participation in their natural environments
- Comprehensive, coordinated and team-based
- Based on the highest quality evidence that is available

As a result of context-specific characteristics in South Africa, the four principles are expanded so that Early Communication Intervention services:

- Focus on the assets of a particular child, family and community to enhance the success of the intervention efforts. An asset-based approach recognises that all children, families and communities do not only have needs, but also have strengths that may be mobilised to enhance and sustain early intervention efforts.
- Promote attachment between mothers and their newborn infants, as South Africa has a high prevalence of child neglect and abuse, more so when the child presents with developmental difficulties. Kangaroo mother care is an effective technique to promote long-term attachment. Mother-infant attachment creates the basis of early communication development.

#### **5. Populations to be served in Early Communication Intervention endeavours**

Many of the populations of infants and young children who require Early Communication Intervention occur in increased prevalence in South Africa. Different populations who need information or some form Early Communication Intervention services include:

- All prospective parents, especially adolescent parents, require *preventative information* to adopt health-promoting lifestyles to prevent transmission of adverse conditions such as HIV and other sexually transmitted diseases, FASD, low birth weight as a result of smoking, and foetal drug exposure, that can cause hearing loss and communication disorders in their future children
- Prospective parents who require *information* and supportive counselling, especially if they know their unborn infant may be affected by a congenital condition
- The entire *asymptomatic population* of infants in South Africa require screening for hearing loss at birth and at entry to formal schooling. The prevalence of hearing loss in school aged children in an urban South African population is 2.2% (Mahomed-Asmail, Swanepoel & Eikelboom, 2016a)
- Preschool children of families and communities at risk of high prevalence conditions and disorders such as FASD, global developmental delay, ASD, child neglect and abuse require preventative transdisciplinary early communication screening and intervention services. Currently, broad developmental checklists are included in the Road to Health Booklet (RTHB) for all children in South Africa, but Van der Linde et al. (2015a) showed that the RTHB developmental checklist fails to identify more than half the infants at risk of delays or disorders. Therefore, more specific multidisciplinary screening is recommended for high-risk infants and young children
- Infants and young children with risk conditions such as low birth weight, preterm birth, FASD (de Beer et al., 2010) and visual impairment (Mosca et al., 2015) that cause secondary communication and hearing disorders, even though the full expression of their hearing and developmental difficulties may not yet be apparent
- Infants and young children with established conditions that *cause* hearing and communication disorders, such as Down syndrome and other genetic syndromes, cerebral palsy, acquired conditions and traumatic brain injury, chronic illness, such as HIV-encephalopathy, multiple disability, seizure disorder, auditory neuropathy spectrum disorder, mental disability, hearing loss, attention deficit hyperactivity disorder, ASD and cranio-facial disorders
- Infants and young children with hearing loss and hearing disorders
- Infants and young children with *emerging communication disorders*, such as fluency disorder, apraxia of speech, specific language disorder, auditory processing disorder, speech sound disorders and voice disorders. All late talking toddlers, i.e. those who are delayed in combining words to form early sentences, fall in this relatively large category of children requiring Early Communication Intervention. It is estimated that between 10-20% of children can be described as “Late Talkers” (Bavin & Bretherton, 2013; Bleses & Vach, 2013)
- Neonates, infants and young children with feeding and swallowing problems. See also Guidelines for assessment and intervention in paediatric patients with dysphagia (SASLHA, 2011b)

## 6. Contexts of Early Communication Intervention practice

The contexts for delivering Early Communication Intervention services depend to a great extent on the specific time period in a child’s life. Services may therefore be offered in the neonatal period, infancy, toddlerhood and the later preschool years, all at different settings. Contexts where early communication intervention services are rendered may range from urban to rural, from resource poor, to resource rich communities. By means of transdisciplinary collaboration, existing health,

childcare and preschool education services may be used to add value to programmes already offered. The establishment of dedicated Early Communication Intervention programmes and facilities is encouraged.

### **6.1 Neonatal care units and postnatal wards**

The neonatal period offers the earliest opportunity for direct intervention to the high-risk infant and mother. While the infant is in a neonatal care unit or a high care unit, there may be a brief period of access to the mother before discharge and before she goes home to an area, where follow-up Early Communication Intervention services may not be accessible. A Kangaroo Mother Care unit offers even more access to a clinician as the mothers are lodging in the ward. The mothers' enhanced attachment and interest in their infants, because of kangaroo care, increase their readiness for information and training to promote the hearing and communication development of the infants. Mothers need information to understand preterm infant progress through developmental stages and the infants' stress signs, readiness for stimulation and subtle cues to communicate. Feeding concerns may also be addressed.

