

Kwinana Children's Respiratory Health Study

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on behalf of

KCRHS Steering Committee



Questions

- **Do Kwinana children have more breathing problems than children living in other areas of Perth?**
- **Do Kwinana children have more worse lung function than children living in other areas of Perth?**

Aims

1. Collect data on Kwinana children's
 - respiratory health and
 - lung function
2. Compare data with similar age cohorts in
 - Australian Child Health and Air Pollution Study (ACHAPS)
3. Investigate factors that may impact on respiratory health
 - Env factors (smoking, proximity to roads/industry, home heating)
 - Biological factors (family history, allergic sensitisation)

Cross-sectional study

- **Subjects**

- Primary school children 5 – 12 yrs (grades 1 – 7)

- **Recruitment/assessment**

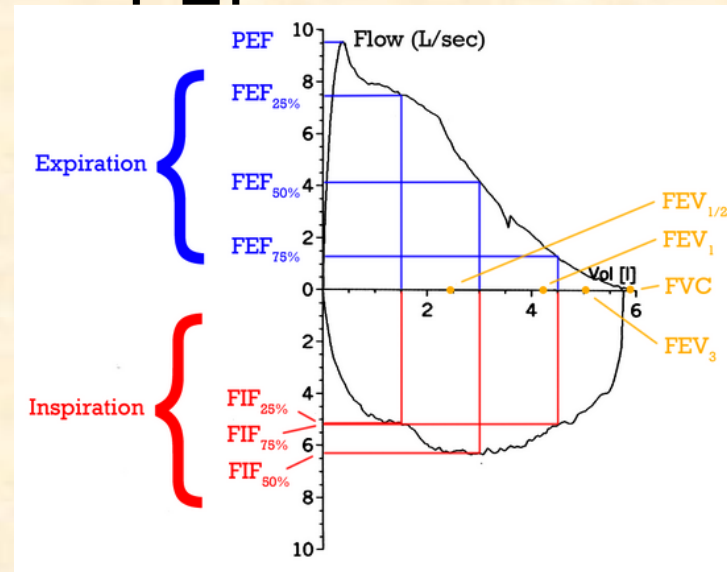
- Recruitment via primary schools
- Questionnaire completed by parents
- Breathing tests conducted at schools

Assessments

1. Respiratory health questionnaire
2. Housing/lifestyle questionnaire
(completed by parents/guardians of children)
3. Lung function (breathing tests)
4. Allergy (skin prick tests)
(Testing done at schools June/July 2009)

