# Developmental TIPS:
## What have we learned?

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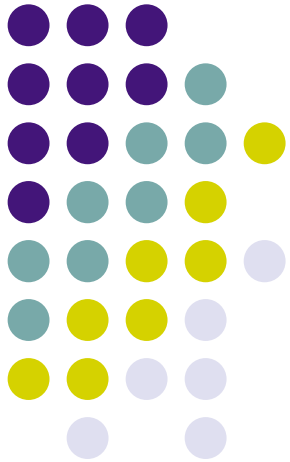


University of Nebraska Medical Center

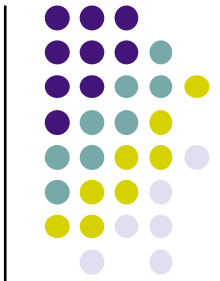
# Developmental TIPS (Tracking Infant Progress System)

- Statewide project (10 hospitals across the state enroll children into the TIPS program)
- Five TIPS clinic sites in four cities across the state [Omaha(2); Lincoln; Scottsbluff; Kearney]
- All data resides at Munroe-Meyer Institute
- Currently over 10,000 children in TIPS database

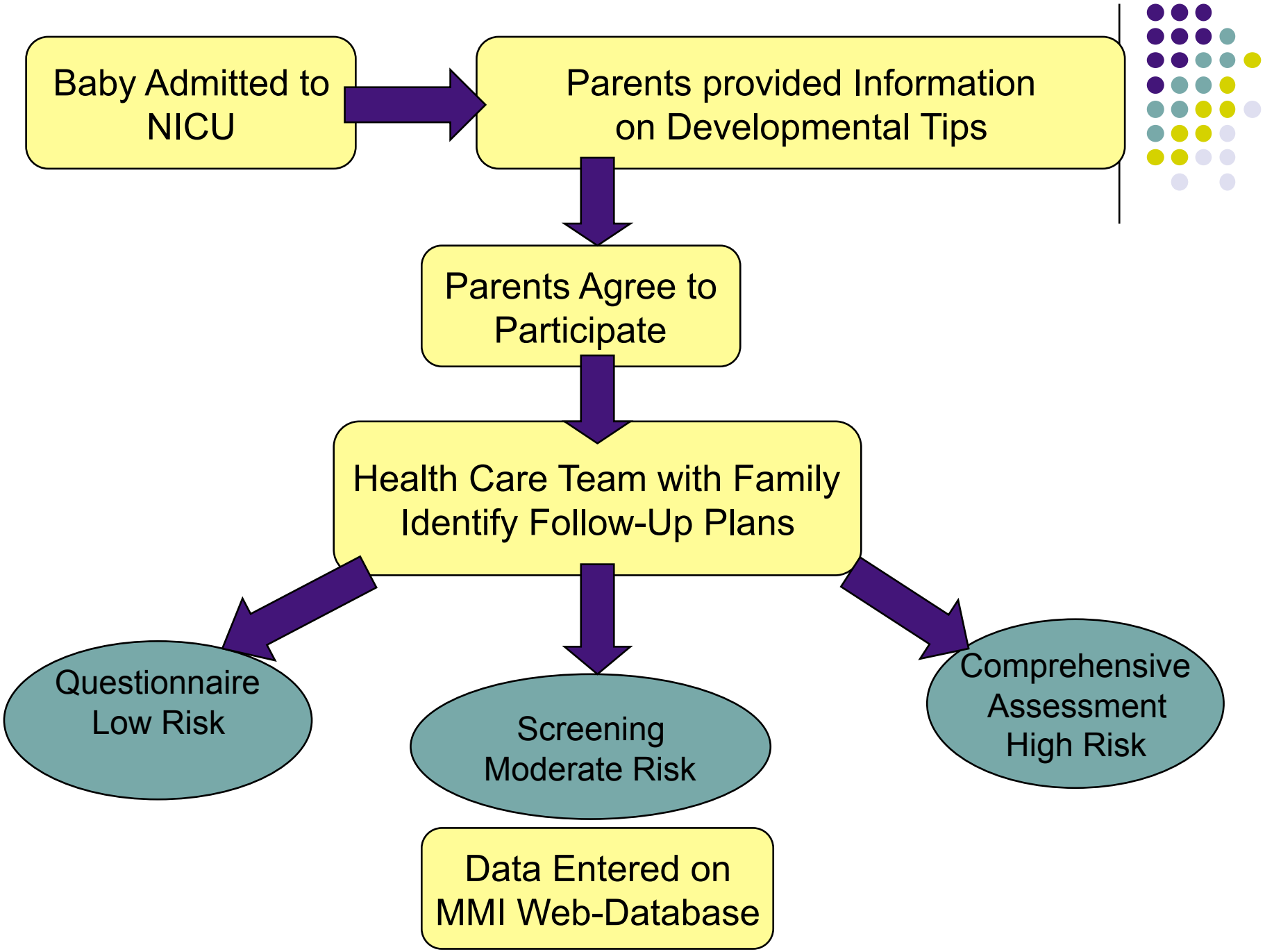
# TIPS continued…

- Provides systematic follow-up at 6,16,24 and 36 months for most babies who have been in the Neonatal Intensive Care Unit (NICU)
- Includes formal, in-depth screening across developmental areas (Questionnaires or Direct Evaluation)
- Refers child to Early Development Network if there are concerns about development

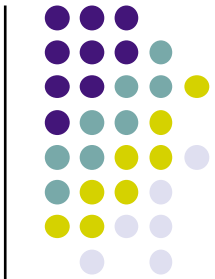
# Definition of Risk Factor for Premature Babies



- Low Risk- Larger babies with short hospital stay
- Moderate Risk- Smaller babies, VLBW with limited complications, on ventilation
