



Does Early Identification of Hearing Loss Really Matter?



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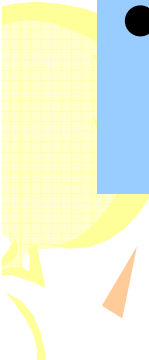
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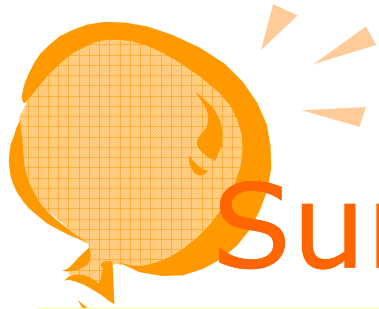
The Objectives of this Presentation

To compare speech and language levels of children with hearing loss based upon:

- Severity of the hearing loss (HL)
 - Age of diagnosis
 - Age aided
 - Age implanted
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Who we are and where we come from





Sunshine Cottage School

Our mission statement

Sunshine Cottage School for Deaf Children prepares children with hearing loss for a successful life in the hearing world by promoting early identification of hearing loss, intervention and listening, language and speech in an auditory oral educational environment. Our doors are always open to every child with hearing loss who can benefit from our program.



Our Programs

Sunshine Cottage School for Deaf Children

Parent Infant
Program

School: On Campus
Mainstream
Program

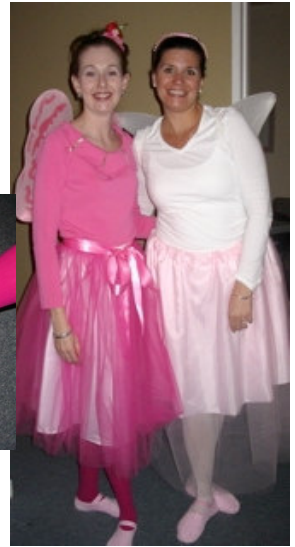
Off Campus
Mainstream Progra

Children with hearing impairment

Children with typical hearing

Parent Infant Program

- Team approach intervention
- Children ages birth-3 years old with hearing loss & their families



Sunshine Cottage School: On Campus Mainstream Program

- Children ages 3 & up
- Early Childhood Classes
 - 3 years - Kinder
- Elementary Classes
 - 1st-5th grades