A highly sensitive pattern of maternal reciprocal communication interaction must be established with the infant so that the auditory system is appropriately stimulated, and not over stimulated, to facilitate language development. It is during the last 10 to 12 weeks of fetal life that the hair cells of the cochlea, the axons of the auditory nerve and the neurons of the auditory cortex are tuned to receive specific frequencies and intensities (Graven & Browne, 2008). Term infants are born with a preference for their mother's voice and human speech, but those born preterm and with low birthweight miss the fetal period of auditory system development in the womb. The appropriate hearing screening protocol for high-risk infants (Joint Committee on Infant Hearing, 2007) should be followed before discharge from a neonatal facility.

Postnatal wards for full-term newborns and their mothers offer opportunities to establish early hearing detection and intervention programmes (Swanepoel, 2007) and information sharing with mothers to get to know their infants, form attachment and understand the importance of early reciprocal communication interaction (Kritzinger & van Rooyen, 2014; Strasheim et al., 2011). Information about the importance of first language proficiency for school readiness and where to access Early Communication Intervention services, should she be concerned about her child's hearing and communication development, may be given to the mother.

### **6.2 Primary healthcare clinics and centers**

After discharge from hospital, individual high-risk infants should be followed up by means of developmental surveillance and information to caregivers. Primary healthcare clinics are accessible sites for Early Communication Intervention surveillance clinics, as these facilities are situated in communities. Early hearing detection and intervention programmes may be established if newborns did not have access to a hospital hearing screening programme.

### **6.3 Nursery schools, day care facilities and Early Childhood Centres**

Although young children who require early communication assessment and intervention are readily available at these facilities, their parents are not. It may not be possible to follow a parent-centred approach to intervention and important opportunities for information sharing, parent training and

support may be missed. However, teacher training may still be beneficial for communication, emergent literacy and listening stimulation (Girolametto, Weitzman, Lefebvre & Greenberg, 2007).

## 7. Roles and responsibilities in Early Communication Intervention

**Table 1. Contexts, roles and responsibilities of audiologists and speech-language therapists in Early Communication Intervention**

<b>Context</b>	<b>Role, responsibility and tasks</b>
<b>1. Community forums, schools, religious gatherings</b>	<ul style="list-style-type: none"> <li>- Use opportunities to promote safe and stimulating natural environments for early learning and provide preventative information</li> <li>- Screening for hearing loss and hearing disorders (Mahomed-Asmail, Swanepoel, Eikelboom, Myburgh &amp; Hall, 2016b).</li> <li>- These activities should typically be collaborative to make the most impact</li> </ul>
<b>2. Antenatal care facilities</b>	<ul style="list-style-type: none"> <li>- Provide expectant parents with information on typical hearing and language development and safe practices for a pregnant mother, and where to access early communication intervention services if required</li> </ul>
<b>3. Postnatal wards</b>	<ul style="list-style-type: none"> <li>- Promote mother-infant attachment and an interest in newborn hearing and communication capabilities</li> <li>- Provide information on the importance of early hearing and language skills, first language proficiency and accessible early communication intervention services to mothers in their communities, should they have future needs</li> <li>- Establish early hearing detection and intervention programmes</li> <li>- Establish neonatal communication intervention programmes</li> <li>- Promote breastfeeding and identify feeding difficulties</li> </ul>
<b>4. Neonatal intensive care units, high care units, kangaroo mother care units</b>	<ul style="list-style-type: none"> <li>- Audiologists conduct a hearing assessment before infant is discharged</li> <li>- Establish a noise reduction programme in the unit</li> <li>- Speech-language therapists diagnose and treat feeding disorders, consult with the medical team on infant's readiness to transition to different feeding methods</li> <li>- Instrumental and clinical feeding assessments are conducted</li> <li>- Information, training and support to parents</li> <li>- Support and collaborate with an existing developmental care programme or establish a neonatal communication programme based on kangaroo mother care</li> <li>- Advocate the importance of Early Communication Intervention for infants with biological risks</li> <li>- Assist with discharge planning</li> <li>- Collaborate with the medical and nursing team to establish sustained neonatal hearing, communication and feeding services in the unit</li> <li>- Participate in follow-up paediatric clinics or establish such clinics</li> </ul>
<b>5. Primary healthcare and community-based services</b>	<ul style="list-style-type: none"> <li>- Provide developmental surveillance services for infants at risk of hearing and communication disorders</li> <li>- Establish early hearing detection and intervention programmes</li> <li>- Provide early communication assessment and intervention services to individual mothers and their children, and groups of mothers (See Balton, 2004 for guidelines on caregiver training groups)</li> <li>- When available, provide transdisciplinary services with occupational</li> </ul>