- High Risk – Babies with syndromes or congenital anomalies associated with known developmental delay or VLBW with multiple complications and long term hospitalization.


Baby Admitted to NICU
Parents provided Information on Developmental Tips
Parents Agree to Participate
Health Care Team with Family Identify Follow-Up Plans
Questionnaire Low Risk
Screening Moderate Risk
Comprehensive Assessment High Risk
Data Entered on MMI Web-Database

# Early Identification and Intervention



- Identification and intervention as early as possible has proven to benefit child health outcomes (Pediatrics, 2001)

- Informal measures of development identify only 30% of delays, therefore the American Academy of Pediatrics recommends using formal, validated tools for screening. (Pediatrics, 2001)

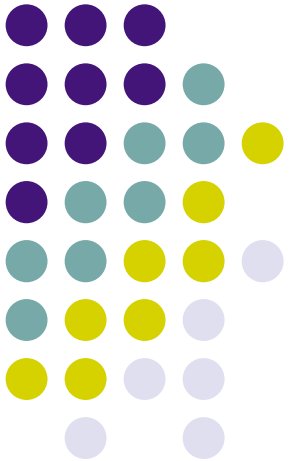
# Research Implications for Practice

- Medical Treatment
- Clinical Practice
- Policy

# Implications for Medical Treatment

# Large Premature Babies (34-35 Weeks Gestation) :

What is the likelihood of referral for early intervention services for large premature babies?



