An Introduction to the Ages and Stages Questionnaires (ASQ): A Parent-Completed Child Monitoring System

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Objectives

- Define and discuss benefits of developmental screening.
- Identify risk and protective factors related to child development.
- Describe features of ASQ.
- Score ASQ.
- Describe ASQ cut-off scores.
Objectives

- Interpret ASQ information in relation to other referral considerations.
- Understand importance of sensitive communication of screening results.
- Discuss the process for referring children to appropriate agencies.
- Discuss appropriate follow-up activities.
What are the Ages and Stages Questionnaires (ASQ)?

- Parent/Caregiver completed screening tool.
- Series of 19 questionnaires for children 4 months to 5 years.
- Accurately identifies children at risk for developmental delay.
- Encourages parent involvement.
ASQ Screens 5 Domains

- Communication
- Gross Motor
- Fine Motor
- Problem solving
- Personal-social

**New companion tool:**

- ASQ:Social-Emotional
ASQ Development

- ASQ initiated in 1980 at University of Oregon
- Reviewed standardized child development tests, text books, and literature
- Selected skills
  - Easily observed or elicited by parents
  - Highly likely to occur in home setting
- ASQ Revised and expanded in 1999
ASQ Materials

- ASQ User’s Guide, Questionnaires, Home Visit Videotape
- Published by Paul H. Brookes Publishing
- www.brookespublishing.com
- Available in English, Spanish, French
- Other translations available - contact the publisher for more information.
Screening Assessment

A brief assessment procedure designed to identify children who should receive more intensive diagnosis or evaluation from local early intervention (EI) or early childhood special education (ECSE) agencies.

Similar in theory to health screenings such as a quick hearing or vision screen.
Diagnostic (Professional) Assessment

An in-depth assessment of one or more developmental areas to determine the nature and extent of a physical or developmental problem and determine if the child is eligible for early intervention services.
Curriculum-Based Assessment
(Programmatic, On-going Assessment)

- An in-depth assessment that helps to determine a child’s current level of functioning. This type of assessment can:
  - provide a useful child profile
  - help with program planning
  - identify targeted goals and objectives
  - be used to evaluate child progress over time
Monitoring

Developmental surveillance (Screening at frequent intervals) at-risk infants and toddlers not known to be eligible for special health or educational services

- Similar in theory to a person with diabetes monitoring his/her blood sugar
Screening

Below Cutoff
- Professional Assessment
  - Eligible
  - Not Eligible

Near Cutoff
- Not Eligible
  - Continue to Monitor (Re-Screen) & use Curriculum-Based Assessment to develop learning plans

Above Cutoff
WHY DO WE SCREEN CHILDREN?
Risk factors for developmental delay

- **Health/Biological Risks**
  - advances in medical technology
  - lack of prenatal care

- **Environmental/Social Risks**
  - teen & single parents
  - poverty
  - alcohol and drugs
  - exposure to violence
Protective Factors

Variables which serve to correct or decrease negative influences of being at risk:

- characteristics of the individual
- supportive relationships and environments within and outside the family
- positive expectations for achievement and a belief in the child’s abilities
- meaningful participation and involvement in family, school, and community
Incidence of children with disabilities

- 2.6% of children birth through 2 are identified as having a disability

- 5.2% of children age 3 through 5 are identified as having a disability

Incidence of children identified as having a disability by age

- 2.6%
- 5.2%
- 12.7%
Benefits of developmental screening

- Identifies children at risk for possible developmental delays
- Detects child’s strengths and needs
- Provides an opportunity to
  - Address family concerns
  - Educate parents on child development
  - Empower parents
More Benefits...

- Builds rapport and trust with family
  - Increased communication
  - Parent and staff enjoy
- Improves health and developmental outcomes through Early Intervention services
- Builds community collaboration and support for staff
Individuals with Disabilities Education Act (IDEA)

- Each state must “identify, locate, and evaluate” children who are in need of special education and related services regardless of the severity of the disability (IDEA Part B sec. 612(3)).

- Child find efforts for infants and toddlers must be consistent with those for children age 3 and above (IDEA Part C sec. 635 (5)).
Infants, Toddlers & Preschoolers: Where are they?

- **Health Systems**
  - Doctor’s Offices
  - Clinics
  - Home visiting programs

- **Educational Systems**
  - Preschools/daycare
  - Early head start
  - Early literacy programs
  - Home visiting programs

- **Social Services**
  - Foster care
  - Shelters
  - WIC
Why Engage Families In Screening?