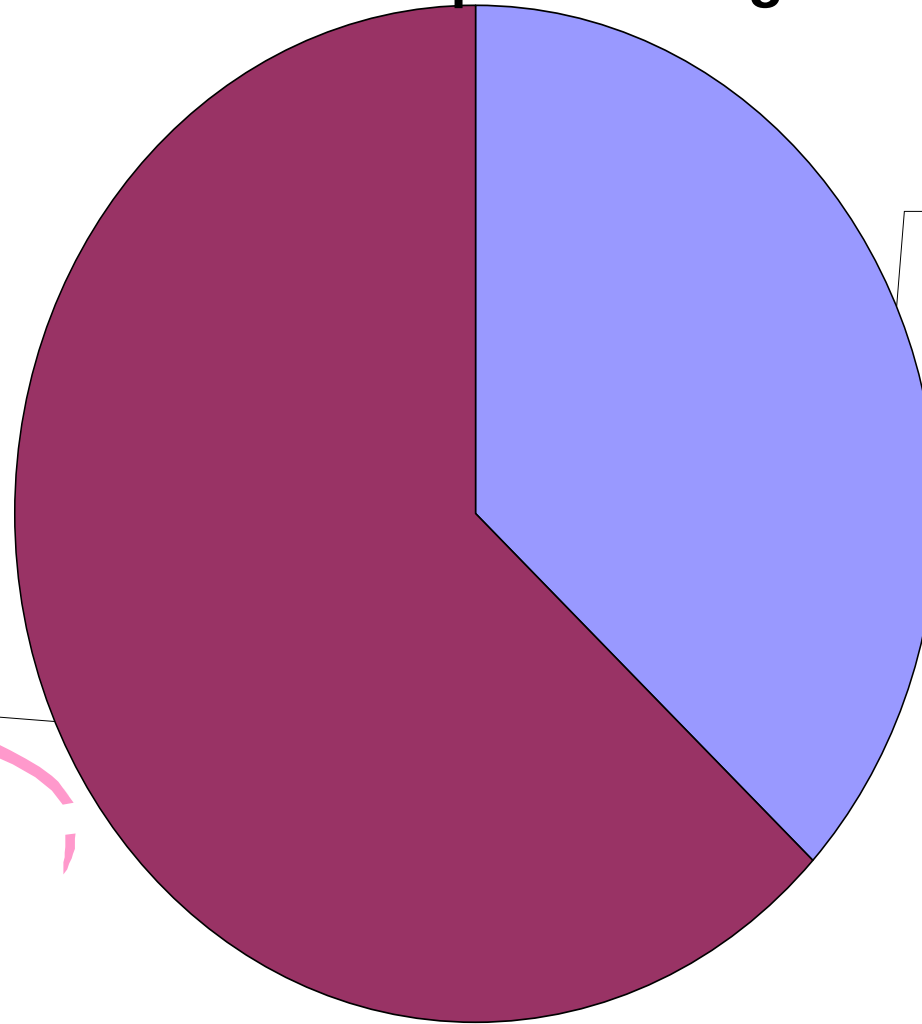


2007-2008 On Campus Mainstream Program Student Hearing Statistics

2007-2008 On Campus Hearing Statistics

Hearing Loss,
63%

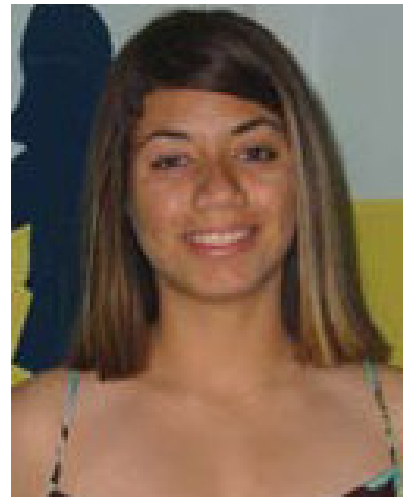
Typical Hearing,
37%



Typical Hearing
Hearing Loss

Off Campus Mainstream Program

- Students 6th -12th grades
- Mainstream Sunshine Cottage services in local public school district
- Sunshine Cottage full time teacher on each campus



Audiology Department



Why should parents be sure to go to follow up testing?

- Parents get lots more info
- ABR vs ALGO
- Don't miss a thing!
 - One false positive result can have long lasting, significant effects on a child's speech-language & listening development.



Speech Language Pathology



Language Testing

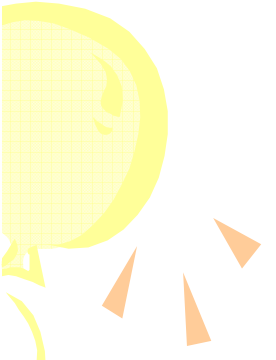


- Clinical Evaluation of Language Fundamentals- 4th and Preschool Editions (CELF-4 & CELF-P2)
- Comprehensive Assessment for Spoken Language (CASL)
- Preschool Language Scale – 2nd Edition (PLS-2)



Speech Testing



- Goldman-Fristoe Test of Articulation – 2nd Edition (GFTA-2)
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Hearing loss is the most common birth defect

- 3 of every 1,000 babies born have permanent HL
- Invisible
- Average age of diagnosis was ~3 yrs. before babies were screened
- Some were as old as 5 to 6 yrs.



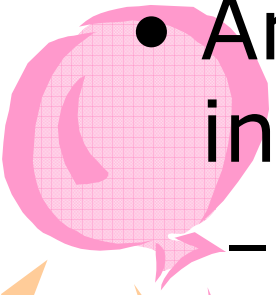
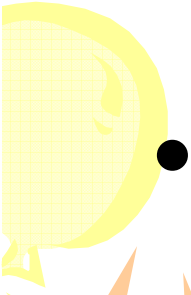
Universal Newborn Hearing Screening (UNHS)

- Screen babies before 1 month of age
- Diagnose HL by 3 months of age
- Appropriate intervention by 6 mos.
- Culturally-competent family support
- All newborns have “medical home”