Context	Role, responsibility and tasks
	therapists and other healthcare providers - Provide in-service training to primary healthcare personnel for improved early identification of infants with risk conditions
<b>6. Nursery schools, day care facilities and early childhood centres</b>	- Provide in-service training to caregivers and teachers to provide language-rich programmes to children - Advocate the importance of Early Communication Intervention - Provide early hearing detection and intervention services, with a focus on middle ear disease and late-onset hearing disorders - If parents are available, assessment and intervention services may be offered. It is not ethical to provide services to a child if caregivers are not trained as well, as the effectiveness of learning is compromised
<b>7. Early Communication Intervention programmes at public hospitals, special schools, private practices and clinics</b>	- A programme that includes the full range of advocacy, promotive, preventative, early identification, assessment, intervention services within a family perspective should ideally be offered, either with an audiology or a speech-language therapy focus - Transdisciplinary collaboration is encouraged so that individual family service plans may be developed and managed - Materials, such as pamphlets, posters, presentations and digitally recorded material in the different South African languages should be developed - Continuous professional activities should be aimed at capacity building and encouraging best practice
<b>8. Universities</b>	- Universities should provide leadership in research activities and prioritise research with clinical applicability in the range of South African contexts where Early Communication Intervention services are required - Undergraduate training, including both theoretical knowledge and practical experience, in Early Communication Intervention should be expanded and sustained with emphasis on evidence based practices

## 8. Key tasks and procedures: Assessment and intervention

### 8.1 Early Communication Assessment

Since extensive attention has been given to all Early Communication Intervention tasks, the focus is now on assessment and intervention as core functions of practice. The golden standard for the challenging task of infant-toddler assessment within a family-centred framework, is a transdisciplinary play-based arena assessment as advocated by Rossetti (2001, chapter 3). *Collaboration between audiologists, speech-language therapists, occupational therapists and paediatric neurologists, even if not involved at the same time, is required during the early communication assessment of an infant or young child and the family. The discipline specific perspectives of these professionals can result in a comprehensive and holistic assessment which produces extensive assessment data so that the most likely cause of the feeding, hearing or communication difficulty can be determined, the different biological and environmental contributing factors can be understood, the developmental areas involved can be identified and described, meaningful recommendations for intervention can be discussed with the family, and knowledgeable referrals can be made, if indicated.*

The transdisciplinary approach may be a superior model for assessment in the South African context as it is more collaborative and less fragmented (Samuels et al., 2012). The public clinic or hospital setting may be able to implement this approach as there are a variety of professionals that may be available to participate. Transdisciplinary care is family centred as the family only travels once to

consult with many professionals, in contrast to the caregiver having to convey information between professionals over multiple visits. Furthermore, this approach decreases resource and time demands on the different professions. An arena assessment provides the same example of behaviour to the whole team at the same time, thereby facilitating a deep analysis and understanding of child and family needs and strengths.

A comprehensive early communication assessment protocol should include all developmental areas, a selection of mainly criterion-referenced assessment instruments, carefully selected age appropriate toys and materials to elicit communication behaviours, and a variety of elicitation techniques that will interest and challenge, but not pressurise the child. The clinician playing with the child should use the child’s first language, or the mother may be requested to assist and interpret the receptive and expressive language skills that the child demonstrated during the interactions with the adults. The quality of assessment should not be compromised if the clinician cannot speak the family’s first language, or when they do not share a common language. For more information on assessment procedures and cultural considerations consult the excellent ASHA Guidelines for early communication assessment (ASHA, 2008b:19-50) and the Cultural Competence Checklist: Personal reflection (ASHA, 2010).