# Methodology

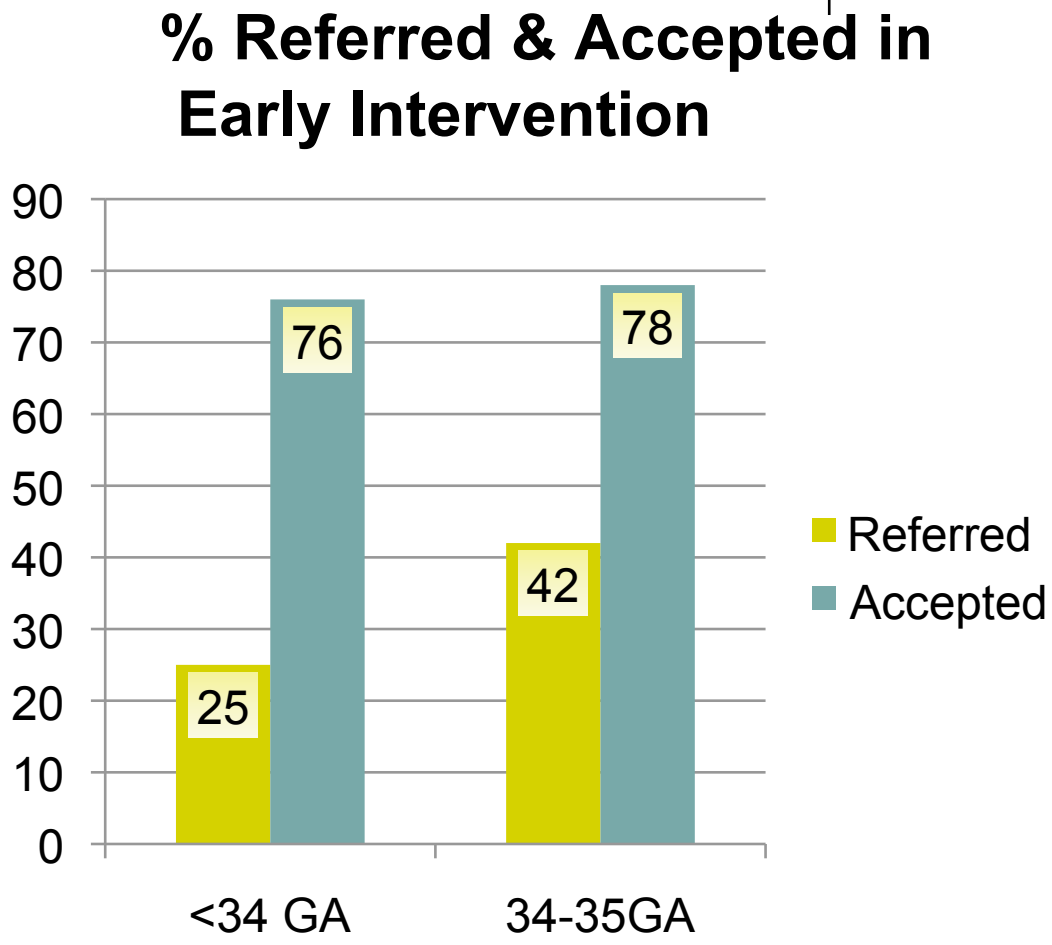
- A retrospective study
- Sample:
  - Drawn from Developmental TIPS longitudinal database
  - Criteria: Infants who were <35weeks GA
- Outcome Measure: Acceptance into the Early Development Network

# Sample

- 2058 premature children had at least one follow-up assessment completed
  - 667 were 34-35 GA
  - 1391 were < 34 GA

# Results

- Infants with lower GA at birth were more likely to referred for early intervention services p=.001



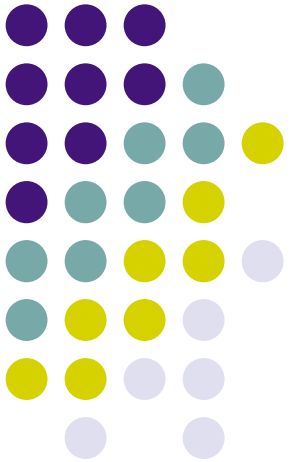
# Implications

- Infants who are 34-35 GA should not be considered normal newborns (65% the brain size of normal newborns) and are of higher referral rate for Early Intervention
- Delivery should proceed only after careful deliberation
- Need to expand criteria for NICU follow-up
- Physicians need to carefully monitor this population of babies during well-baby checks

# POLICY IMPLICATIONS

# Premature Infants Acceptance into Early Intervention Services:

Is there a difference between Rural vs. Urban Communities?



# Research Question:

Is there a difference in acceptance rates for services in the Early Development Network (Nebraska's Early Intervention System) for babies with NICU experience dependent on their geographic location within Nebraska (urban vs. rural)?