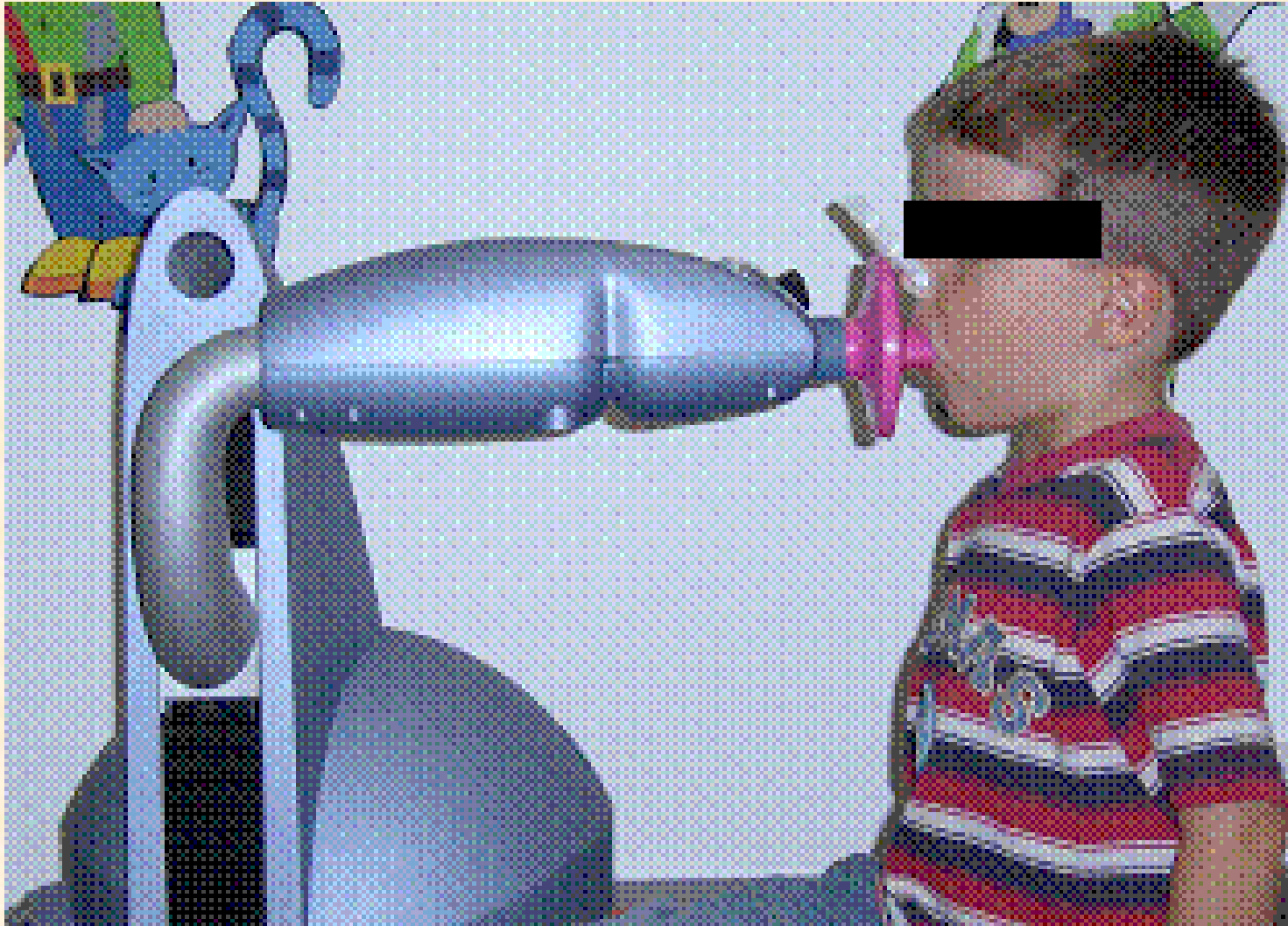
Spirometry

- FVC
- FEV1
- MMEF
- PEF



* Difficult for children < 7 yrs old

Forced Oscillation



Can be completed by children as young as 3 years

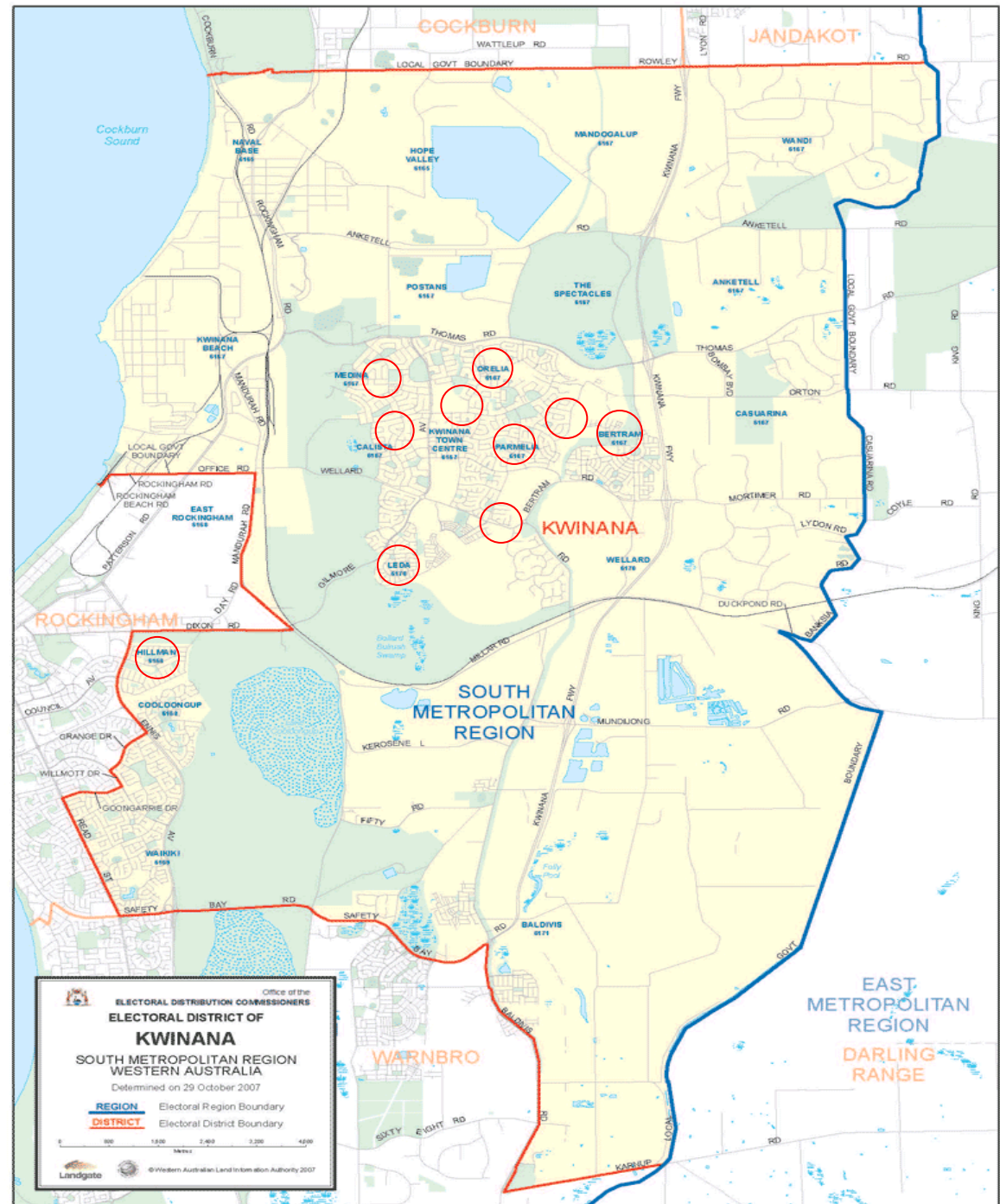
2. Allergy testing

- Skin prick test (SPT)
- Allergens
 - House dust mite
 - Grass
 - Mould
 - Cat hair
 - Dog hair
 - Milk
 - Egg
 - Cockroach
- +ve reaction = small lump (mossie bite)



Schools involved:

Bertram Primary School
Calista Primary School
Gilmore College
Hillman Primary School
Leda Primary School
Medina Primary School
North Parmelia Primary
Orelia Primary School
Peter Carnley Primary
St Vincent's Primary
School



Participation

	Number of responses	Number of children in the school	% from School
Bertram Primary School	49	297	16.5
Calista Primary School	117	271	43.2
Gilmore College	11	100	11.0
Hillman Primary School	73	234	31.2
Leda Primary School	93	342	27.2
Medina Primary School	20	125	16.0
North Parmelia Primary	58	288	20.1
Orelia Primary School	42	187	22.5
Peter Carnley	85	400	21.25
St Vincent's Primary School	43	222	19.4
Total	591	2466	23.96

Consent

- Parents were asked for consent to each test individually

	Consent	Successful Completion
Questionnaire	591	588 (99.5)
FOT	554	490 (88.4)
SPIROMETRY	554	305 (55.1)
ALLERGY TEST	528	485 (91.9)

42 children away on testing day
37 did not consent to FOT and SPIRO
63 did not consent to SPT

RESULTS:

To date

NB: The results are mostly for a 'within-Kwinana' analysis. We are still waiting on data for the comparison study

Outcome Measures - Symptoms

- Wheeze ever
- Wheeze in last 12 months
- Parent reported asthma (ever)
- Current asthma
 - Dr diagnosed asthma AND (at least 1 of)
 - Wheeze in last 12 months
 - Use of asthma medication
 - Absence from school due to asthma
- Cough without cold