Recommended assessment areas (See Table 2 for descriptions):

1. Background information and risk assessment
2. Genetic screening of child’s physical features, noting size, shape and symmetry
3. Hearing evaluation
4. Evaluation of all other senses and sensory processing
5. Oral-facial structural assessment
6. Oral-motor functioning
7. Feeding assessment
8. Comprehensive assessment of listening skills, language comprehension, communication functions and means, gestural communication, communication interaction, speech sound production and inventory, vocalisations, vocabulary and word class analysis, phrase structure and sentence structure, phonological awareness and emergent literacy development
9. Parent/caregiver-child communication interaction
10. General developmental functioning, including perceptual cognitive, play, social, self-help, gross and fine motor skills
11. Identify strengths in the child and family, and areas of difficulty

Different informal assessment instruments such as scales and checklists may be used to guide and structure the clinician’s observations while playing with the child (See Table 2). Age appropriate toys should be used to elicit examples of communication behaviours and the child’s ability to imitate. Sufficient assessment data may be obtained during spontaneous parent-child interaction, interactive play between the child and the clinician, and play with 1) functional and construction toys, 2) symbolic toys, 3) material to elicit problem solving, 4) equipment to observe oral motor skills, 5) noise makers to observe listening skills and 6) picture and story books. Developmental levels of children with limited experience with toys should be adjusted. Assessment data should yield results that provide direct intervention guidelines.

**Table 2. Description of assessment areas and procedures**

<b>Assessment areas</b>	<b>Descriptions, procedures and resources</b>
1. Background information	Biographical information, parental description of the problem, prenatal, perinatal, developmental, and medical history, sleeping and feeding patterns, languages the child is exposed to and contexts,

Assessment areas	Descriptions, procedures and resources
	family structure and interaction patterns, day care, family needs, stressors, strengths and resources. The Developmental Systems Approach of Guralnick (2013) may be used as a comprehensive framework to assess the interactions between the child's social and cognitive competence, the family patterns of interaction and their resources.
2. Risk assessment	Compile a profile of prenatal and perinatal risks that may still impact on the child's development
3. Genetic screening	Observe the child's physical features and refer to a geneticist if three minor and/or one major anomaly is identified
4. Hearing testing	Otosopic examination, behavioural assessment, immittance measurements, otoacoustic emission testing and auditory brainstem response testing or other procedures if indicated
4. Sensory processing	Observe the child's behaviour in order to categorise sensory responses (auditory, vestibular, kinaesthetic, tactile, proprioceptive, visual, smell and taste) as low registration, normal, sensation seeking, sensation avoiding, or sensitive behaviours. Identify patterns of sensory processing interfering with learning and refer to an occupational therapist
5. Oral-facial features	Describe observable features in terms of shape, size, and symmetry
6. Oral-motor functioning	Describe suck-swallow-breathing patterns, endurance, risk for aspiration, lip closure, tongue movements, breast, bottle or cup drinking, blowing, biting and chewing skills, straw drinking
7. Feeding assessment	Describe drinking and eating patterns, quantities and texture of food, and independent feeding skill development
8. Speech, language and communication assessment	<p>Listening skills for sounds and speech; phonological awareness; language comprehension; communication functions: behaviour regulation, social interaction and shared attention; means of communication; phonetic repertoire and articulation skills; babbling patterns and structure; phonological development and processes; vocabulary size and word class analysis; syntactical analysis; emergent literacy skills; phonological awareness, parent-child communication interaction.</p> <p>Data collection relies on digital recordings, checklists and scales, such as the <i>The Rossetti Infant-Toddler Language Scale</i> (Rossetti, 2006), <i>Observation of Communicative Interaction</i> (Klein &amp; Briggs, 1987), <i>Communication and Symbolic Behaviour Scales</i> (Wetherby &amp; Prizant, 2006).</p>
9. Emergent literacy assessment	Attending to pictures, page turning, vocalising to pictures, pointing to and naming objects, learns that words have meaning, correct book orientation, fills in words, "reads" aloud, recites familiar passages, idea of plot, coordinates text with picture, tracks text, "writes" names, learns letter recognition, rhymes
10. Parent-child communication interaction	Caregivers that are responsive, give praise, join in play, follow the child's interest and let the child lead, encourage longer interactions (Cress, Grabast, & Burgers Jerke, 2013)
11. General development	Emotional-social development, behaviour, self-help skills, play skills, fine and gross motor skills and perceptual cognitive skills. An example of an assessment scale is the <i>Developmental Assessment Schema</i>

Assessment areas	Descriptions, procedures and resources
	(Anderson, Nelson & Fowler, 1978) and the <i>Bayley Scales of Infant Development</i> (Bayley, 2006).