# Methodology

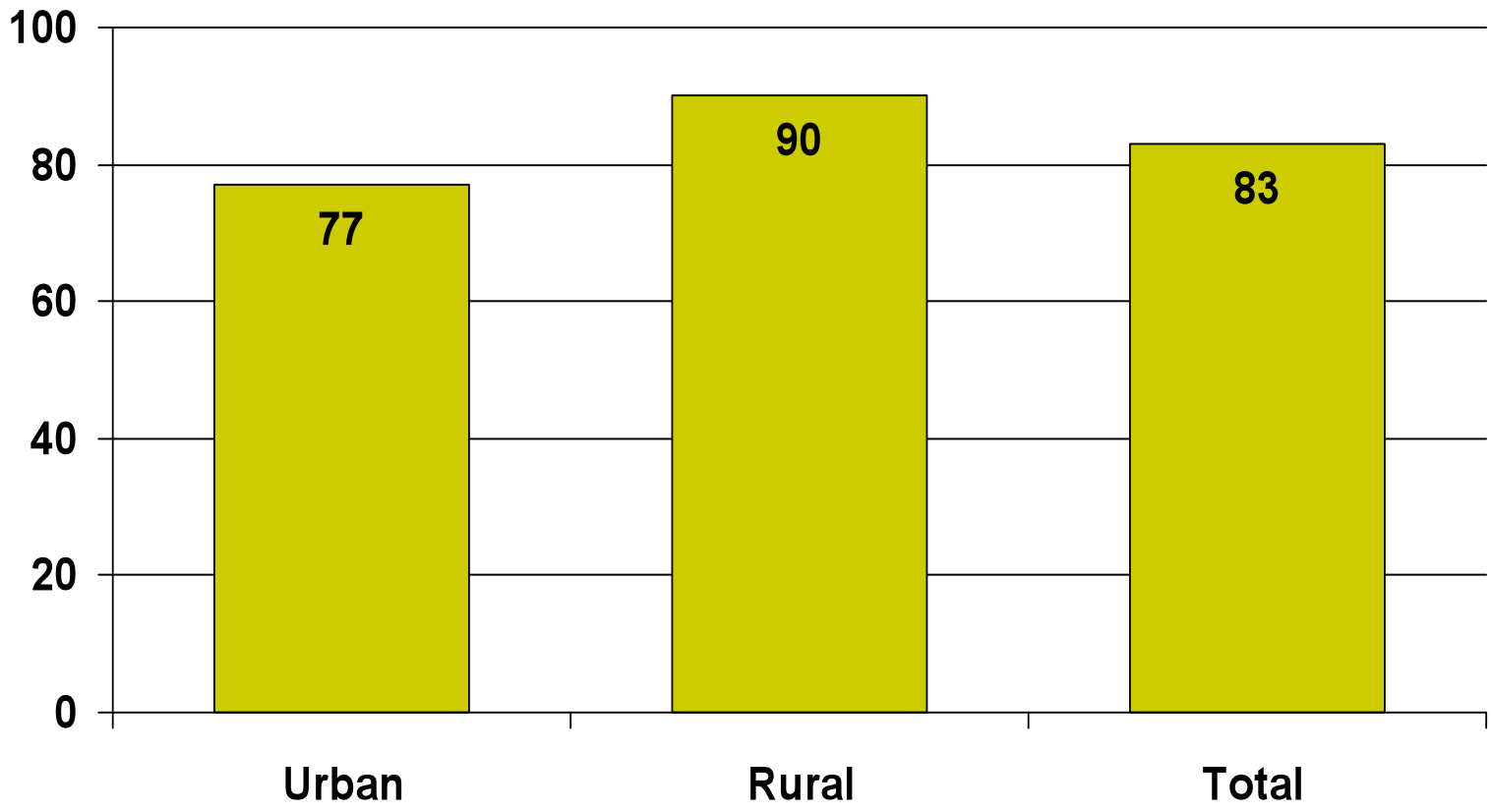
- A descriptive retrospective study
- Sample:
  - Drawn from Developmental TIPS longitudinal database
  - Criteria: Infants who were <31 weeks GA and were referred to Early Development Network
- Outcome Measure: Acceptance into the Early Development Network

