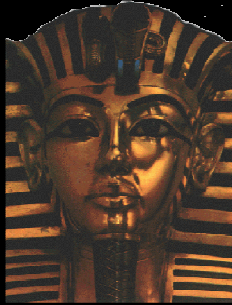




# HEARING LOSS SCREENING IN NEWBORNS AND INFANTS IN PAYSANDU, URUGUAY



*Dr. Enrique Dal Monte.*  
*COMEPA ENT Department*

23/12/2004

IFOS XVII World Congress  
Cairo

1

Among sensorial sequelae, hearing loss constitutes a major factor in child development when not identified and treated at an early stage. Screening for hearing loss by high risk registry alone overlooks the fact that 10 percent of children with congenital hearing loss are normal newborn

**Area: 176,220 sq km**  
**Population: 3,278,000**  
**Birth rate: 16.8 ‰**  
**Infant mortality rate: 13.5 ‰**  
**Population Paysandu 76.000**

IFOS XVII World Congress  
Cairo

23/12/2004

Although the early detection of hearing loss has been recommended by the National Institute of Health and the Joint Committee on Infant Hearing in the United States, such standard has yet to be implemented in our

# Universal Newborn Hearing Screening Paysandú - URUGUAY

## Materials and Methods

F <sup>1</sup>	F <sup>2</sup>	L <sup>1</sup>	L <sup>2</sup>	TA	MinSN	MinDP
4800	6000	65	55	4	6	-10
3333	4000	65	55	4	6	-10
2800	3360	65	55	4	6	-10
2350	2820	65	55	4	6	-10
1980	2370	65	55	4	6	-10
1666	2000	65	55	4	6	-10



23/12/2004

IFOS XVII World Congress  
Cairo

3

### Material and Methods

We used a Starkey DP-2000, with the 2.00a software version, with the protocol is shown.

The distortion product was studied over frequencies 2-6 kHz, and a Pass was required in respect of 4 of the 6 frequencies analyzed in order for the patient to pass.

# Universal Newborn Hearing Screening Paysandú - URUGUAY



23/12/2004

IFOS XVII World Congress  
Cairo

4

The plan was to test all at-risk infants admitted to the Comepa's NICU, together with all normal babies born between 15 January – 15 April 1999 at the COME 600 per year.

# Universal Newborn Hearing Screening Paysandú - URUGUAY



23/12/2004

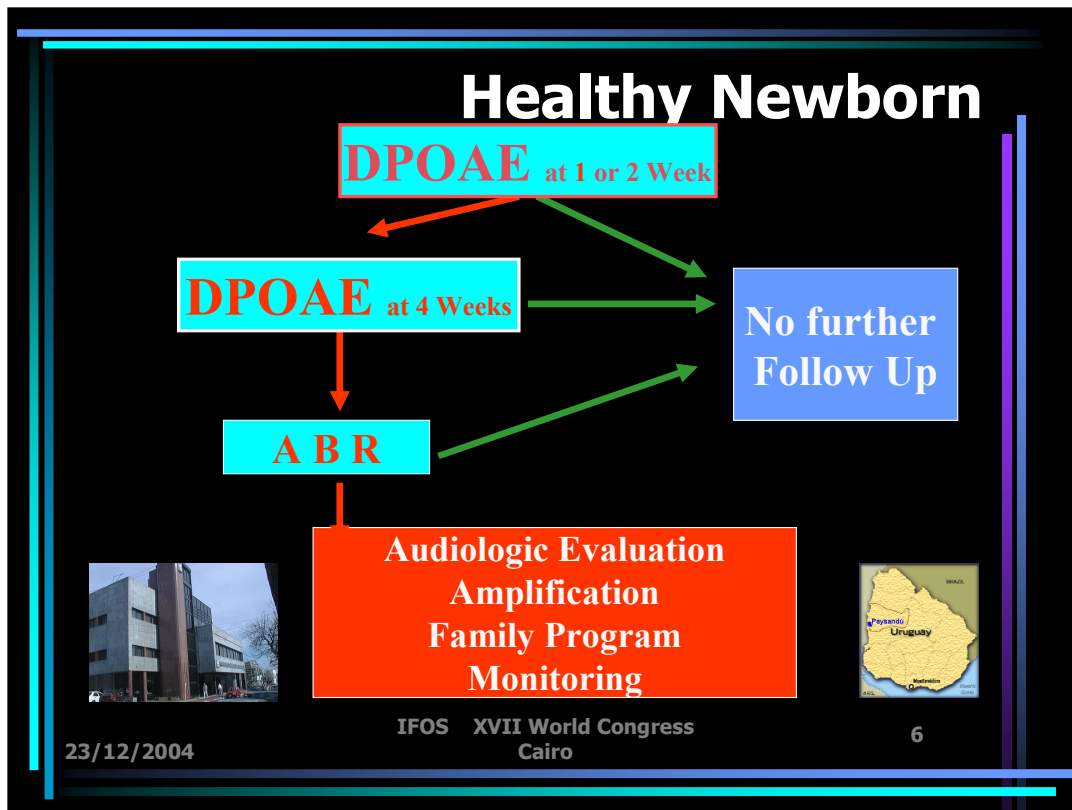
IFOS XVII World Congress  
Cairo

5

We use the Marion Downs Protocol from Colorado.