- Parents are reservoirs of rich information, useful for providers
- Parental involvement reduces cost
- Screening helps structure observations, reports and communications about child development
- Screening may become a teaching tool
- Encourages parent involvement on the intervention team.
Activity: Rotating Review

- Number off by 5
- Go to flip chart with your number
- Work together to answer the question
- Rotate to the next flip chart at the signal
Features of the Ages and Stages Questionnaires (ASQ)
Features of the ASQ

19 Questionnaire intervals:

4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 27, 30, 33, 36, 42, 48, 54, 60 months
When to give the ASQ

Through the age of 24 months

- Administer within two month “window” (e.g., 16 mo. ASQ is valid from 15 months through the end of the 16th month).
- Exception: 4 month questionnaire has a 4 week “window”, use between 3 1/2 to 4 1/2 months.

Over the age of 24 months but between intervals

- First give the lower interval and then follow up with the higher interval.
Features of the ASQ

- **Cover sheet**
  - Allows for program to personalize

- **Information sheet**
  - Date of completion: Is the questionnaire “in the window”?

- **CDOB  Corrected Date of Birth**
  - is made for babies born 3 or more weeks premature,
  - up to- but not including- 24 months.

- Written at 4th to 5th grade reading level
Features of the ASQ

- 6 questions in each area
- Questions are in hierarchical order
- Questions fall into the 75-100 developmental quotient (DQ) range.
- Questions are answered “yes”, “sometimes”, and “not yet”.
Features: the Overall Section

- Not scored but indicates parent concerns
- Very predictive
- Looks at quality of skills (speech, movement)
- 4, 6, 8, 10, 12 ASQ asks questions to detect cerebral palsy:
  - Use of both hands equally?
  - Stands flat on surfaces most of the time?
- Any questionable response requires follow-up
Features: Summary Sheet

- Each summary sheet is specific to an interval
- Summary sheets have four sections
  - Child family information
  - Overall section
  - Bar graph of the five domain scores
  - Bubble boxes to transfer responses
Bell curve used to determine cutoff point

The graph shows a normal distribution curve with the following key points:

- **ASQ Cutoff**: The point where 68% of the population falls within ±1 standard deviation (SD) from the mean.
- **Percentage of population**:
  - 68% within ±1 SD
  - 13.5% within ±2 SD
  - 2.5% within ±3 SD

**Score**
- 0
- 60

**Number of Children**
- 0
- 60

**ASQ Cutoff Scores**
- 13.5% at -2 SD
- 2.5% at -3 SD
- 13.5% at +2 SD
- 2.5% at +3 SD
ASQ Administration and Scoring

Case Study
Prescreening Activities

- Obtain consent
- Explain purpose of screening and review questionnaire content.
- Schedule screening
- Mail ASQ 2 weeks before visit or leave on previous visit and ask parent to review
- Assemble materials (if necessary)
Correcting for prematurity

Either of the following methods can be used to determine the appropriate interval to give a family:

- **CDOB**  Add weeks of prematurity to date of birth to obtain a corrected date of birth
- **Adjusted Age**  Subtract weeks of prematurity from present age to determine corrected age
Correcting for prematurity: CDOB

Andrew born six weeks premature April 30, 2001.

- **Step 1:** add six weeks to his date of birth (think due date).
  - Andrew’s CDOB is June 14, 2001.

- **Step 2:** Add 16 months to his CDOB
  - Andrew should receive the questionnaire on or near October 14, 2002.
Correcting for prematurity:
Adjusted age

Andrew born six weeks premature April 30, 2001

- Today's date is October 14, 2002
- Andrews actual age is 17 1/2 months
  - Subtract 6 weeks from 17 1/2 months
- Andrew’s adjusted age is 16 months
Scoring the ASQ

- **Step 1:** Total the points in each area. “yes” = 10, “sometimes” = 5, “not yet” = 0.

- **Step 2:** Transfer the area totals to the information summary page. Fill in the matching circle in the space provided.

- **Step 3:** Read the answers to overall section questions carefully and respond appropriately.

- **Step 4:** Any score falling near or into the shaded area requires further attention or assessment.
Omitted item?

*If possible, contact parent to answer item. If not:*

- **Step 1):** Divide the total area score by the number of completed items.
- **Step 2):** Enter the result as the “best guess” point total to the unanswered question.
- **Step 3):** Add your “best guess answer” to the area total to get a new total.

\[
\text{Total area score} = \frac{\text{Best guess}}{\# \text{ of completed items}}
\]
Bell curve used to determine cutoff point

- **ASQ Cutoff**
  - 2.5% at -2 SD
  - 13.5% at -1 SD
  - 68% at 0 SD
  - 13.5% at +1 SD
  - 2.5% at +2 SD

Percentage of population

Number of Children

Score

0 to 60
16 Month A.S.Q.