# Results

- 344 premature children were identified as being referred to 29 school districts to determine eligibility for services

- Of the 29 school districts:
  - 193 children from 7 urban districts
  - 151 children from 22 rural districts

# Percentage Accepted to EDN Based on Geographic Location

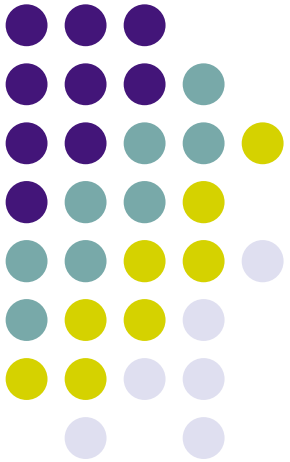



Chi Square Statistical Analysis: 9.866 (alpha=.01)

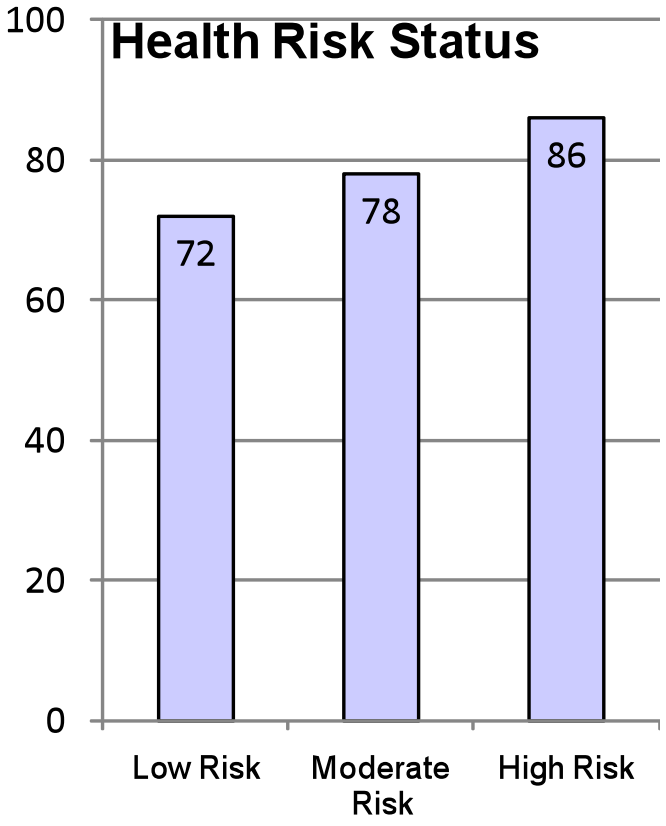
# Are there other factors that influence the findings?

Income Level?