## 8.2 Early Communication Intervention

Intervention planning should include parents so that an individual family service plan can be drafted for the year. Goals should include all assessment areas where the child demonstrated difficulties. Long-term goals span over the year, short-term goals span over a term and session goals should be achievable in one intervention session. Careful tracking of child progress should be recorded so that accountable services are rendered. In every intervention session, parents should participate and be informed, coached and supported. Roberts and Kaiser (2011) reviewed 18 different studies that evaluated parent-implemented language intervention offered to groups of parents. The trained parents were found to be as effective, if not more effective in some cases, than speech-language therapists at supporting their child. Parent-implemented intervention is effective not only because the parent plays a key role, but because intervention becomes an ongoing process, where every interaction with the child becomes an opportunity to build language.

Consult ASHA (2008b, 50-71) for guidelines regarding responsive interaction approaches, directive interaction approaches and blended approaches, which include focused stimulation, vertical structuring, milieu teaching, prelinguistic milieu teaching, responsive prelinguistic milieu training, responsive prelinguistic milieu training, and enhanced milieu teaching.

The responsive interactional approach of Pepper and Weitzman (2004) has produced evidence of effectiveness and is highly recommended. Many different early intervention programmes are published and may be adapted to suit the context and family. Parents should be taught to use routine activities for enhanced language interaction. See Balton (2009) for examples of typical activities that South African parents and children engage in.

## 9. Minimum requirements to perform the tasks

Audiologists and speech-language therapists should have completed undergraduate Early Communication Intervention training to practice in the field. They may also practice when a period of self-study or mentorship has been completed, and when relevant continuous professional development activities are regularly attended. Minimum requirements for intervention in paediatric dysphagia are dependent on undergraduate theoretical and clinical training, and remain the exclusive function of speech-language therapy.

### Endnote

The big idea in Early Communication Intervention is:  
*Those who talk well before school, are likely to learn well at school*

## 10. Resources

- Albino, N., & Berry, L. (2013). Early childhood development services in South Africa: What are the next steps? In L. Berry, L. Biersteker, A. Dawes, L. Lake & C. Smith (eds). *South African Child Gauge 2013*. Cape Town: Children's Institute, University of Cape Town.
- American Speech-Language-Hearing Association. (2010). *Cultural Competence Checklist: Personal reflection*. Available from [www.asha.org](http://www.asha.org).
- American Speech-Language-Hearing Association [ASHA]. (2008a). *Roles and responsibilities of speech-language pathologists in early intervention: Position Statement*. Available from [www.asha.org/policy](http://www.asha.org/policy)
- American Speech-Language-Hearing Association [ASHA]. (2008b). *Roles and responsibilities of speech-language pathologists in early intervention: Guidelines*. Available from [www.asha.org/policy](http://www.asha.org/policy).
- American Speech-Language-Hearing Association [ASHA]. (2008c). *Roles and responsibilities of speech-language pathologists in early intervention: Technical Report*. Available from [www.asha.org/policy](http://www.asha.org/policy)
- American Speech-Language-Hearing Association [ASHA]. (2007). Executive Summary for JCIH Year 2007 Position Statement: Principles and guidelines for early hearing detection and intervention programs. Available from [www.asha.org/policy](http://www.asha.org/policy)
- American Speech-Language-Hearing Association [ASHA]. (2005). *Roles and responsibilities of speech-language pathologists in the neonatal intensive care unit: Guidelines*. Available from [www.asha.org/policy](http://www.asha.org/policy)
- Anderson, D., Nelson, J., & Fowler, S. (1978). In W.H. Northcott (Ed.) Developmental Assessment Schema. *Curriculum guide: Hearing impaired children (0-3 years) and their parents*. Washington DC. The Alexander Bell Association for the Deaf, Inc.
- Balton, S. (2004). Changing the present to change the future: The parent-child language programme. *Perspectives in Education*, 22(2), 143-146.
- Balton, S. (2009). Family-based activity settings of typically developing three to five-year-old children in a low income African context. Unpublished Communication Pathology DPhil Thesis, University of Pretoria.
- Berry, L., Biersteker, L., Dawes, A., Lake, L., & Smith, C., (eds). (2013). *South African Child Gauge 2013*. Cape Town: Children's Institute, University of Cape Town.
- Owens, R.E. Jr (2016) *Language development. An introduction*. 9<sup>th</sup> edition. Boston: Pearson.
- Owens, R.E. Jr (2014). *Language disorders. A functional approach to assessment and intervention*. Boston: Allyn & Bacon. Chapter 3.
- Pepper, J., & Weitzman, E. (2004). *It takes two to talk. A practical guide for parents of children with language delays*. Toronto: A Hanen Publication.
- Rossetti, L.M. (2001). *Communication intervention. Birth to three*. 2<sup>nd</sup> Ed. Australia: Singular Thomson Learning.
- South African Department of Education. (2008). *National Strategy on screening, identification, assessment and support (SIAS): Operational guidelines*. Pretoria: Department of Education.
- Swanepoel, D.W. (2007). *Early hearing detection and intervention programmes in South Africa*. HPCSA, Professional Board for Speech, Language and Hearing Professions. Pretoria: HPCSA.
- Wetherby, A.M., & Prizant, B.M. (2006). *Communication and Symbolic Behaviour Scales*. Baltimore: Brookes Publishing Company.

