



# FETAL ALCOHOL SYNDROME

A SOUTH AFRICAN PERSPECTIVE



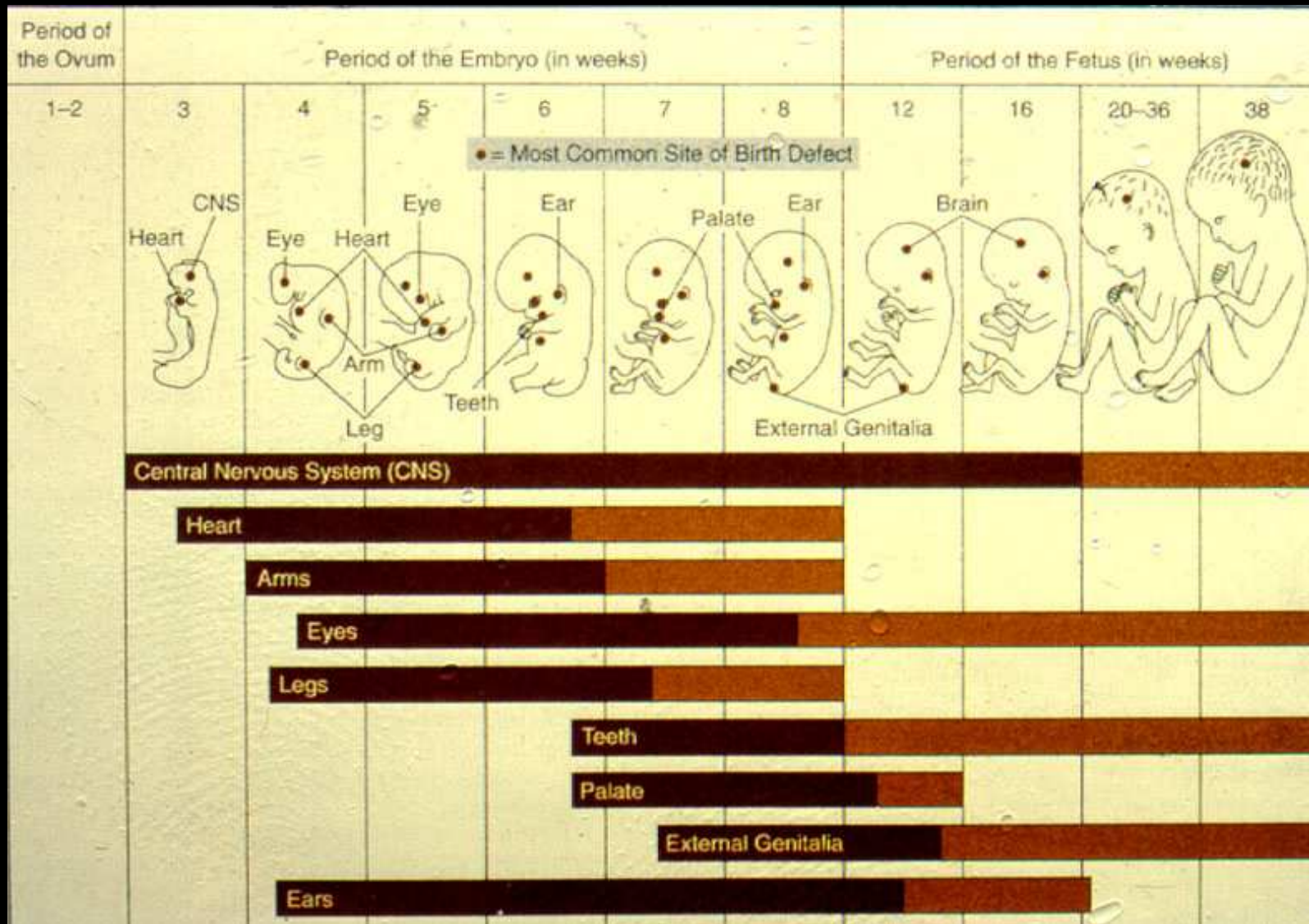
**‘Fetal alcohol syndrome is the most common preventable cause of mental retardation in the world’**