<table>
<thead>
<tr>
<th>Area of Development</th>
<th>Average Score (Mean)</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>49.1</td>
<td>12.4</td>
</tr>
<tr>
<td>Gross Motor</td>
<td>55.3</td>
<td>11.9</td>
</tr>
<tr>
<td>Fine Motor</td>
<td>51.7</td>
<td>10.6</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>49.6</td>
<td>11.4</td>
</tr>
<tr>
<td>Personal-social</td>
<td>48.4</td>
<td>11.1</td>
</tr>
</tbody>
</table>

★Mean = Average score across subjects
Standard Deviation = Amount of variability found in scores
Cutoff Point = 2 Standard Deviations below the mean
Follow-up/Referral Criteria

- **Well above cut-off points.**
  - Provide follow up activities to parents
  - Rescreen in 4-6 months

- **Close to cutoffs:**
  - Provide follow up activities to practice skills in specific domain(s)
  - Talk to parents about opportunities to practice skills
  - Make community referrals as appropriate
  - Rescreen in 4-6 months or sooner if necessary
Follow-up/Referral Criteria (con’t)

**Below cutoff in one or more areas:**
- Refer to early intervention or early childhood special education agencies for diagnostic assessment

**Parent concern:**
- Respond to all concerns.
- Refer if necessary
Information to guide decisions: *risk and protective factors*

- **Biological / Health factors**
- **Environmental factors**
  - stressful life events
  - social supports
  - family/caregiving environment
- **Developmental history**
- **Family and cultural context**
- **Parent concerns**
- **Extent and frequency of contact**
- **Availability of resources**
Communicating Screening Results

- Assure the family that the discussion is confidential
- Review the purpose of screening
- Avoid terms such as “test”, “pass” or “fail”. (“below cutoff, near cutoff”)
- Review the ASQ and explain area scores
- Emphasize child and family strengths
- Provide specific examples of concerns
- Invite parents to share observations, concerns
Communicating Screening Results*

Prepare for the meeting carefully

- Make notes about behaviors
- Note information you need to gather (health history etc.) from family
- Role play conversation with a peer
- Select a private, comfortable place
- Consider cultural or language issues
- Know your community resources
- Be calm!

* Adapted from the Hilton/Early Head Start Training Program
  Sonoma State University
Parent Report: Research

- As accurate as formal measures for identifying cognitive delay (Glascoe, 1989, 1990; Pulsifer, 1994)
- As accurate as formal measures for identifying language delay (Tomblin, 1987)
- As accurate as formal measures for identifying symptoms of ADHD and school related problems (Mulhern, 1994)
- More accurate than Denver for predicting school-age learning problems (Diamond, 1987)
Parent Report: Factors that may effect accuracy

Characteristics of parents:
- Impaired mental functioning
- Mental health issues
- Cultural and language differences
- Involvement with child protective agencies
- Low literacy
Qualities of assessment tools

- **Validity** “accuracy”
- **Reliability** “consistency”
- **Adequate normative population**
- **Cultural sensitivity**
- **Comprehensiveness**
- **Attractiveness to children**
<table>
<thead>
<tr>
<th>#</th>
<th>ASQ</th>
<th>Total N</th>
<th>% Agreement</th>
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<tbody>
<tr>
<td>4</td>
<td>192</td>
<td>76%</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>207</td>
<td>86%</td>
<td></td>
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<tr>
<td>12</td>
<td>327</td>
<td>86%</td>
<td></td>
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<tr>
<td>16</td>
<td>188</td>
<td>87%</td>
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<tr>
<td>20</td>
<td>158</td>
<td>82%</td>
<td></td>
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<tr>
<td>24</td>
<td>226</td>
<td>82%</td>
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<tr>
<td>30</td>
<td>144</td>
<td>85%</td>
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<td>36</td>
<td>68</td>
<td>91%</td>
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<td>48</td>
<td>103</td>
<td>84%</td>
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<tr>
<td>60</td>
<td>30</td>
<td>97%</td>
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Validity

Specificity: how accurately a tool identifies children without problems

Sensitivity: how accurately a tool identifies children with problems
## Validity: Sensitivity, Specificity, Over and Under-referral rates