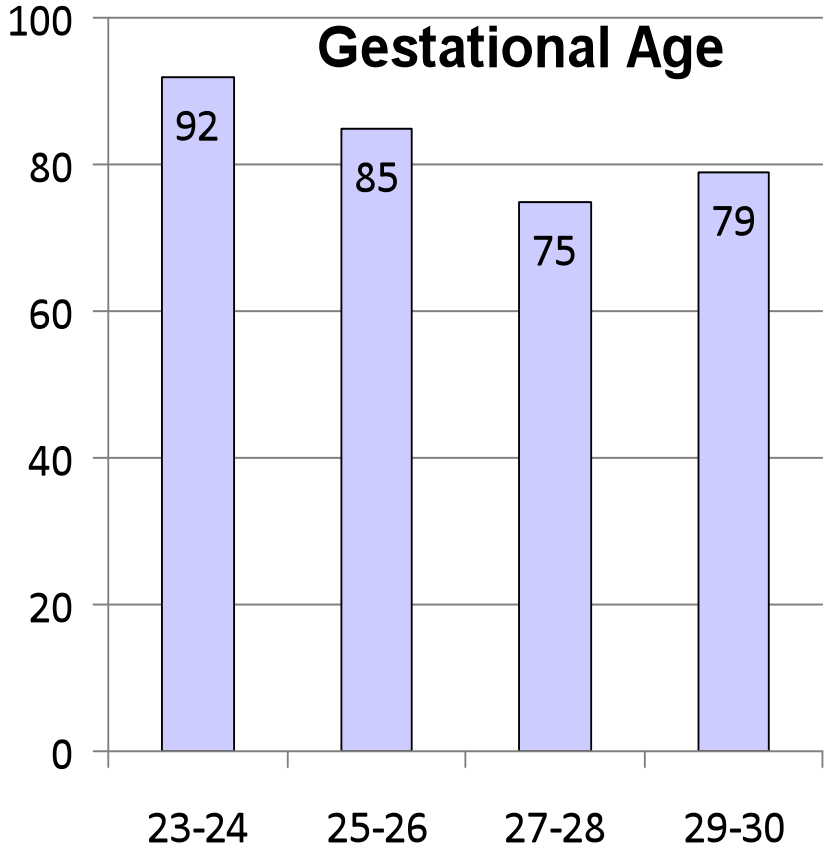
Health Risk Factors?