**(Sampson PD et al.; Teratology (1997); 56:317-326)**

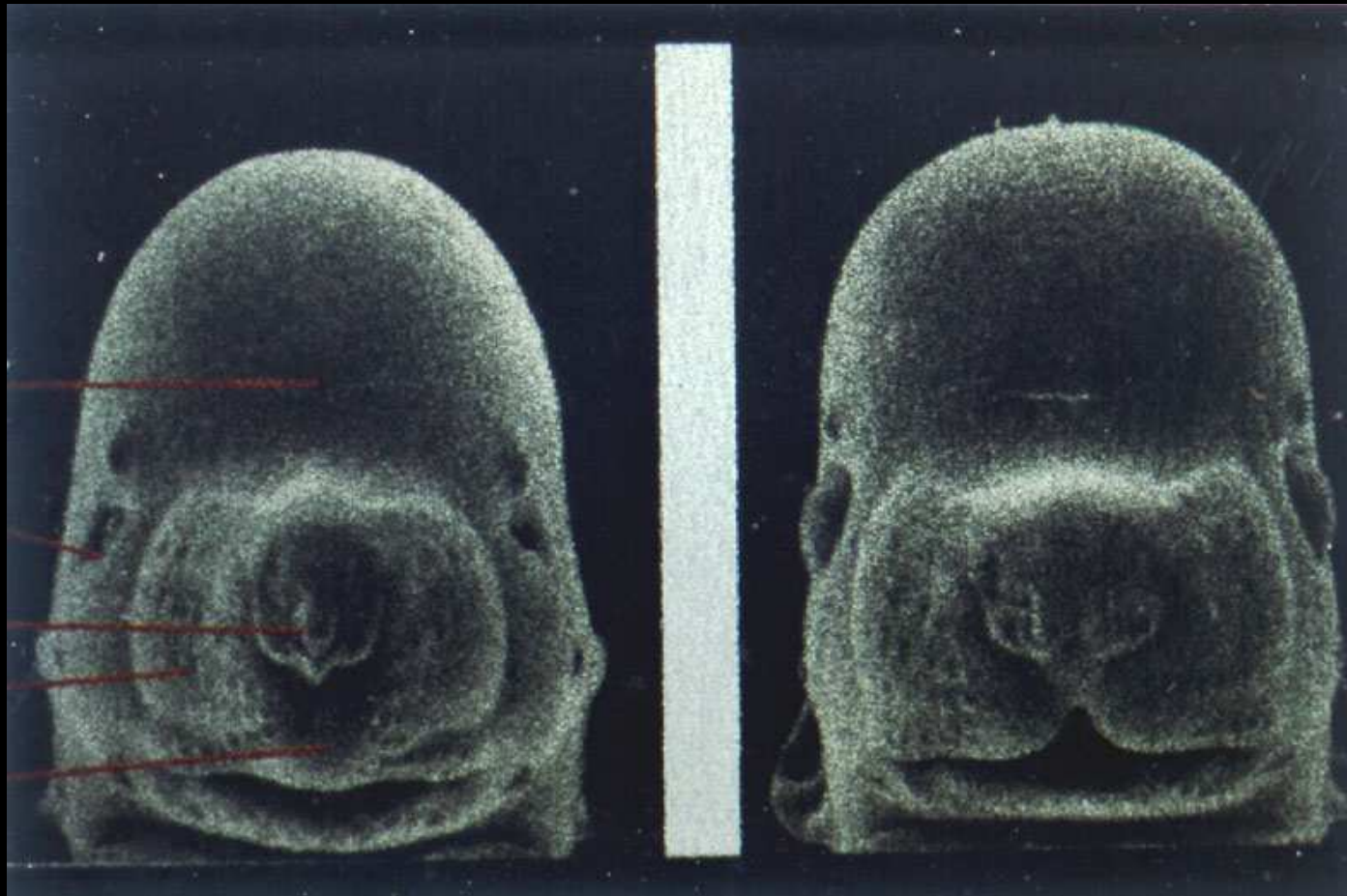
# RISK FACTORS

- Volume of alcohol consumed
- Duration and timing of drinking during pregnancy
- Additional substance abuse
- Age
- Parity
- Genetic factors
- Health status of the mother
- Poverty
- Low maternal education
- Partner, other family members and friends who also drink