The first difficulty we encountered, was that the babies born under normal conditions at the Comepa Hospital, were discharged at 24 hours.

Bearing in mind the ideal scenario whereby a diagnosis is made before 3 months and intervention occurs before 6 months,



we deemed appropriate to test within the first 15 days from birth, with the second test conducted at 30-45 days.

The following work outline adopted is shown:

In Healthy Newborn

If result is REFER again, we perform an ABR test.

If we confirm the suspected Hearing Loss, a Behavioral assessment and Fittir is made.

The newborns that PASS the Screening leave the Program.

**In addition, we test ABR on ALL at-risk newborn,  
Periodic reassessment of the babies with OAE and ABR is made.  
Treatment of associated pathology if necessary**

# Universal Newborn Hearing Screening Paysandú - URUGUAY



23/12/2004

IFOS XVII World Congress  
Cairo

8

Environmental noise, including a baby's crying, is a critical factor. We found it  
A baby's crying is a problem of timing:  
Breast-feeding a baby is a suitable way to settle it down so the test can be pe



# Universal Newborn Hearing Screening Paysandú - URUGUAY



23/12/2004

IFOS XVII World Congress  
Cairo

9

We learn just how critical is to put the probe in the External Ear Canal. There are often differences between the left and right side that require changing the size of the probe tip.

In the event of a REFER, the child is retested immediately several times, until a PASS is obtained or we are absolutely sure of the referral.

## Universal Newborn Hearing Screening Paysandú - URUGUAY



23/12/2004

IFOS XVII World Congress  
Cairo

10

The new Starkey software makes it possible to study frequencies individually, and this is very useful for reexamining only those frequencies that are not within protocol specifications.

The final results of this short series of tests showed there were 4 infants in whom otoacoustic emissions could not be detected. Of these 4 infants, three were tested using ABR, while the fourth was unable to be contacted again.

Two of them have permeable auditory pathways. The other has absent evoked potential in both ears and will be referred for assessment and treatment.

# **Universal Newborn Hearing Screening Paysandú - URUGUAY**

**COMEPA, Follow-up Programme 2000.**

**606 Newborn Examinees (95.73 %)**

**Pass Rate of 94% (at the first examination)**

**3 Infants suspected of  
Sensory Neural Hearing Loss**



23/12/2004

IFOS XVII World Congress  
Cairo

11

From 1 January 2000, we make UNHS to all the babies born in Comepa's Hospital or discharged from Comepa's NICU.

At end December 2000, 671 bilateral tests had been carried out on normal neonates and neonates with perinatal risk.

From the total number of newborns, we can examine 606, that is 95.73 %.

We have a Pass rate of 94% at the first examination.

Four parents did not accept to participate in the Screening Plan.

We have found, in the Plan 2000, three infants suspected of Sensory Neural Hearing Loss that are evaluated with the Marion Downs Protocol.

## **Universal Newborn Hearing Screening Paysandú - URUGUAY**

**We continue working in 2001,  
and at end August,  
we have tested a total of  
1090 Newborns**



23/12/2004

IFOS XVII World Congress  
Cairo

12

**We continue working in 2001,  
End August, we have tested a total of  
Thousand ninety Newborns**

# Universal Newborn Hearing Screening Paysandú - URUGUAY

*MA.*

**DPOAE at 12 days. Refer.**

**DPOAE at 40 days. Refer.**

**ABR at 50 days PASS over 35 dB**



23/12/2004

IFOS XVII World Congress  
Cairo

13

To finish, we would like to comment on four particular cases,  
to exemplify the problems and benefits of the UNHS

The first,

A refer 2 times DPOAE + ABR PASS

# Universal Newborn Hearing Screening Paysandú - URUGUAY

*MA.*

**Patient with a Cleft Palate,  
Transmission Hearing Loss > 35 dB**



23/12/2004

IFOS XVII World Congress  
Cairo

14

This patient has a cleft palate and a transmission hearing loss higher than 35 dB that make impossible to register the OAE response

# Universal Newborn Hearing Screening Paysandú - URUGUAY

**SMA:**

**Weight at birth : 3970 Grs.  
Hemolytic Disease, Rh conflict,  
Mother 0 Rh(-) , Coombs +  
Physical examination: . Jaundice**



23/12/2004

IFOS XVII World Congress  
Cairo

15

**The second,**  
Hemolytic Disease, Jaundice

# Universal Newborn Hearing Screening Paysandú - URUGUAY

SMA:  
DPOAE PASS  
+ ABR REFER

Auditory Neuropathy by Jaundice.



23/12/2004

IFOS XVII World Congress  
Cairo

16

DPOAE PASS  
+ ABR REFER

Auditory Neuropathy by Jaundice.



