Methods of Identifying Infants for High Risk Infant Follow up

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Problem:

- Infants who require care in NICU are at risk for developmental, behavioral and health problems (Decoufle, Boyle, Paulozzi & Lary, 2001).

- The current method of identifying these infants for specialized follow up in California attempts to "predict" by utilizing criteria assembled by committee in the 1970s.

- Those 70-80% of infants not eligible enter the current general surveillance system that has challenges (King & Glascoe, 2003).

- Approximately only 20-30% of children enter the school system with diagnosable delay are identified prior to enrollment (Glascoe & Shapiro, 2003).

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Purpose of the Study:

- To determine if incorporating developmental testing to the screening process would identify infants who would benefit from specialized follow up and early intervention.

Research Question:

- Will incorporating two developmental assessment tools identify more infants requiring specialized follow up and intervention than using the current method?

Methods:

- Design:
  - Prospective convenience study

- Sample:
  - N=85 infants

- Setting:
  - Tertiary Neonatal Intensive Care Unit

- Exclusion Criteria:
  - Congenital, chromosomal or cerebral insults (ex. Trisomy 21, severe asphyxia)
  - Short stays for antibiotics or phototherapy

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Research Instruments

- California Children's Service High Risk Follow-up Criteria prior to 7/01/06

- California Children's Service High Risk Follow-up Criteria after 7/1/06

- Test of Infant Motor Performance (TIMP)

- Neonatal Oral Motor Assessment Scale (NOMAS)

- Demographic Sheet

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California Children's Service High Risk Infant Eligibility Criteria (CCS 1&2)

- Birth Weight < 1500 grams (3lbs 5oz)

- Ventilation assistance > 48 hours

- ECMO

- Apgar score (2nd) of =/> 3

- IVH =/> grade 2

- Documented sepsis

- Low tone

- Seizures

- Bilirubin levels requiring exchange transfusion

- Other indicators of neonatal depression or instability

- Birth Weight < 1500 grams

- Gestational Age < 32 weeks

- Apgar or pH < 7.0 on umb. or CBG

- Apnea requiring Rx at DC

- NO > 4 hours for PPHN

- Documented sepsis

- Seizures

- Bilirubin levels requiring exchange transfusion

- Other indicators of neonatal depression or instability (expanded)

- Intracranial pathology

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Test of Infant Motor Performance (TIMP)

- Designed for infants from 32 weeks to 4 months of age

- Administered in approximately 35-40 minutes

- Consists of two scales
    - One scale rates the presence of spontaneous motor behavior
    - Second scale rates patient's response to handling, positioning and to sensory input

(Kolobe, Osten, Lenke & Girolami, 1995)

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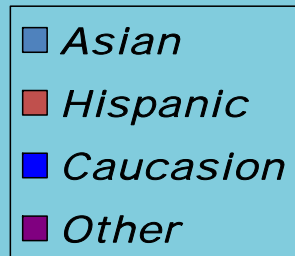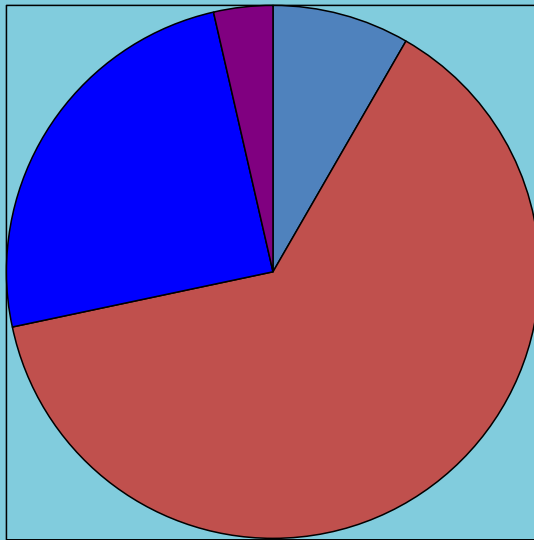
Neonatal Oral Motor Assessment Scale (NOMAS)

- Defines and describes feeding patterns of high risk infants and the assessment is done as part of a regular feeding.