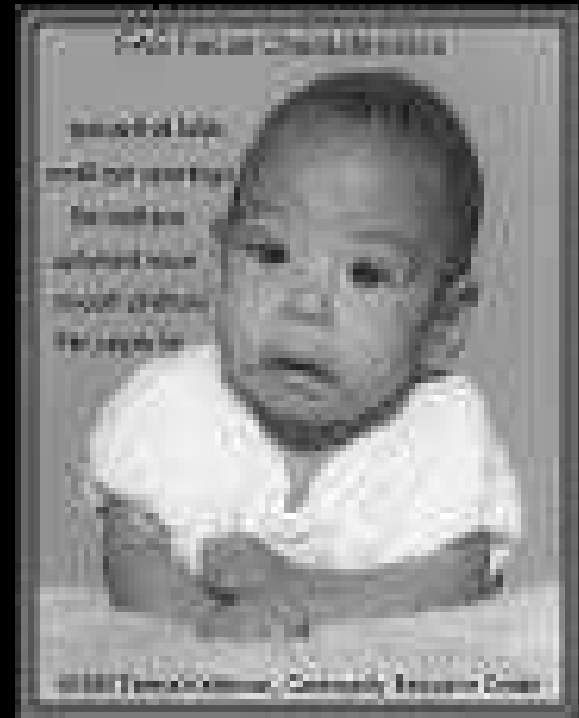


# Physical characteristics



# Clinical characteristics of FAS

- Growth retardation
- Characteristic facies
- Neurological deficits
- Other
- Maternal alcohol abuse



## Discriminating Features

## Associated Features

short palpebral fissures

flat midface

short nose

indistinct philtrum

thin upper lip

epicanthal folds

low nasal bridge

minor ear anomalies

micrognathia



# Characteristic facies

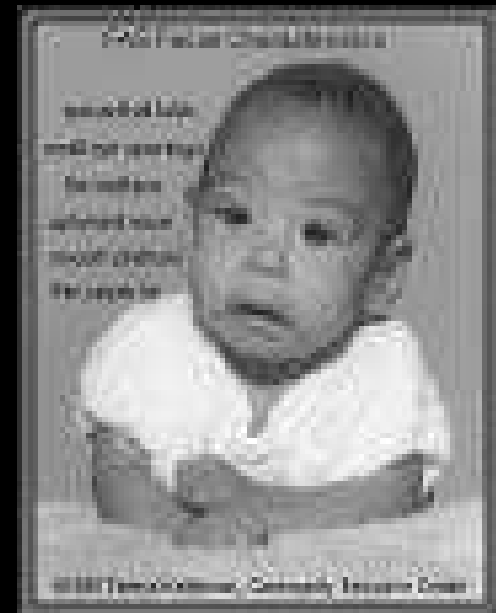
- **Hypoplasia of the middle third of the face**
  - Short upturned nose
  - Flattened nasal bridge
  - Epicanthic folds
  - Short palpebral fissures
  - Long, smooth upper lip
  - Thin vermilion border
  - Micrognathia
- **Other minor facial features**





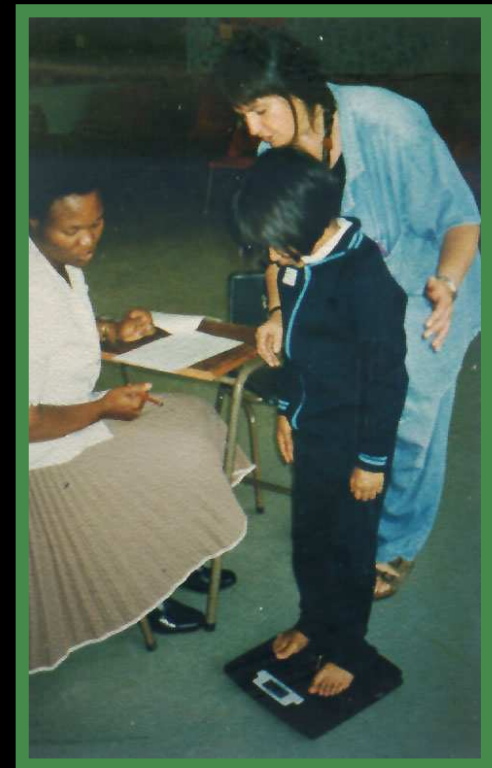
# Growth retardation

- Prenatal & postnatal
- Screening criteria
  - On/below 10<sup>th</sup> centile height/weight
  - On/below 10<sup>th</sup> centile for head circumference



# Neurological sequelae of FAS

- **Microcephaly**
- **Structural brain anomalies**
- **Behavioural problems**
  - Hyperactivity
  - Poor concentration span
  - Inappropriate sexual behaviour
  - ADHD-like symptoms
  - Problems with the law
- **Average IQ = 65**



# Neurological sequelae of FAS

- Deficient in aspects of:
  - Number processing
  - Visual-spatial reasoning
  - Visual memory
  - Verbal learning
  - Language
  - Motor (fine) functioning



# SECONDARY DISABILITIES

## Definition

**Disabilities that are not present at birth, and could be minimised through better understanding and intervention**



# SECONDARY DISABILITIES



- ↳ **Mental health problems**
- ↳ **Disrupted school experiences**
- ↳ **Trouble with the law**
- ↳ **Confinement**
- ↳ **Inappropriate sexual behaviour**
- ↳ **Alcohol and other drug problems**