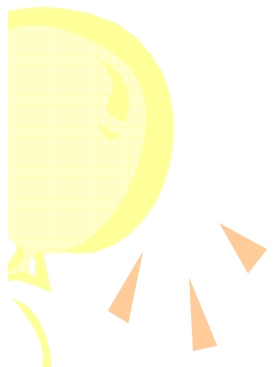
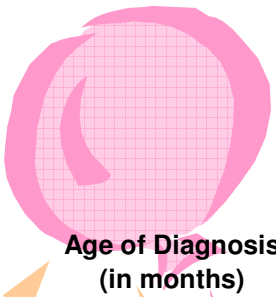
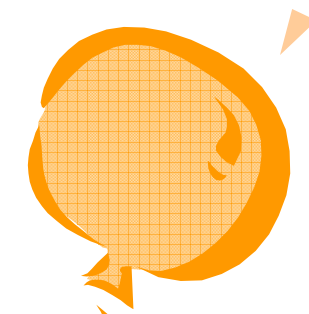
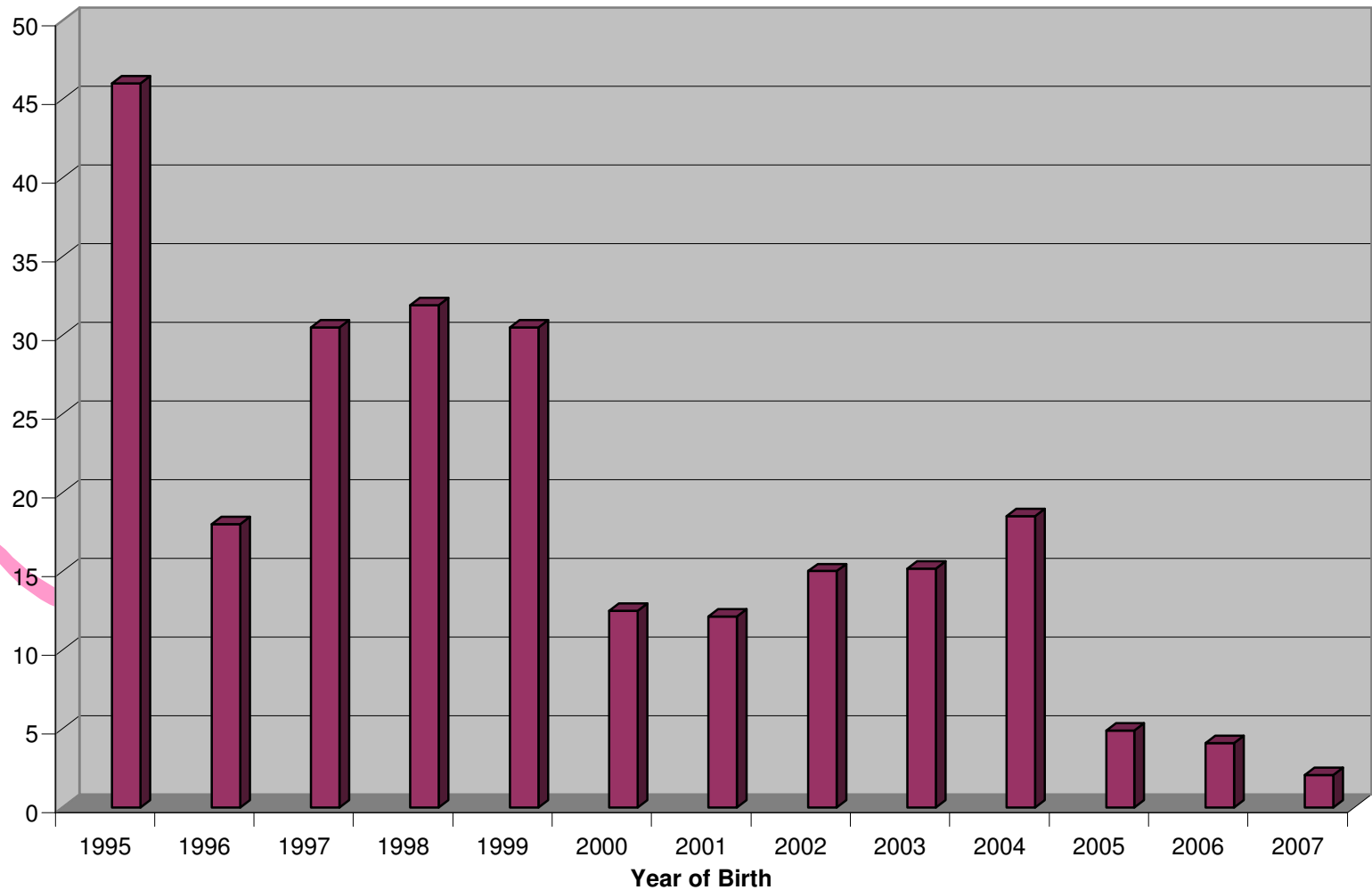


Yoshinaga-Itano Landmark Studies

- Children identified with hearing loss before 6 months
 - And who receive appropriate intervention demonstrate
 - Better receptive and expressive language
 - Better expressive vocabulary
 - Better personal-social skills
 - And maintain those skills within normal limits
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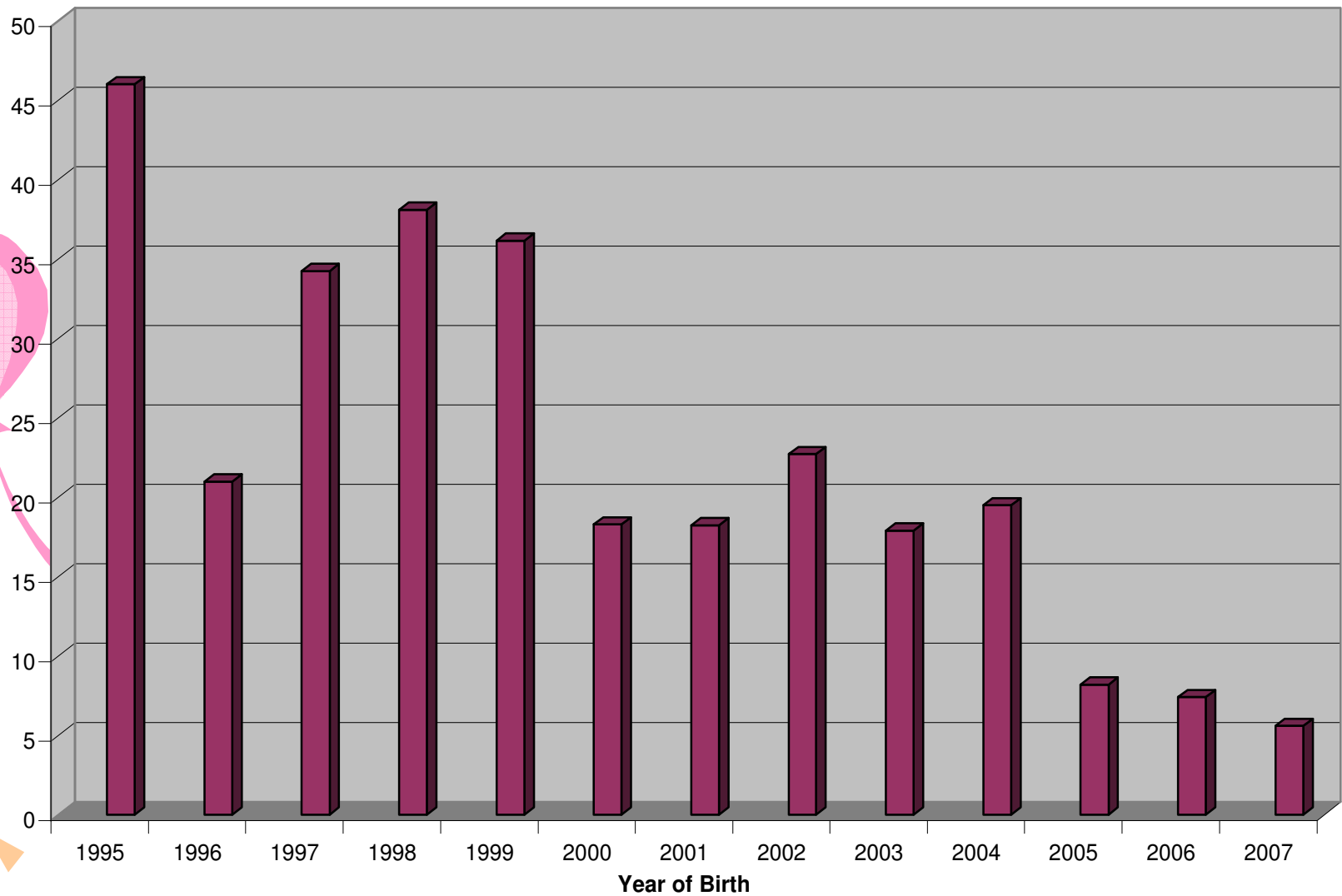
Sunshine Cottage Students 2006-2007 Average Age of Diagnosis by Birth Year