- Examiner observes the infant prior to and during initiation of a feeding.

- There are two sections; tongue and jaw. Nutritive sucking (NS) patterns are categorized as normal, disorganized and dysfunctional by evaluating jaw and tongue movement.
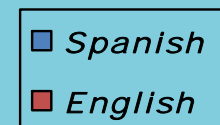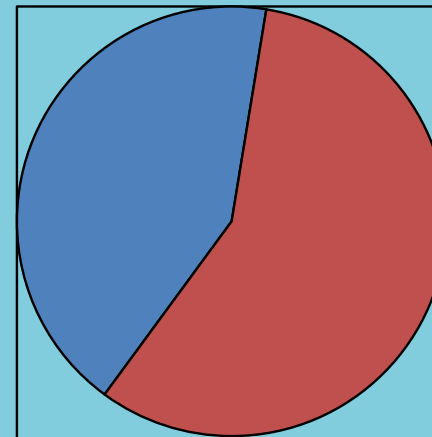
(Palmer, Crawley & Blanco, 1993)

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Results:

Research Sample

Legend (top pie chart):
- Asian
- Hispanic
- Caucasion
- Other

Legend (bottom pie chart):
- Spanish
- English
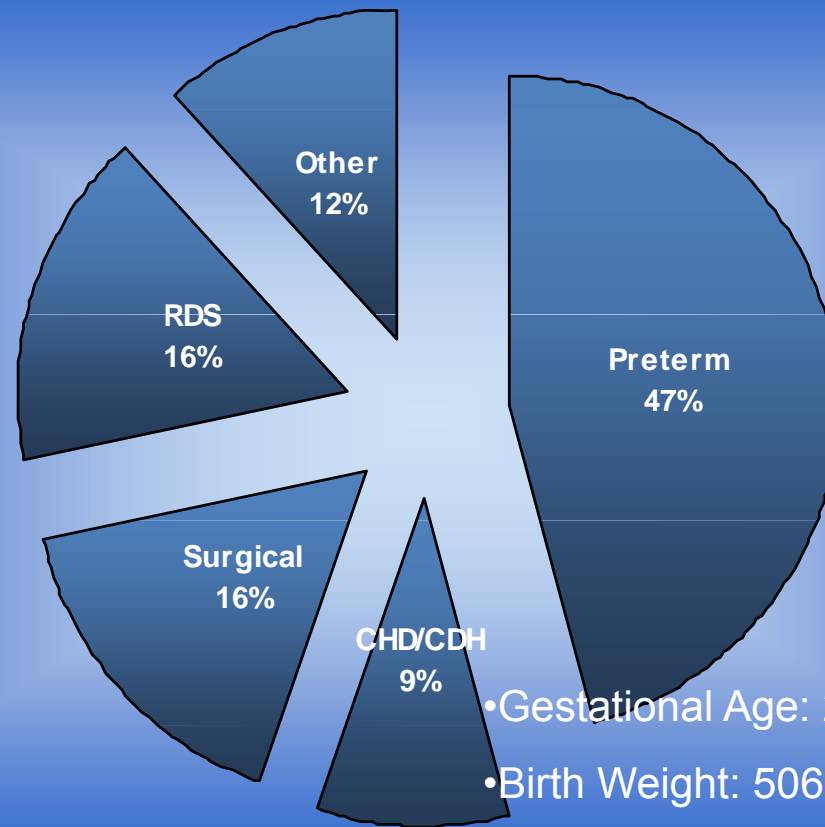
- Maternal Age: 15 to 53 years
- Maternal Education: Some Elementary to Graduate Degree
- Income: < 30,000 to > 100,000

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Research Sample

Other 12%
Preterm 47%
RDS 16%
Surgical 16%
CHD/CDH 9%

- Gestational Age: 23.6 to 41 weeks
- Birth Weight: 506 to 5900 grams
- Length of Stay: 3 to 183 days

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Infant Acuity

	1	2	3	4
■ n=85	34	21	20	10

■ n=85

1= lowest acuity level

4= highest acuity level

Risk of Mortality

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Results: Infants Identified for Referral