# PROTECTIVE FACTORS

- ✓ **Stable and nurturing home**
- ✓ **Not having frequent changes of household**
- ✓ **Not being a victim of violence**
- ✓ **Receiving developmental intervention**
- ✓ **Diagnosis before 6 years**

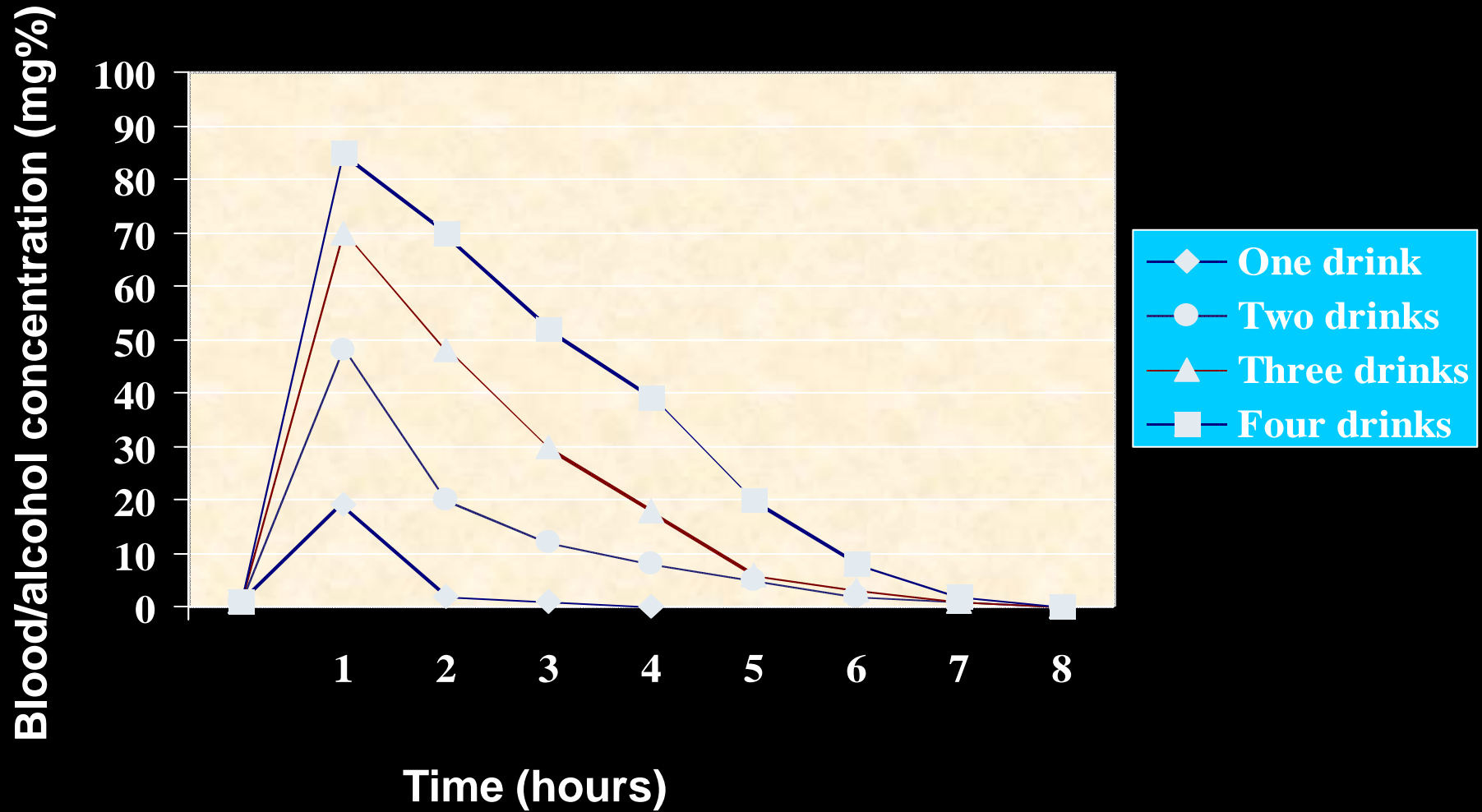


# Heavy drinking in pregnancy

- One - two drinks per day (>30ml AA)
- Five - six drinks per occasion per week (>90ml AA)



# Alcohol metabolism





# Absolute alcohol calculations

- Wine - 10% (150ml = 1 drink)
- Beer - 5% (300ml = 1 drink)
- Spirits - 30 to 40% (25 - 30ml = 1 drink)