Average Age Diagnosis of Hearing Loss 1995-2007



Average Age Started Wearing Hearing Aids

Average Age Aided 1995-2007



Age Aided
(in months)

Year of Birth

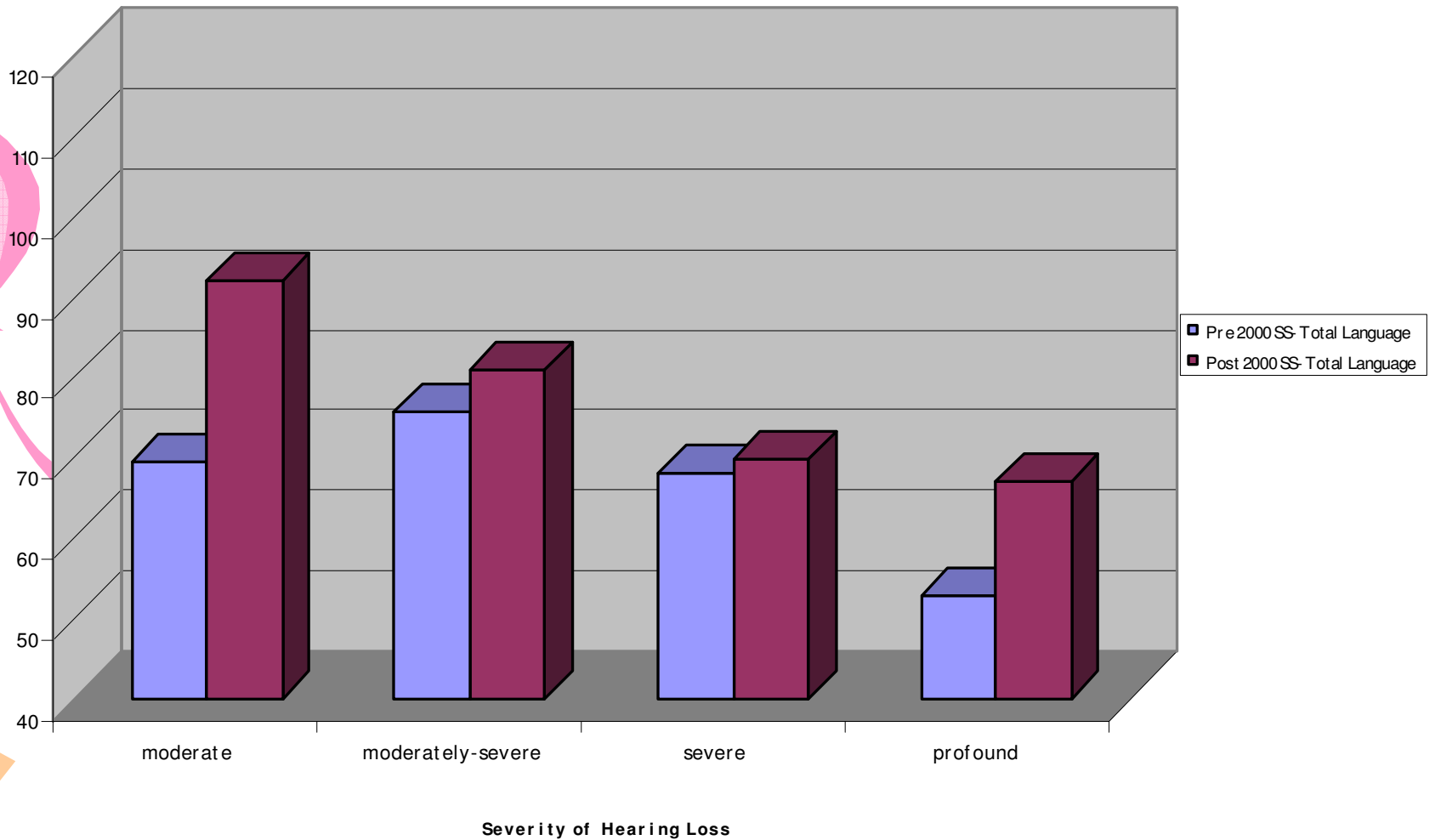
Why Does it Still Take So Long to Start Intervention and to Fit Hearing Aids?