	CCS 1	CCS 2	TIMP	NOMAS
■ Instruments	51	47	49	1
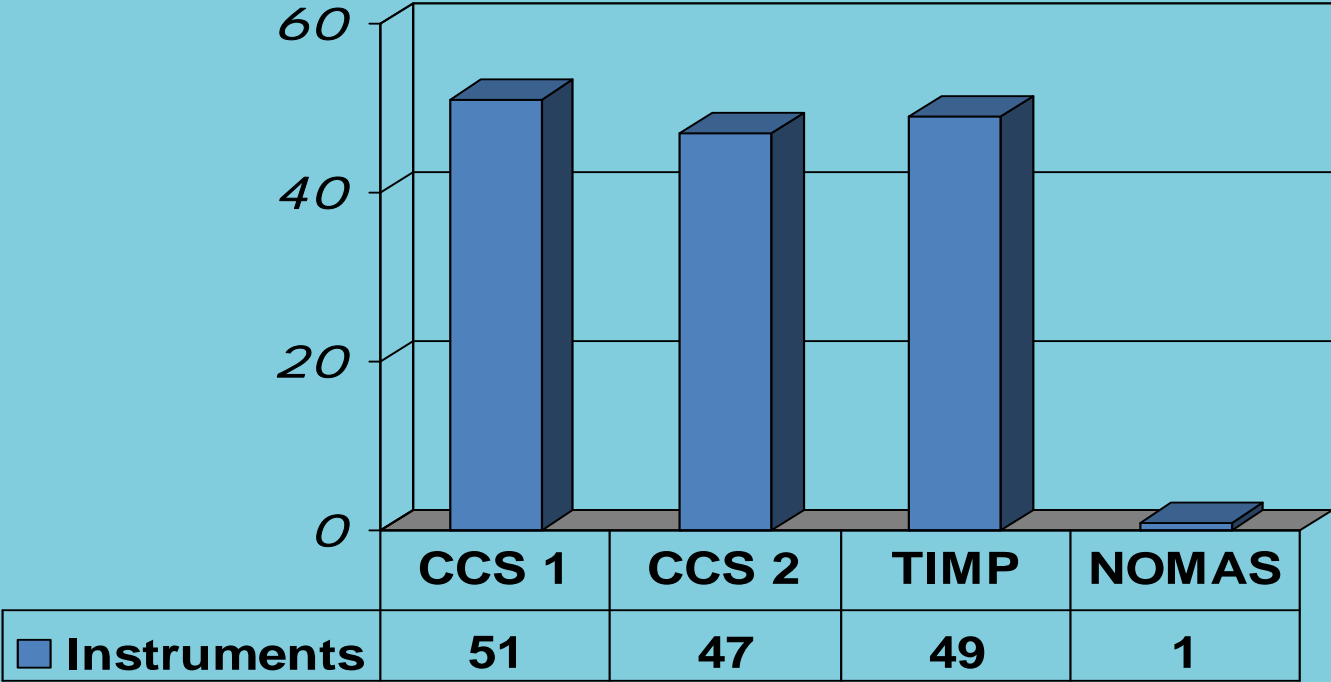
CCS 1&2 n=85

TIMP n=82

NOMAS n=32

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Results: Infants Identified for Referral