# Percentage Accepted to EDN based on Health Status

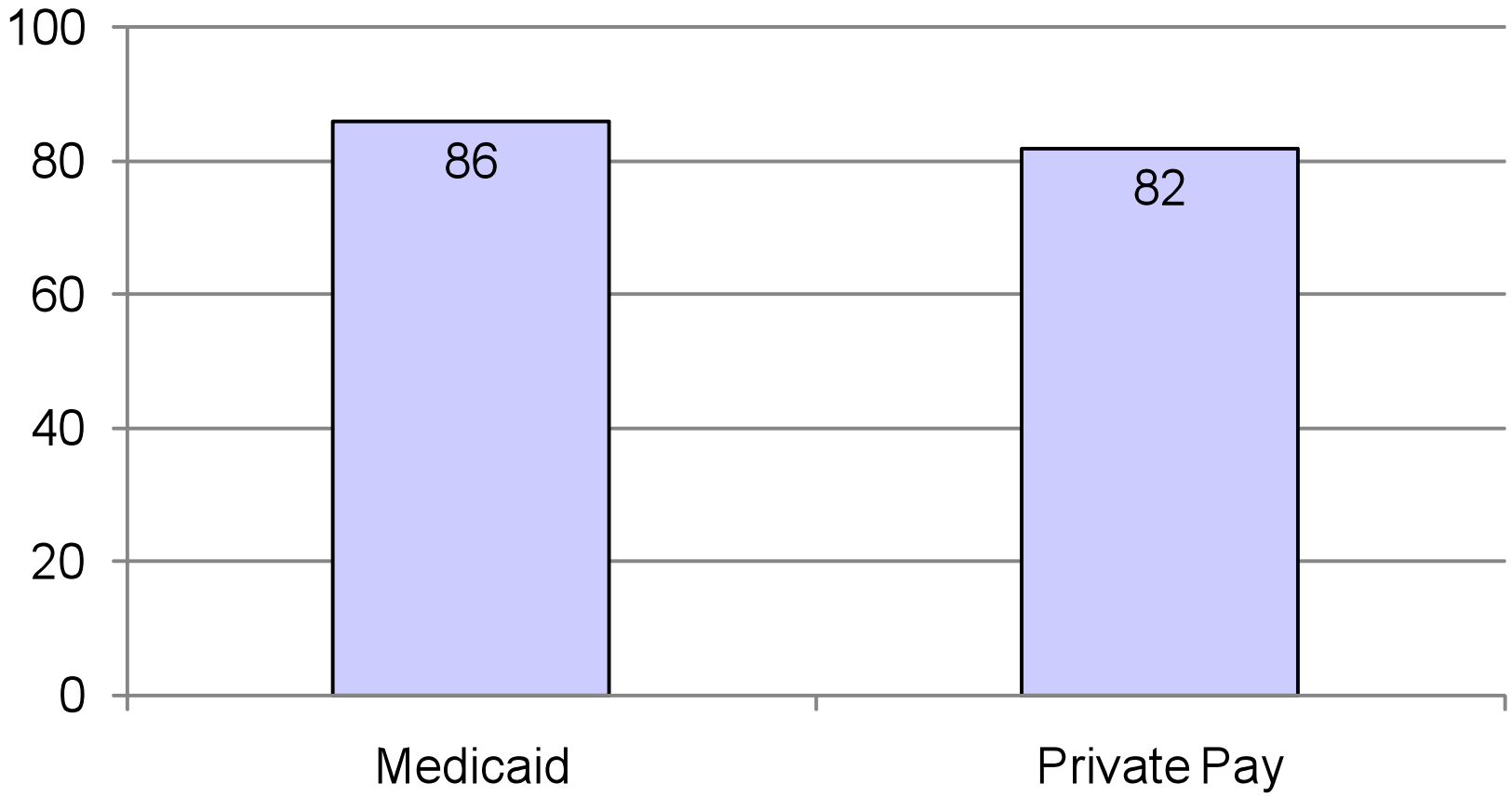



Chi Square Statistical Analysis: 4.73 (alpha=.07)




Chi Square Statistical Analysis: 1.83 (alpha=.50)

# Percentage Accepted to EDN based on Insurance Coverage (Income Proxy)




**Chi Square Statistical Analysis: .742 (alpha=.50)**

# Discussion

- Based on the referral pattern, it appeared to TIPS staff that more rural children were being accepted for services.
- The results of this study confirmed this observation.
- Analyses indicated that there were no differences in child characteristics influencing the results.
- Therefore the differences are intrinsic in the system and not the children and warrants further investigation.

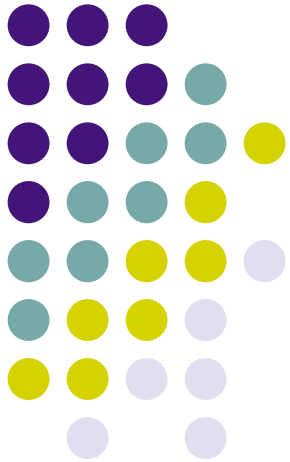
# Next Steps

- Conduct interviews with key informants (Part C Co-Leads, EDN Administrators and staff) to help better understand why these differences were found.
- Possible Hypotheses?
  - Different interpretation of the law around eligibility criteria (Rule 51)