**15ml AA = 1 drink (USA)**

**10ml AA = 1 drink (UK & Europe)**

# INTERNATIONAL FAS RATES

- **USA**

**0.3/1000 to 2.2/1000**

**8/1000 Native  
American Indians**

**1.2/1000 France**

- ***Developed world***

**0.97/1000**



# FAS STUDIES - SOUTH AFRICA

***Western Cape***

**Wellington**

***Gauteng***

**Westbury, Soweto, Diepsloot,  
Lenasia South**

***Northern Cape***

**De Aar, Upington**



# RESULTS – GAUTENG

## FAS Prevalence



*Westbury*  
37/1000

*Soweto*  
19/1000

*Lenasia South*  
12/1000

*Diepsloot*  
0/1000

# Wellington – Epidemiology results

- 1997- 1988 children screened
  - 46 FAS
  - 7 deferred
  - Prevalence: 46,4/1000
  
- 2002- 818 children screened
  - 32 FAS
  - 76 not fully appraised but screened positive



# UPINGTON – Epidemiology results

<b>Children screened</b>	<b>1358</b>
<b>Screen positive</b>	<b>758</b>
<b>FAS and deferred</b>	<b>104</b>
<b>Not FAS</b>	<b>584</b>

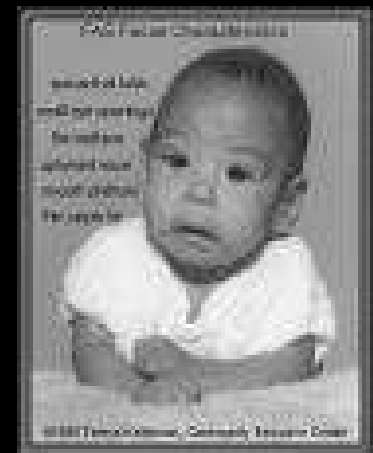
***Estimated FAS prevalence - 77/1000***



# De Aar – Epidemiology results

<b>Children screened</b>	<b>534</b>
<b>Screen positive</b>	<b>291</b>
<b>FAS</b>	<b>55</b>
<b>Deferred</b>	<b>10</b>
<b>Not FAS</b>	<b>2</b>