	ALL	CCS 1&2	CCS 1+TIMP	CCS 2+TIMP
Instruments	69	56	66	66
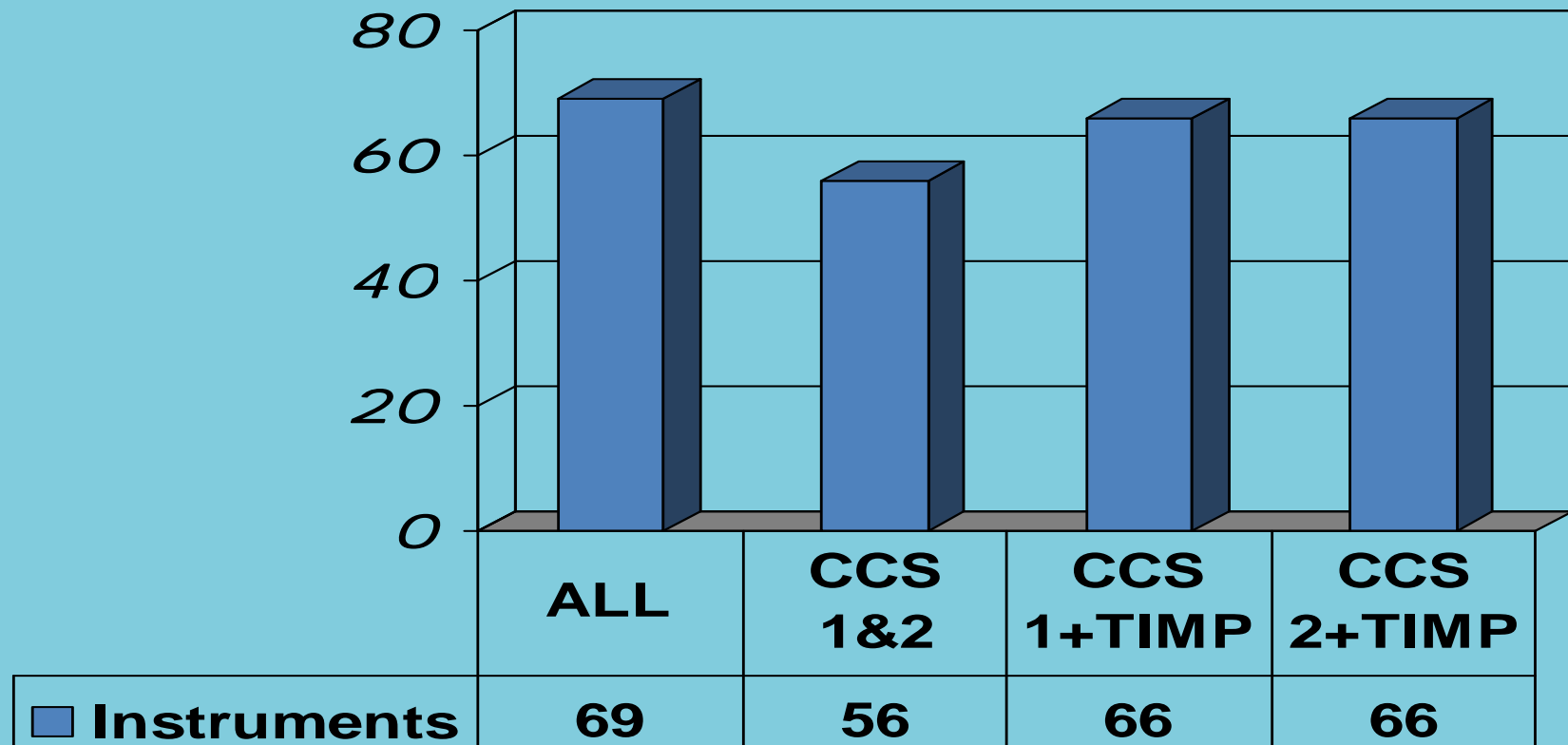
*Possibly due to small n NOMAS
did not add any additional infants.

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Results:

- Strong agreement exists between the new and old CCS criteria

- The revision of the CCS criteria in this sample may have reduced the number of identified infants (6/9 failed the TIMP)

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Results:

- Weak agreement exists between the new and old CCS criteria and the TIMP

- None of the acuity proxies yielded statistical significance in predicting which of the instruments was more effective

- Analysis of the TIMP data revealed that the older the infant was at the time of the test the more likely they were to fail

Conclusions:

- Utilizing developmental tests prior to discharge of high risk infants may yield additional infants who would benefit from specialized follow up and early intervention

- More studies are needed to look at the current criteria for it's predictive validity

- NOMAS needs further testing

Limitations

- Sample reflected small geographic area

- Infants were discharged or transferred prior to developmental testing completion

- Families who were receiving developmental services while in the NICU may have been more likely to participate in the study

- It is unknown if the tests were predictive of developmental delay for these infants

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