Communication Development of Preterm Infants: A Longitudinal Study

Background
Improved perinatal care has led to decreased mortality in preterm infants; although a significant proportion are at risk for disability.1,2 In follow-up studies at school age, preterm children, born without physical or major sensorineural impairment, have been shown to have a lower intelligence quotient than full term controls. This affects academic, social and behavioural development.3

Reported communication deficits in preterm infants include an absence of babbling and delayed communication milestones4-6.

Outline of Study
This prospective longitudinal study described the vocabulary development of six children born at <32 weeks gestation. Parents completed the OZI, an Australian adaptation of the MacArthur Communicative Development Inventory7 on their children every four months from 18 to 36 months (corrected age). At two and three years of age (corrected) each child was seen by an experienced paediatric speech pathologist for speech and language assessment.

Research Question
1. Do children born preterm present with delayed vocabulary development?

Participants
Six children and their families were recruited from a cohort of children completing the Preterm Clinical Pathway8 in Queensland.

Assessment
• OZI
• Diagnostic Evaluation of Articulation and Phonology (DEAP)9
• Preschool Language Scales – 410

Results
Individual
Each child’s vocabulary development, as reported by a parent, and test results at two and three years of age is described. All of the children showed a similar pattern of development. At the younger age the size of the preterm children’s vocabulary was smaller than the reference group. By 28 months (corrected age) all children had ‘caught up’.

Group comparisons
Due to the small number of data points it was only possible to perform one-sample t-tests at three time intervals.

20 month: t(1,5) = 3.76, p = 0.01
24 month: t(1,6) = 2.04, p = 0.09
28 months: t(1,6) = 2.28, p = 0.06

Conclusions & caveats
• In this group of children born preterm without neurosensory or physical impairment there was a group trend of delayed vocabulary development. By two years of age (corrected) the majority of children had vocabularies similar to the normative reference group.
• It is important to note that the families who agreed to this study were committed and interested in the communication development of their children. It is well documented that children born preterm that are followed with difficulty have substantially worse outcomes.

Clinical Implications
• The results of this study highlight the importance of correcting for age when assessing children born preterm.

References
2. Doyle, L.W. (2001). Outcome at 5 years of age of children born preterm without neurosensory or physical impairment, have been shown to have a lower intelligence quotient than full term controls. This affects academic, social and behavioural development.3

Case 1: Olive
Birth Information
Gestational age: 28.5 weeks
Birth weight: 1032 grams

Assessment results at 2.0 years
MLU: 6.74
PLS-4 Auditory comprehension: 111 SS
Expressive communication: 114 SS

Assessment results at 3.0 years
MLU: 12.6
PLS-4 Auditory comprehension: 114 SS
Expressive communication: 118 SS

Case 2: Jamie
Birth Information
Gestational age: 26.6 weeks
Birth weight: 1016 grams
Length of hospital stay: 81 days

Assessment results at 2.0 years
MLU: 3.03
PLS-4 Auditory comprehension: 111 SS
Expressive communication: 77 SS

Assessment results at 3.0 years
MLU: 7.88
PLS-4 Auditory comprehension: 123 SS
Expressive communication: 121 SS

Case 3: Bree
Birth Information
Gestational age: 26 weeks
Birth weight: 844 grams

Assessment results at 2.0 years
MLU: 6.0
PLS-4 Auditory comprehension: 117 SS
Expressive communication: 78 SS

Assessment results at 3.0 years
MLU: 7.21
PLS-4 Auditory comprehension: 135 SS
Expressive communication: 114 SS

Case 4: William
Birth Information
Gestational age: 28.7 weeks
Birth weight: 844 grams
Length of hospital stay: 101 days

Assessment results at 2.0 years
MLU: 4.45
PLS-4 Auditory comprehension: 120 SS
Expressive communication: 106 SS

Assessment results at 3.0 years
MLU: 5.58
PLS-4 Auditory comprehension: 127 SS
Expressive communication: 123 SS

DEAP: PPC 89 (11 SS)

Case 5: Sophia
Birth Information
Gestational age: 26.7 weeks
Birth weight: 1126 grams
Length of hospital stay: 70 days

Assessment results at 2.0 years
MLU: 5.48
PLS-4 Auditory comprehension: 109 SS
Expressive communication: 89 SS

Assessment results at 3.0 years
MLU: 5.93
PLS-4 Auditory comprehension: 119 SS
Expressive communication: 89 SS

DEAP: PPC 89 (11 SS)

Case 6: Brianna
Birth Information
Gestational age: 26 weeks
Birth weight: 942 grams
Length of hospital stay: 86 days

Assessment results at 2.0 years
MLU: 6.0
PLS-4 Auditory comprehension: 117 SS
Expressive communication: 78 SS

Assessment results at 3.0 years
MLU: 7.21
PLS-4 Auditory comprehension: 135 SS
Expressive communication: 114 SS

DEAP: PPC 94 (12 SS)

Vocabulary development