- Grieving process
- Health of baby
- Family crisis
- Progressive hearing loss
- Otologic clearance
- Middle ear problems
- Not enough pediatric audiologists
- Lack of continuity of services

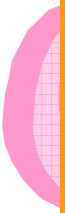

Total Language by Severity of Hearing Loss Before and After UNHS

Average Standard Score Total Language/Severity Hearing Loss
1995-2004



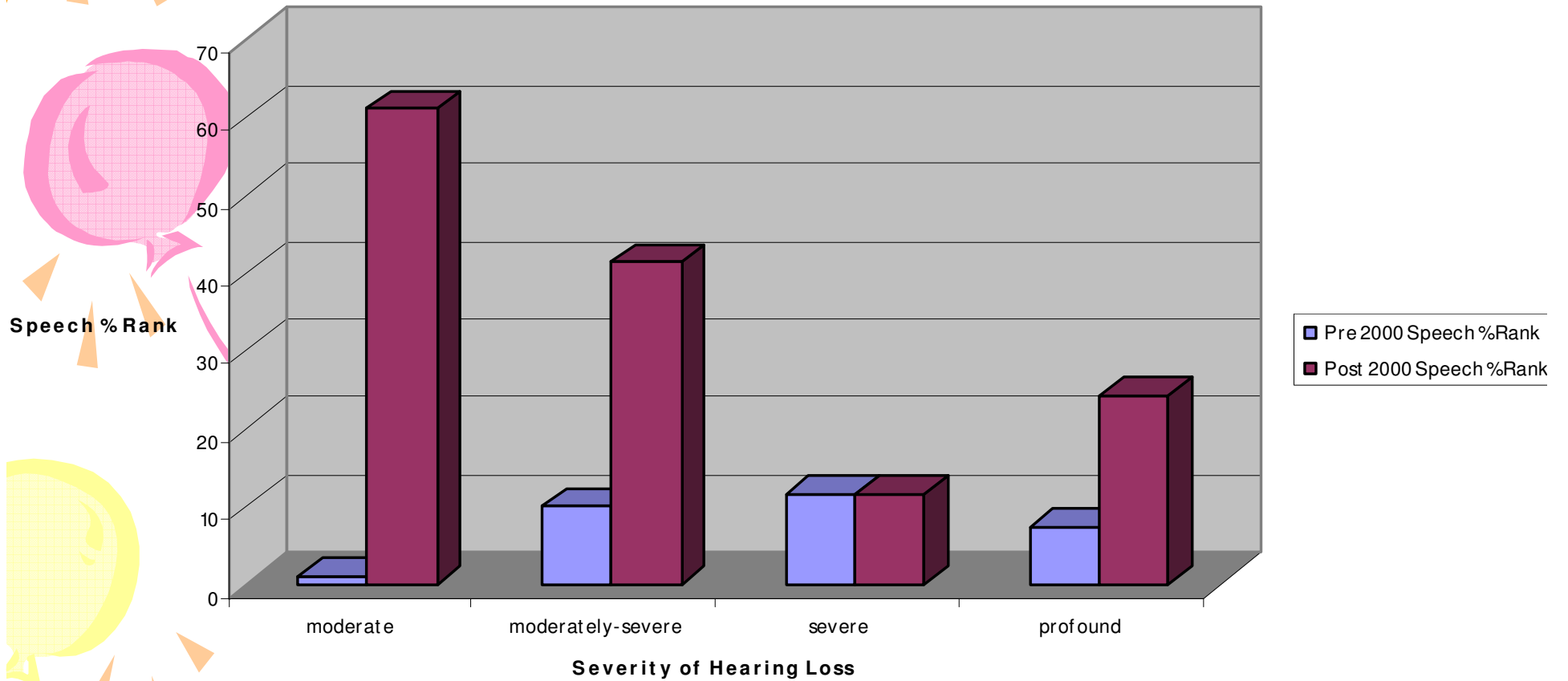


When Hearing Loss is Identified Early

- More improvement in language scores for those with
 - Moderate hearing loss
 - Profound hearing loss
 - Less improvement in language scores for those with
 - Moderately-severe hearing loss
 - Severe hearing loss
- 
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Speech Percentile by Severity of Hearing Loss Before and After UNHS