***FAS prevalence - 103/1000***





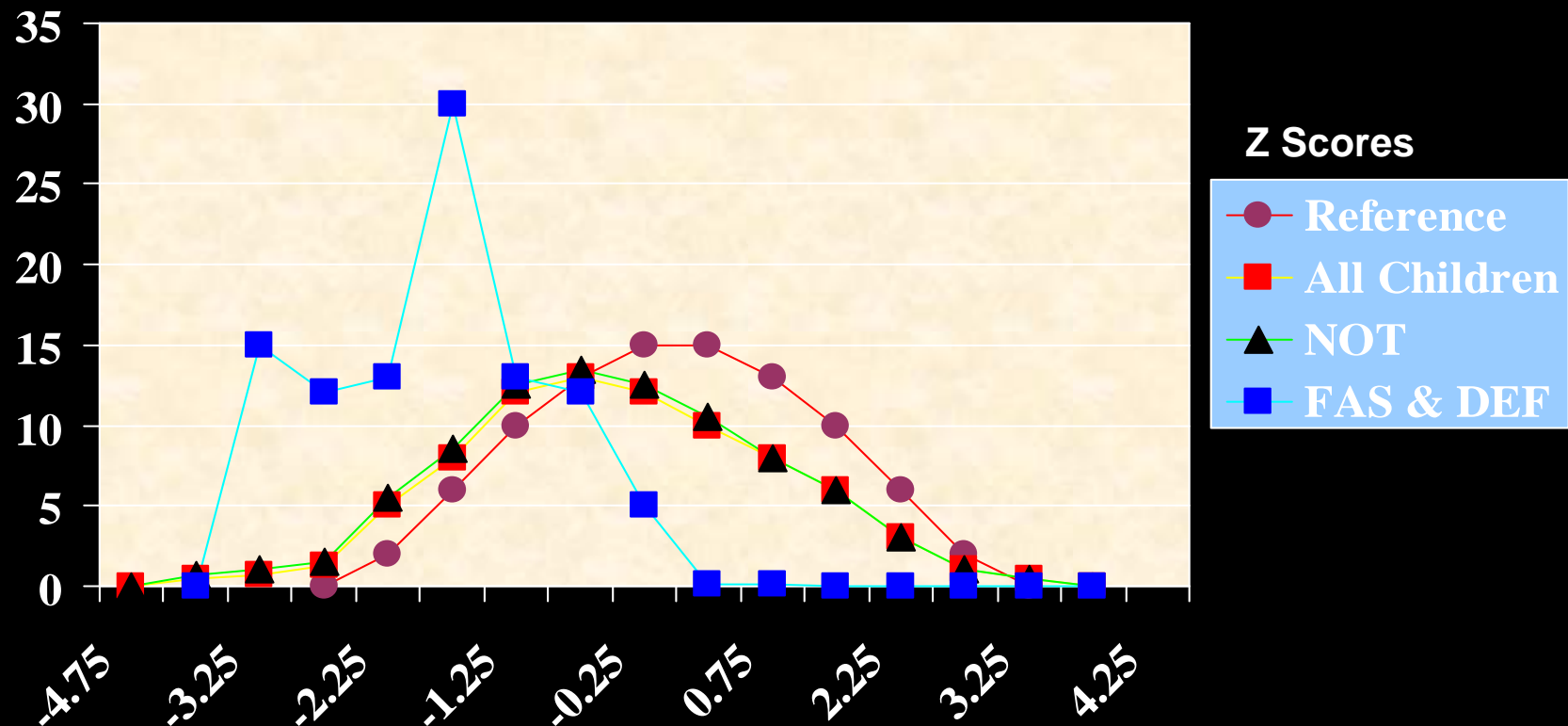






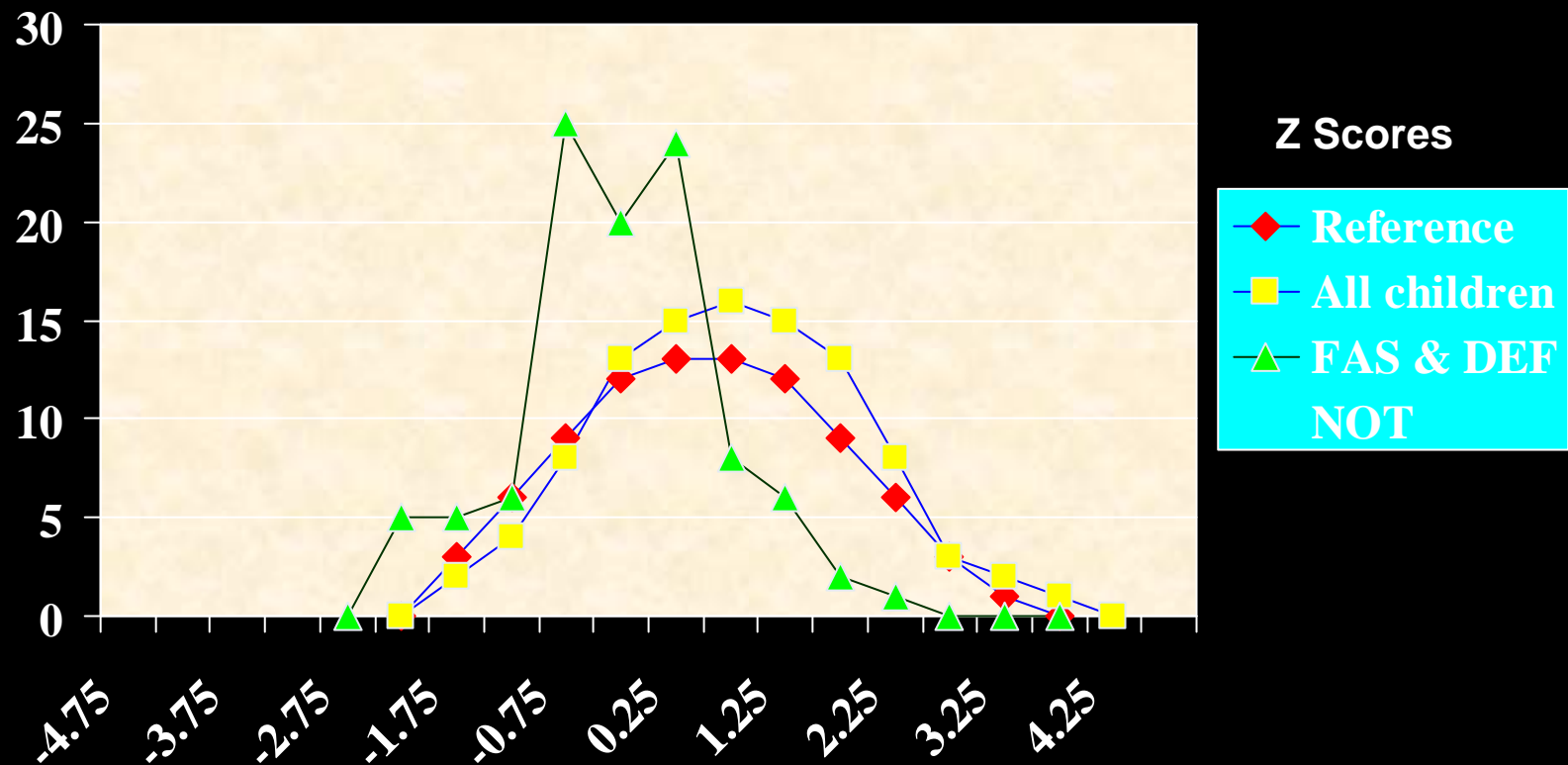