## 11. References used in the Guidelines

- Alant, E., & Lloyd, L.L. (2005). *Augmentative and alternative communication and severe disabilities. Beyond poverty*. London: Whurr Publishers.
- American Academy of Pediatrics [AAP] (2011). Policy statement: Media use by children younger than 2 years. *Pediatrics*, 128(5), 1-6.
- Bayley, N. (2006). *Bayley Scales of Infant and Toddler Development*. San Antonio (TX): The Psychological Corporation.
- Bavin, E.L., & Bretherton, L. (2013). The Early Language Victoria Study: Late talkers, predictors, and outcomes. In L.A. Rescorla & P.S. Dale (Eds.) *Late talkers: Language development, interventions, and outcomes* (3-21). Baltimore, Maryland: Paul H. Brookes Publishing Co.
- Bleses, D., & Vach, W. (2013). Danish late talkers: A first portrait. In L.A. Rescorla & P.S. Dale (Eds.) *Late talkers: Language development, interventions, and outcomes* (41-65). Baltimore, Maryland: Paul H. Brookes Publishing Co.
- Cress, C.J., Grabast, J., & Burgers Jerke, K. (2013). Contingent interactions between parents and young children with severe expressive communication impairments. *Communication Disorders Quarterly*, 34(2), 81-96.
- De Beer, M., Kritzing, A., & Zsilavec, U. (2010). Young children with fetal alcohol spectrum disorder-communication profiles. *South African Journal of Communication Disorders*, 57(1), 33-42.