Average Speech Percentile Rank per Severity of Hearing Loss
1995-2004



When Hearing Loss is Identified Early

More improvement in speech/articulation skills

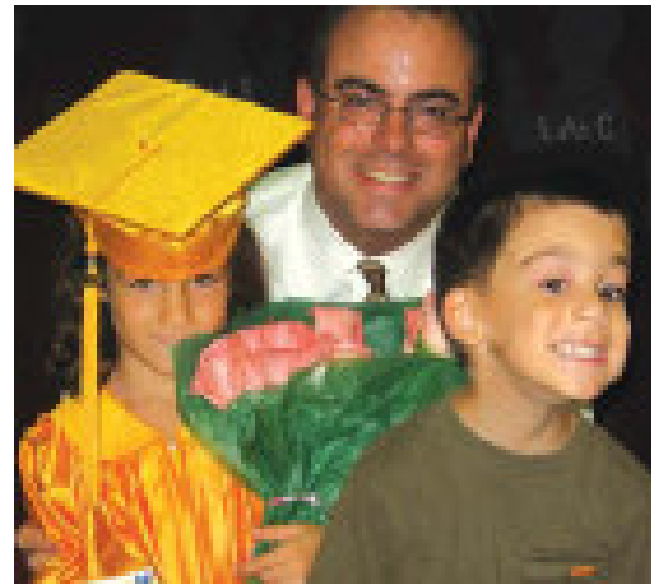
for those with

- Moderate
- Moderately-severe
- Profound hearing loss

Little improvement in speech/articulation skills

for those with

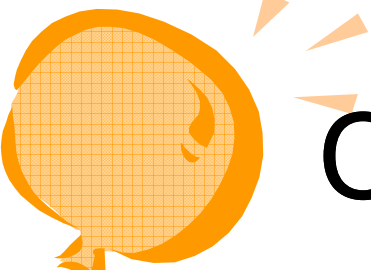
- Severe hearing





Why would children with severe hearing loss have less benefit from early identification?

- Less improvement in technology for this group
- Limitations of hearing aids: distance, noise
- Dependent on FM






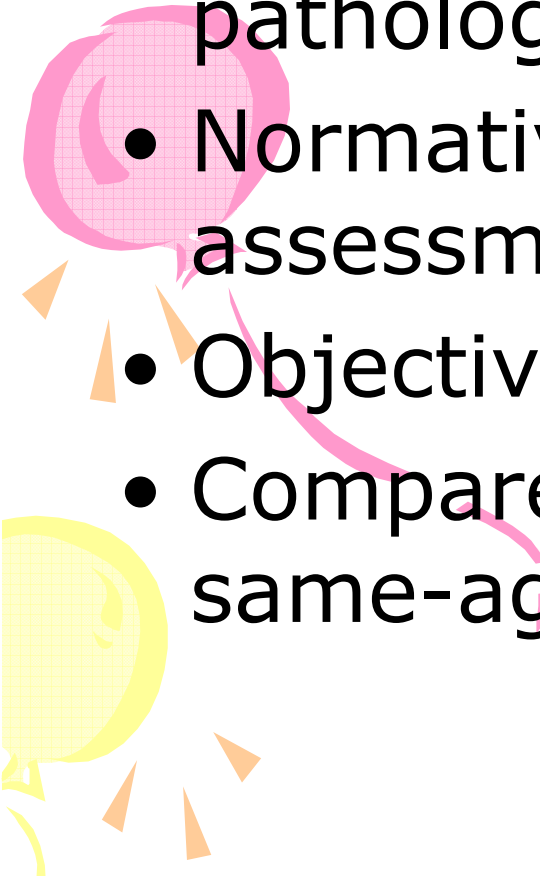
Our data differs from previous data

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- Sunshine Cottage (2006-2007)
 - Language and speech scores varied as function of severity of HL
 - Those with severe HL had lowest speech scores

- Yoshinaga-Itano, (1998)
- No significant difference in language development by severity of HL



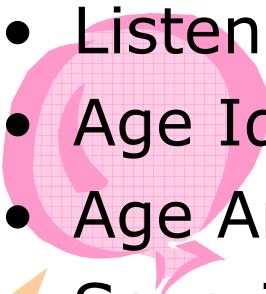

Our speech-language evaluations are different from previous studies

- Administered by speech-language pathologists
 - Normative, standardized assessments
 - Objective data
 - Compared to typically hearing, same-aged peers
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Videos

Video 1

- Chronological Age: 8y 3m
 - Listening Age: 2y 0m
 - Age Id: 4y 1m
 - Age Amplified: 4y 6m
 - Severity of Loss: Moderate - Profound
 - Language Severity: Severe
 - Speech Severity: Severe
- 
- 

Video 2

- Chronological Age: 7y 7m
- Listening Age: 5y 8m
- Age Id: 0y 0m (4 days!)
- Age Amplified: 0y 2m
- Severity of Loss: Mild-Moderately Severe
- Language Severity: WNL
- Speech Severity: WNL