# Weight for age Z-scores of first grade children examined in Wellington



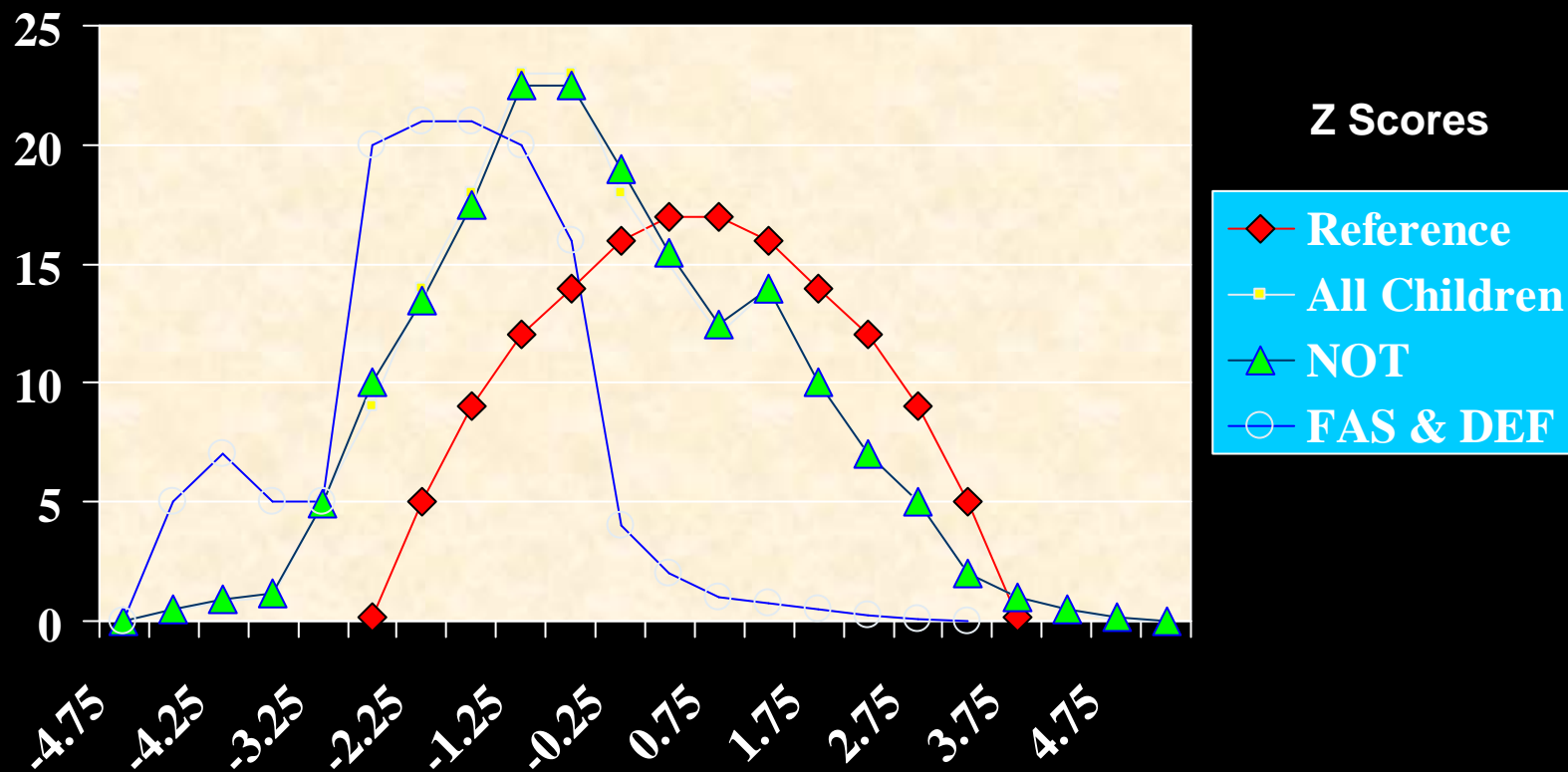
Children in Sub-A Class (5-7 years of age)