# Implications for Clinical Practice

# Moderate Risk Infants: An exploratory study

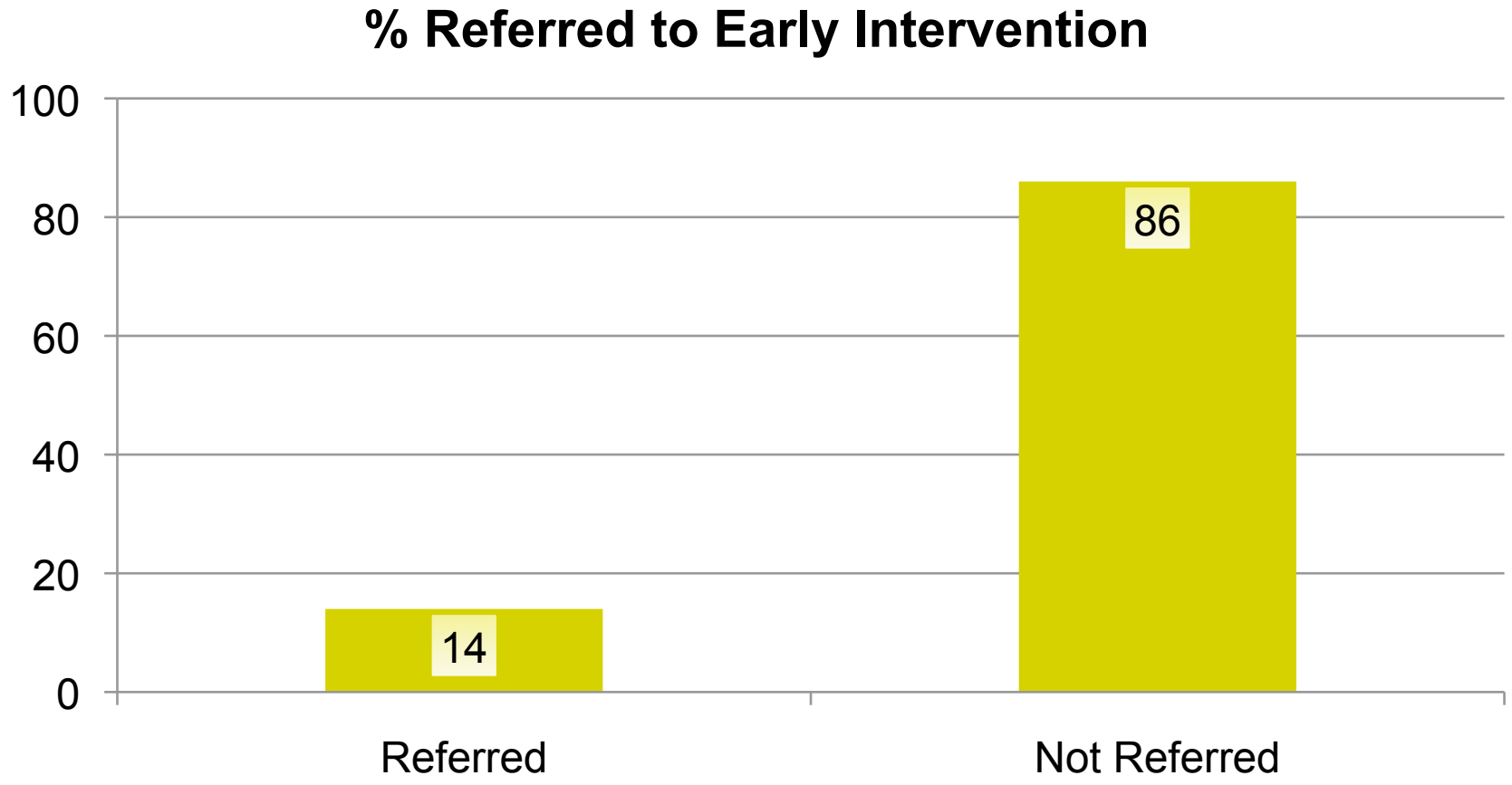
What assessment tool is the most effective in identifying children with motor problems who are in need of Early Intervention?



# Sample

- 93 infants with at the six month follow-up and were identified as moderate risk.
- Infants at Children's Hospital and a series of motor assessments completed:
  - Bayley Scales of Infant Development III Screening Test
  - Alberta Infant Motor Scale
  - Revised Gesell Developmental Index

# Results


% Referred to Early Intervention
100
80
60
40
20
0
14
86
Referred
Not Referred

# Results

- A binary logistic regression analysis was used to determine the best predictors of referral status.
- The BSID III Screening accounted for a significant portion of the variance in referral status. P=.005
- The BSID III was the only variable that accounted for a significant portion of the referral category (Cox & Snell $R^2$=.093; Nagelkerke $R^2$= .165)

# Implications

- Use the BSID III Screener for referral to Early Intervention may be sufficient and be the most cost effective approach.

- The AIM and Revised Gesell may provide other useful information to the clinician in evaluating the motor development of the child, but are not the best predictor of referral for Early Intervention

# New Directions

- Outcomes for babies with gastrochesis
- Prevalence of autism in premature population
- Developmental outcome of the CoolCap procedure for children with hypoxic ischemic encephalopathy
- 1st Grade Follow-Up