Video 1 – Pre 2000

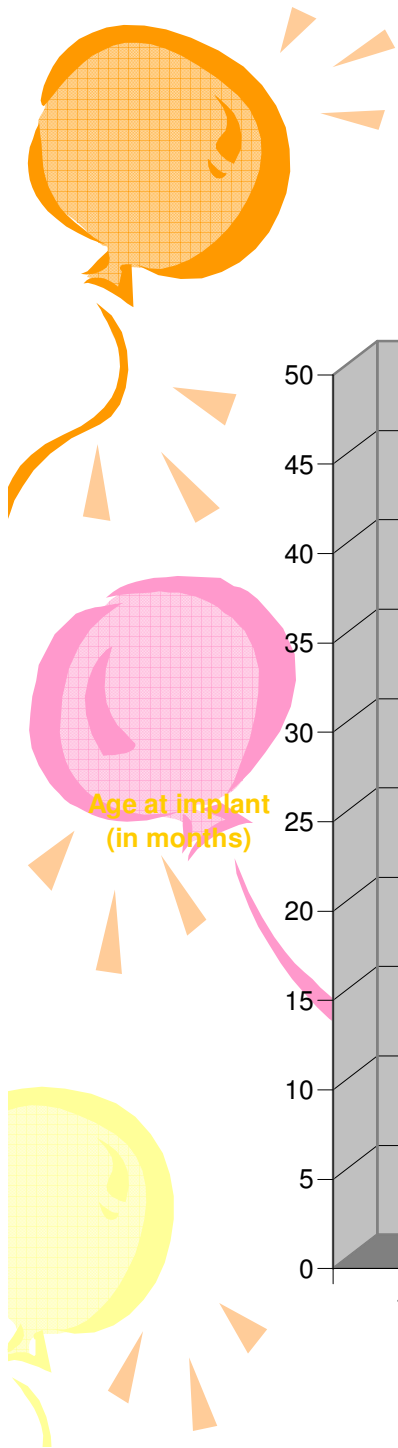
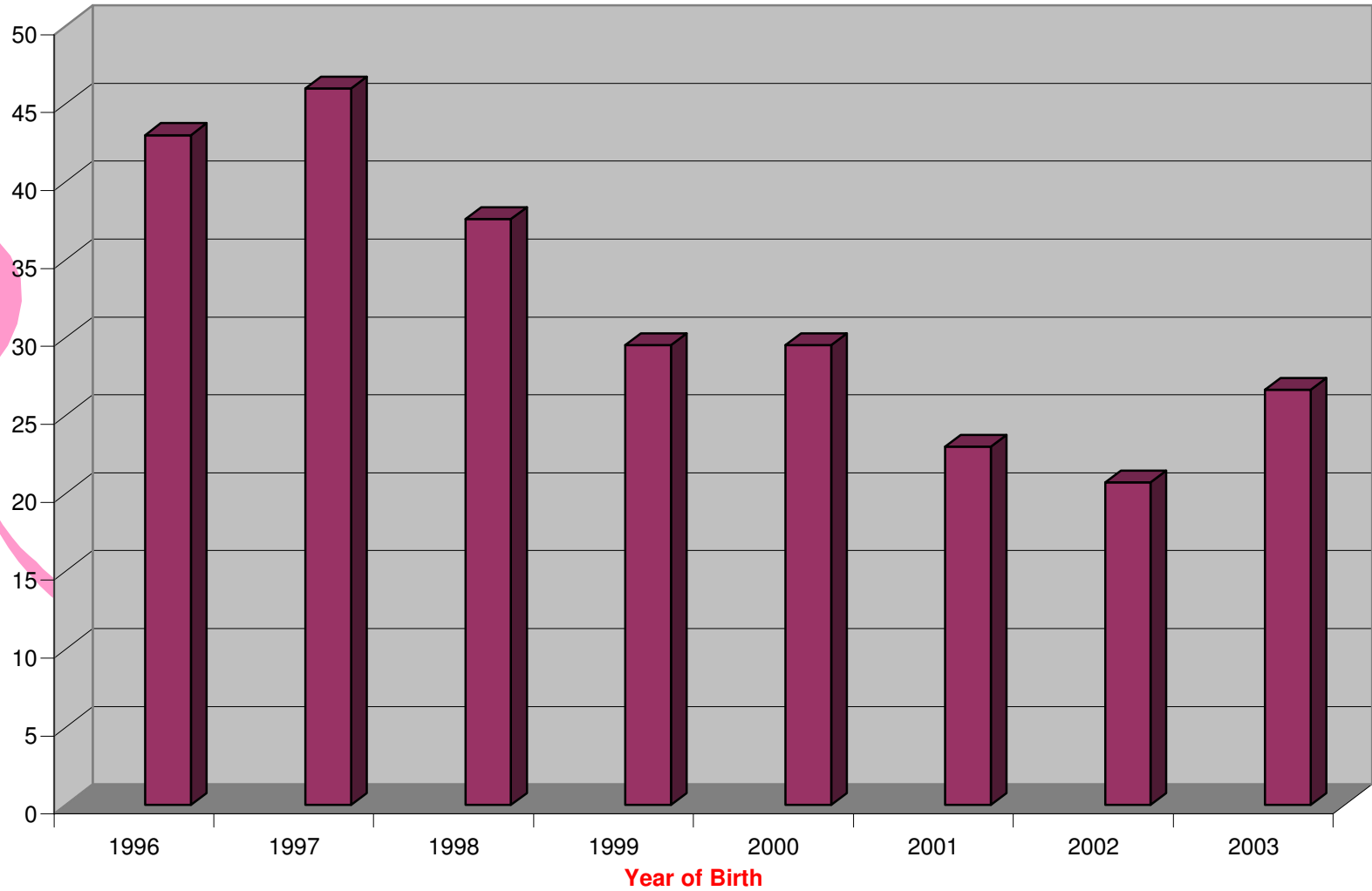