<table>
<thead>
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<th></th>
<th></th>
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<tbody>
<tr>
<td>4</td>
<td>51%</td>
<td>84%</td>
<td>12.5%</td>
<td>11.98%</td>
</tr>
<tr>
<td>8</td>
<td>78%</td>
<td>88%</td>
<td>3.46%</td>
<td>9.66%</td>
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<td>12</td>
<td>85%</td>
<td>86%</td>
<td>1.83%</td>
<td>11.93%</td>
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<tr>
<td>16</td>
<td>73%</td>
<td>81%</td>
<td>3.19%</td>
<td>16.49%</td>
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<td>20</td>
<td>65%</td>
<td>90%</td>
<td>5.7%</td>
<td>8.23%</td>
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<td>24</td>
<td>80%</td>
<td>82%</td>
<td>1.33%</td>
<td>16.37%</td>
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<td>30</td>
<td>75%</td>
<td>86%</td>
<td>2.08%</td>
<td>13.19%</td>
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<td>36</td>
<td>90%</td>
<td>92%</td>
<td>1.45%</td>
<td>7.25%</td>
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<td>48</td>
<td>78%</td>
<td>85%</td>
<td>1.94%</td>
<td>13.59%</td>
</tr>
<tr>
<td>60</td>
<td>83%</td>
<td>100%</td>
<td>3.33%</td>
<td>16.67%</td>
</tr>
<tr>
<td>Overall</td>
<td>76%</td>
<td>87%</td>
<td>4.0%</td>
<td>11%</td>
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Overall Validity of ASQ?

- Sample: 1613
- Agreement: .86
- Sensitivity: .76
- Specificity: .87
- Under-referred: .04
- Over-referred: .11
Reliability of the ASQ

- Interobserver reliability of infants classifications between ASQ completed by parents and by professional examiners
  - N=112
  - Agreement = 94%

- Test-retest reliability of infant’s classifications on ASQ completed by parents at two-to-three week intervals
  - N=175
  - Agreement=94%
**Normative Sample:** Total number of questionnaires in each interval

<table>
<thead>
<tr>
<th>Interval</th>
<th>Number</th>
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<tbody>
<tr>
<td>4 month</td>
<td>1500</td>
</tr>
<tr>
<td>8 month</td>
<td>1405</td>
</tr>
<tr>
<td>12 month</td>
<td>1185</td>
</tr>
<tr>
<td>16 month</td>
<td>1057</td>
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<td>20 month</td>
<td>930</td>
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<td>24 month</td>
<td>898</td>
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<tr>
<td>30 month</td>
<td>609</td>
</tr>
<tr>
<td>36 month</td>
<td>535</td>
</tr>
<tr>
<td>48 month</td>
<td>286</td>
</tr>
<tr>
<td>60 month</td>
<td>125</td>
</tr>
<tr>
<td><strong>Overall:</strong></td>
<td><strong>8530</strong></td>
</tr>
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</table>
Cultural adaptability of the ASQ

- Alternative administration methods
- Alternative materials suggested on the questionnaire
- Normative sample includes diverse populations
- Scoring allows for omission of inappropriate items
Coordinating, Planning and Managing Screening Efforts

- Excellent resource
- Covers all topics in depth
Interagency Collaboration

- **What other agencies are screening children?**
  - What ages? What domains? What tools?
  - Coordinate training efforts

- **Coordinate services to:**
  - Decrease duplication
  - Save resources

- **Determine your referral sources**
  - Establish relationship/interagency agreement
  - Establish referral/feedback procedures
Planning a Screening Program

- Establish goals and objectives with stakeholders
- Determine program resources
- Select criteria for participation
- Outline internal referral and feedback procedures
- Develop policies and procedures
- Train staff
- Plan evaluation activities
Planning: ASQ format selection

**Method(s)**
- mail-out, home visit, interview

**Setting(s)**
- child care setting
- pediatric waiting room

**Intervals**
- all
- selected
Management

Features unique to ASQ
- intervals
- windows of reliability
- forms
- cut-off scores

Management systems
- tickler system (card file)
- computer system
Training

Materials:

- ASQ User’s Guide
- ASQ trainer’s notes
- Overheads (or powerpoint)
- Scoring Exercises
- Communication Role Plays
- Home Visit Video
- Handouts
On-going Support

**Before training**
- Discuss training’s value and importance with trainee

**During Training**
- Allow time for practice, questions, discussion
- Plan for trainees return to job after training

**After training**
- Provide frequent practice opportunities
- Coach trainees in applying new learning
- Provide on-going support
- Encourage and reward transfer of new skills
Program Evaluation

- Screening success.
- Parent satisfaction.
- Referral procedures: Are they working?
- Interagency collaborations. Are they happening?
Screening Success: Positive Predictive Value

Proportion of children identified by the ASQ as needing further assessment who will, in fact, have intervention needs:

True Positives*

All Positive Screenings

* Verified by in-depth evaluation
In Summary

- Managers and Supervisors play an important role in:
  - collaborating with community partners
  - planning screening programs
  - establishing screening policies and procedures
  - assuring staff competency
  - supporting staff implementation efforts
  - evaluating program effectiveness
For More Information
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