# **Universal Newborn Hearing Screening Paysandú - URUGUAY**

**AINC**

**Weight at birth: 696 grs.  
Well controlled Pregnancy,  
Oligoamnios.**

**Admittance reason :  
Extreme prematurity**



23/12/2004

IFOS XVII World Congress  
Cairo

17

Extreme prematurity:

Weight: 696 grs.

# Universal Newborn Hearing Screening Paysandú - URUGUAY

AINC

DPOAE Pass (4 times)  
ABR Refer (2 times)  
1 year later: ABR Pass

Auditory Dis-synchrony by  
Prematurity.

**Improves with maturity.**



23/12/2004

IFOS XVII World Congress  
Cairo

18

DPOAE Pass more  
ABR Refer

But 1 year later, ABR PASS

Auditory dis-synchrony that improve with maturity

# Universal Newborn Hearing Screening Paysandú - URUGUAY

CS.

3 years old

No relevant background.

**Diagnosed with a Deep Bilateral  
Sensoryneural Hearing Loss  
when visiting for a mild earache.**



23/12/2004

IFOS XVII World Congress  
Cairo

19

The four is not from the plan,

3 years old girl with  
No relevant background.

Was Diagnosed with a

Deep Bilateral Sensoryneural Hearing Loss

when visiting for a mild earache.

# Universal Newborn Hearing Screening Paysandú - URUGUAY

CS.

**Had the programme been in place, this girl would have won 3 years on her fitting and auditory reeducation.**

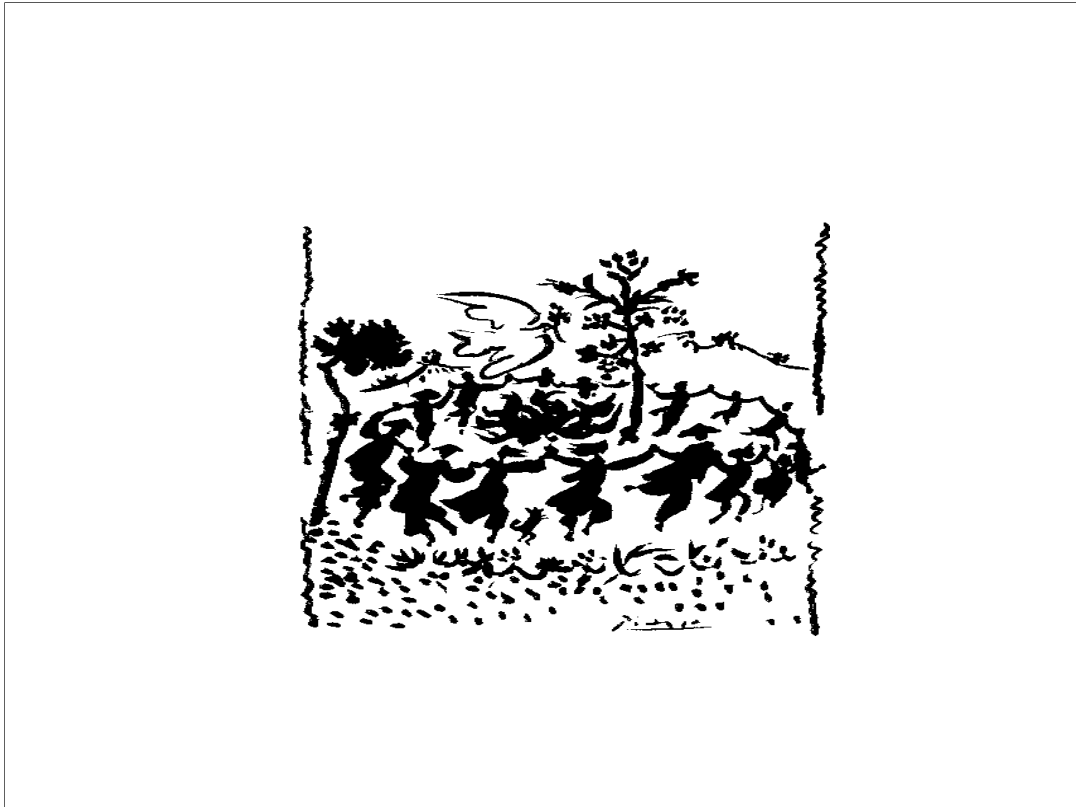


23/12/2004

IFOS XVII World Congress  
Cairo

20

**Had the programme been in place, this girl would have won 3 years on her fitting and auditory reeducation.**



This paper seek to show the importance of testing all normal newborns and those with hearing risk, as well as highlight the possibility of carrying out such testing under a Follow-up Programme for monitoring normal newborns and those with perinatal risk.

We seek to encourage their use among pediatricians, otolaryngologists, audiologists, health care Administrators and parents, in order to promote intervention in children with hearing impairments at an early stage that is beneficial in terms of the development of language.

**EVERYONE needs to get involved!**