Video 2 – Post 2000



Average Age Implanted

Average Age Implanted 1996-2003





Videos

Video 3

- Chronological Age: 9y 11m
- Listening Age: 6y 10m
- Age Id: 2y 2m
- Age Amplified: 2y 10m
- Age Implanted: 3y 5m
- Severity of Loss: Profound
- Language Severity: Severe
- Speech Severity: WNL

Video 4

- Chronological Age: 5y 9m
- Listening Age: 3y 5m
- Age Id: 0y 9m
- Age Amplified: 0y 11m
- Age Implanted: 1y 6m
- Severity of Loss: Profound
- Language Severity: WNL
- Speech Severity: WNL



Video 3 – Pre 2000



Video 4 – Post 2000





Trends in our population

- More children identified with
 - Mild hearing loss
 - Unilateral hearing loss
 - Progressive hearing losses
- Higher incidence of middle ear fluid in babies than expected
- More bilateral (simultaneous and sequential) cochlear implants
- More children developing normal speech-language skills
- More babies in our program. PIP has doubled to tripled in the last 7 years!

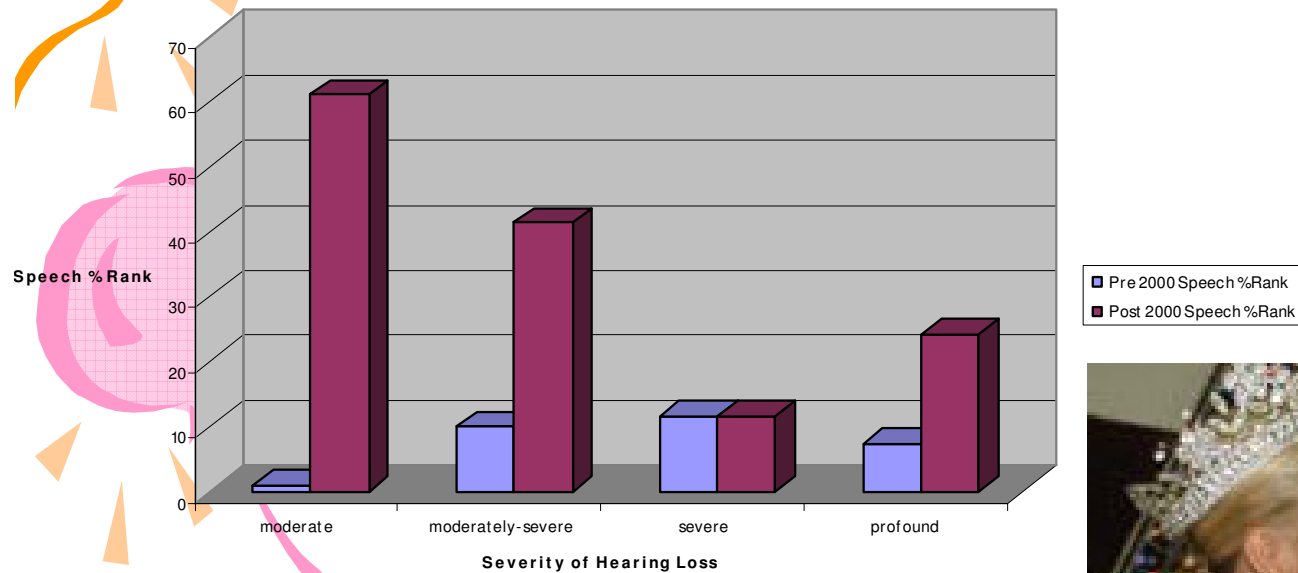
Concerns and Hopes for the Future



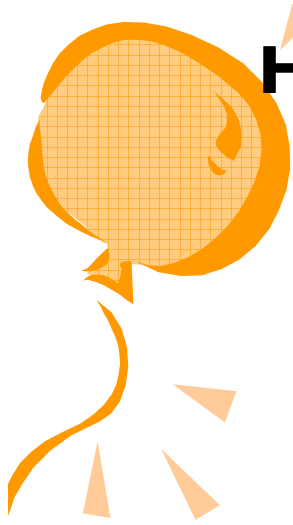
- More qualified and experienced pediatric audiologists for diagnosis and management of babies with HL
- Seamless process of **diagnosis** → **intervention** → **amplification**
- Fewer babies “lost” following diagnosis
- Insurance coverage for
 - audiological and speech-language services
 - amplification equipment and supplies
- More research on speech-language skills of children with hearing loss

One more time, here's what early identification can do

Average Speech Percentile Rank per Severity of Hearing Loss
1995-2004







Happy 60th Birthday, Sunshine Cottage!

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