- Department of Health (2003). *National Health Bill no 61*. Republic of South Africa.
- Graven, S.N., & Browne, J.V. (2008). Auditory development in the fetus and infant. *Newborn and Infant Nursing Reviews*, 8(4), 187-193.
- Friderichs, N., Swanepoel, D., & Hall, J.W. (2012). Efficacy of a community-based infant hearing screening program utilizing existing clinic personnel in Western Cape, South Africa. *International Journal of Pediatric Otorhinolaryngology*, 76(4), 552-559.
- Foundation for Alcohol Related Research [FARR]. (2016). Press Release - International Fetal Alcohol Spectrum Disorder (FASD). Retrieved September 14, 2016, from <http://www.farrsa.org.za/press-release-international-fetal-alcohol-spectrum-disorder-fasd/>
- Girolametto, L., Weitzman, E., Lefebvre, P., & Greenberg, J. (2007). The effects of in-service education to promote emergent literacy in child care centers: A feasibility study. *Language, Speech, and Hearing Services in Schools*, 38(1), 72-83.
- Guralnick, M.J. (2013). Developmental science and preventative interventions for children at environmental risk. *Infants and Young Children*, 26(4), 270-285.
- Joint Committee on Infant Hearing (2007). *Position Statement* and updates. American Academy of Pediatrics. <http://www.jcih.org/JCIH-2007-Position-Statement-Supplement.pdf>.
- Kathard, H., & Pillay, M. (2013). Promoting change through political consciousness: A South African speech-language pathology response to the World Report on Disability. *International Journal of Speech-Language Pathology*, 15(1), 84-89.
- Kanji, A., & Khoza-Shangase, K. (2012). The occurrence of high-risk factors for hearing loss in very-low-birth-weight neonates: A retrospective exploratory study of targeted hearing screening. *South African Journal of Communication Disorders*, 59, 3-7.
- Khoza-Shangase, K., Barratt, J., & Jonosky, J. (2010). Protocols for early audiology intervention services: Views from early intervention practitioners in a developing country. *South African Journal of Child Health*, 4(4), 100-105.
- King, G., Strachan, D., Tucker, M., Duwyn, B., Desserud, S., & Shillington, M. (2009). The application of a transdisciplinary model for early intervention services. *Infants and Young Children*, 22(3), 211-223.
- Klein, M.D., & Briggs, M.H. (1987). Observation of Communication interaction. *Journal of Childhood Communication Disorders*, 10(2): 95-106.
- Kritzinger, A., & Van Rooyen, E. (2014). The effect of formal, neonatal communication-intervention training on mothers in kangaroo care. *African Journal of Primary Health Care and Family Medicine*, 6(1), 1-9.
- Kritzinger, A., & Louw, B. (2003). Clinical training of undergraduate communication pathology students in neonatal assessment and neonate-caregiver interaction in South Africa. *South African Journal of Communication Disorders*, 50:5-14.
- Krüger, E., Kritzinger, A., & Pottas, L. (2017). Breastfeeding and swallowing in a neonate with mild hypoxic-ischaemic encephalopathy. *South African Journal of Communication Disorders* 64(1), a209. <https://doi.org/10.4102/sajcd.v64i1.209>
- Kyarkanaye, T., Dada, S., & Samuels, A.E. (2017). Collaboration in early childhood intervention services in Gauteng. Caregiver perspectives. *Infants and Young Children*, 30(3), 238-254.
- Lawn, J.E., Mwansa-Kambafwile, J., Horta, B.L., Barros, F.C., & Cousens, S. (2010). 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. *International Journal of Epidemiology*, 39 (Supplement 1), i144-i154. doi: 10.1093/ije/dyq031
- Louw, B. (1997). *Guidelines for speech-language therapists and audiologists: Early communication intervention*. Ethics and Standards Committee, SASLHA, Braamfontein.
- Mahomed-Asmail, F., Swanepoel, D.W., & Eikelboom, R.H. (2016a). Diagnostic Hearing Assessment in Schools: Validity and Time Efficiency of Automated Audiometry. *Journal of the American Academy of Audiology*, 27(1), 42-48.
- Mahomed-Asmail F, Swanepoel DCDW, Eikelboom RH, Myburgh HC, Hall J (2016b). Clinical validity of hearScreen™ Smartphone hearing screening for school children. *Ear and Hearing*, 37, 11-17.
- Mandela, N.R. (2003). SABC TV interview on 13 July 2003.
- McMillan, B.T.M., & Saffran, J.R. (2016). Learning in complex environments: The effects of background speech on early word learning. *Child Development*, 87(6), 1841-1855. DOI: 10.1111/cdev.12559
- Mosca, R., Kritzinger, A., & van der Linde, J. (2015). Language and communication development in preschool children with visual impairment: A systematic review. *South African Journal of Communication Disorders*, 62(1), 1-10.
- Msall, M.E., Bobis, F., & Field, S. (2006). Children with disabilities and supplemental security income. Guidelines for appropriate access in early childhood. *Infants and Young Children*, 19(1):2-15.