- Hayfever (allergic rhinitis)

Respiratory Health Data Summary

	Kwinana (%)	Aust data (%)
Wheeze ever	37.6	27.7
Wheeze 12 mo	18.4	
Asthma ever	26.6	18.6*
Current asthma		
All	10.3	13.0
5-9 yrs	11.1	11.3*
10-12 yrs	9.1	8.7*
M	11.1	15.1
F	9.1	11.0
Allergic rhinitis	13.9	12.9
cough	28.8	
Atopy	40.7	44.5*

Health issues & Risk factors

Health issues

- **Respiratory symptoms**

- Wheeze
- Asthma
- Hayfever
- Cough

- **Breathing tests**

- Flows and volumes
- Airway stiffness

Risk factors

- **Biological**

- Sex (M/F)
- Family history of allergy
- Body Mass Index (BMI)
- Prematurity
- Atopy (skin prick test +ve)
- Asthma

- **Environmental**

- Parental smoking
 - During pregnancy
 - Now
- Traffic
- Gas heating

Residence time in Kwinana

1. All children
2. Children who lived in Kwinana for at least first 3 years of life
3. Children who have lived in Kwinana all their life

Symptoms

1. **Wheeze** (in last 12 months)

- Parental asthma, prematurity, male, atopy (mother current smoking is a risk for more severe wheeze)

2. **Current asthma**

- Atopy, prematurity, male, parental asthma

3. **Hayfever**

- Parental allergy, atopy, male

4. **Cough**

- Parental allergy, atopy, current parental smoking, living near a busy road

Lung function

1. Volumes and flows

- Having asthma and living near a busy road ↓ amount of air children can blow out quickly (in 1 sec)

2. Airway stiffness

- Mother smoking during pregnancy, living near a busy road and high BMI ↑ airway stiffness

Ongoing analyses

1. Comparison with non-Kwinana children
 - Data has been sent to Sydney
 - Comparisons to be done by Sydney research group
2. Measure of industry exposure
 - Distances from various industries to be calculated (for school and home)
 - These 'proxy' measures to be included in analyses