# Weight for height Z-scores of first-grade children examined in Wellington



Children in Sub-A Class (5-7 years of age)

# Height for age Z-scores of first grade children examined in Wellington



Children in Sub-A Class (5-7 years of age)

# Prevention Projects- 3 year programme



- **AIM: to reduce the incidence of FAS in the communities**
- De Aar:
  - Clinical examination and neurological assessment of 9 month old babies
  - Maternal interview
  - Intervention and prevention projects through education of the communities and awareness
  - Teacher training to recognise and manage children with ARBD (FAS) and ARND (FAE)

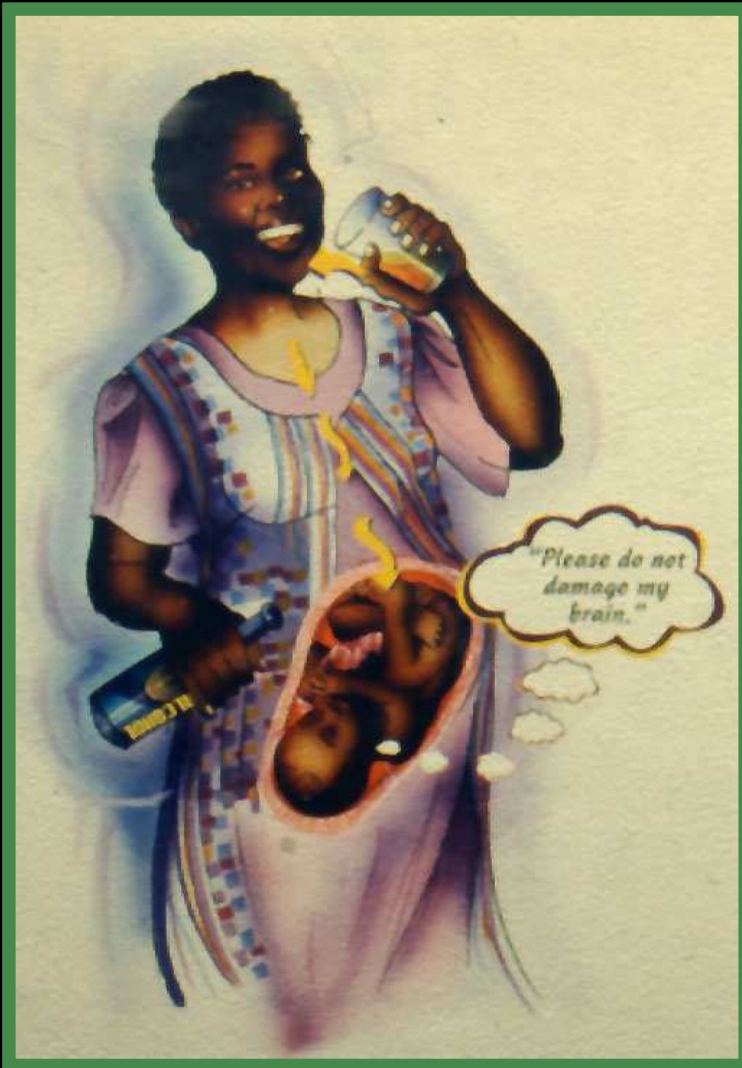
# Prevention projects



- Planned in Upington, Kimberley, Gauteng
- Wellington has ongoing intervention
- Nutritional study planned for Upington
- Ongoing research at FARR, WITS, UCT and MRC including alcohol metabolism, related nutritional effects, genetic factors and susceptibility of fetuses to alcohol



# Education The key to combating FAS



# LONG TERM GOAL

- To decrease drinking in pregnant women
- To decrease the incidence of FAS in our communities
- To educate the communities regarding the primary and secondary disabilities associated with drinking in pregnancy



# Acknowledgements

- Pat Craig –initiated the project with Professor Denis Viljoen and co-ordinated the education and training of community workers
- Leigh-Anne Fourie-conducting evaluation and assessment of children
- Tina-Marie Wessels –Genetic counselling manager



This talk was prepared in fond memory of our friend and colleague who was dedicated to the ongoing program for FAS in South Africa

STEFANIE SCHON

# For further information on FAS and FAS clinics:

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Genetics Division

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