- Pattinson, R. (2013). *Saving Babies 2010-2011: Eighth report on perinatal care in South Africa*. (R. Pattinson, Ed.). Pretoria: Tshepesa Press. Retrieved from <http://www.ppip.co.za/wp-content/uploads/Saving-Babies-2012-2013.pdf>
- Pattinson, R.C., Bergh, A.M., Malan, A.F., & Prinsloo, R. (2006). Does kangaroo mother care save lives? *Journal of Tropical Pediatrics*, *52*(6), 438-441.
- Pike, M., Kritzinger, A., & Krüger, E. (2017). Breastfeeding characteristics of late-preterm infants in a kangaroo mother care unit. *Breastfeeding Medicine* (in press).
- Preston, J.L., Frost, S.J., Mencl, W.E., Fulbright, R.K., Landi, N., Grigorenko, E., Jacobsen, L., & Pugh, K.R. (2010). Early and late talkers: School-age language, literacy and neurolinguistic differences. *Brain*, *133*, 2185-2195.
- Rescorla, L. (2009). Age 17 language and reading outcomes in late-talking toddlers: Support for a dimensional perspective on language delay. *Journal of Speech, Language and Hearing Research*, *52*, 16-30.
- Roberts, M.Y., & Kaiser, A.P. (2011). The effectiveness of parent-implemented language interventions: A meta-analysis. *American Journal of Speech-Language Pathology*, *20*(3), 180-199.
- Rossetti, L.M. (2006). *The Rossetti Infant-Toddler Language Scale*. East Moline (IL): LinguiSystems.
- Samuels, A., Slemming, W., & Balton, S. (2012). Early childhood intervention in South Africa in relation to the developmental systems model. *Infants and Young Children*, *25*(4), 334-345.
- Sanders, D., Bradshaw, D., & Ngongo, N. (2010). The status of child health in South Africa. In M. Kibel, L. Lake, S. Pendelbury, & C. Smith. *South African Child Gauge 2009/2010*. Children's Institute, University of Cape Town.
- Schoeman, J., & Kritzinger, A. (2017). Risks associated with suspected dysphagia in infants admitted to a neonatal intensive care unit in a South African public hospital. *South African Journal of Child Health*, *11*(2), 75-79.
- South African Speech-Language-Hearing Association [SASLHA]. (2011a). *Early Communication Intervention: Guidelines for Speech-Language Therapists and Audiologists*. Johannesburg: South African Speech, Language and Hearing Association. Ethics and Standards Committee.
- South African Speech-Language-Hearing Association [SASLHA]. (2011b). *Guidelines: Paediatric dysphagia*. Johannesburg: South African Speech, Language and Hearing Association. Ethics and Standards Committee.
- Shonkoff, J.P., Garner, A.S., Siegel, B.S., Dobbins, M.I., Earls, M.F., McGuinn, L., ... & Wood, D.L. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, *129*(1), e232-e246.
- South African Department of Basic Education. (2015). *Early childhood development is a potential game-changer for education in South Africa*. Department of Basic Education.
- Strasheim, E., Kritzinger, A., & Louw, B. (2011). The development of a neonatal communication intervention tool. *South African Journal of Communication Disorders*, *58*(1), 13-18.
- Swanepoel, D.W. (2004). A review of the South African context: Information for community-based speech-language and hearing services. *Clinica: Applications in Clinical Practice of Communication Pathology*. Monograph 7, 11-16.
- Van der Linde, J., Swanepoel, D.W., Glascoe, F.P., Louw, E.M., & Vinck, B. (2015). Developmental screening in South Africa: Comparing the national developmental checklist to a standardized tool. *African Health Sciences*, *15*(1), 188-196.
- Van der Linde, J., & Kritzinger, A. (2013). Perceptions of rural primary healthcare personnel about expansion of early communication intervention. *African Journal of Primary Health Care and Family Medicine*, *5*(1), 1-11.
- Van der Linde, J., Swanepoel, D.C.DW., Glascoe, F., Louw, E.M., Hugo, J.F.M., & Vinck, B.H.M.E. (2015a). Risks associated with communication delays in infants from underserved South African communities. *African Journal of Primary Health Care & Family Medicine*, *7*(1), 1-7.
- Van der Linde, J., Swanepoel, D.C.DW., Glascoe, F., Louw, E.M., & Vinck, B.H.M.E. (2015b). Developmental screening in South Africa: Comparing the national developmental checklist to a standardized tool. *African Health Sciences*, *15*(1), 188-196.
- Van der Linde, J., Swanepoel, D.C.DW., Hanekom, L., Lemmer, T., Schoeman, K., Glascoe, F., & Vinck, B.H.M.E. (2016). Early detection of communication delays with the PEDS tools in at-risk South African infants. *African Journal of Disability*, *5*(1), pp. 1-5.
- Viviers, M., Kritzinger, A., & Vinck, B. (2016). Development of a clinical feeding assessment scale for neonates in South Africa. *South African Journal of Communication Disorders* *63*(1), a148. <http://dx.doi.org/10.4102/sajcd.v63i1.148>

Werner, E.E. (2000). Protective factors and individual resilience. In J.P. Shonkoff & S.J. Meisels (Eds.) *Handbook of early childhood intervention*. 2<sup>nd</sup> Ed. pp. 115-132. Cambridge: Cambridge University Press.

*White Paper on an Integrated National Disability Strategy* 1997. Office of the Deputy President T. M. Mbeki. Cape Town: Rustica Press.

Compiled by Prof. Alta Kritzinger and Ms Renata Mosca, Clinic for High-Risk Babies (CHRIB), Department of Speech-Language Pathology and Audiology, University of Pretoria, August 2017