

Health indicators for School aged Children – why and which?

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What are indicators, and why are they so important?

- indicators are succinct measures that aim to describe as much about a system as possible in as few points as possible.
- indicators help us understand a system, compare it and improve it.

The three key roles of measurement

1. for understanding: to know how a system works and how it might be improved (research role)
2. for performance: monitoring if and how a system is performing to an agreed standard
(performance/managerial/improvement role)

The three key roles of measurement

3. for accountability: allowing us to hold ourselves up to patients, the government and taxpayers and be openly scrutinised as individuals, teams and organisations (accountability/democratic role).

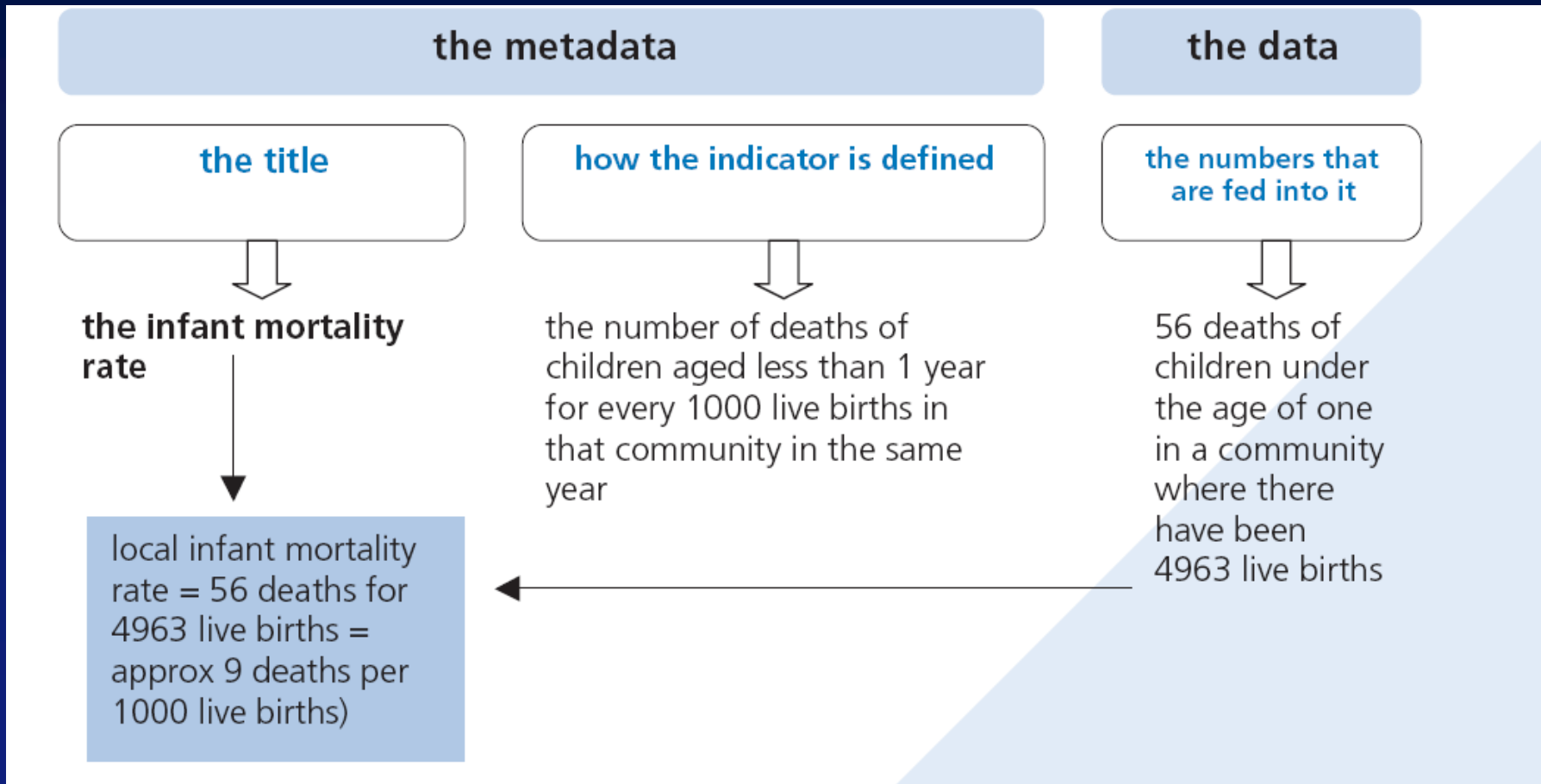
Why are people suspicious and mistrustful towards indicators?

- indicators very often make people and organisations feel vulnerable, exposed and defensive.

Four things to know and accept about indicators

- Indicators only indicate
- Indicators encourage explicitness
- Indicators usually rely on numbers and numerical techniques
- Indicators should not just be associated with fault-finding

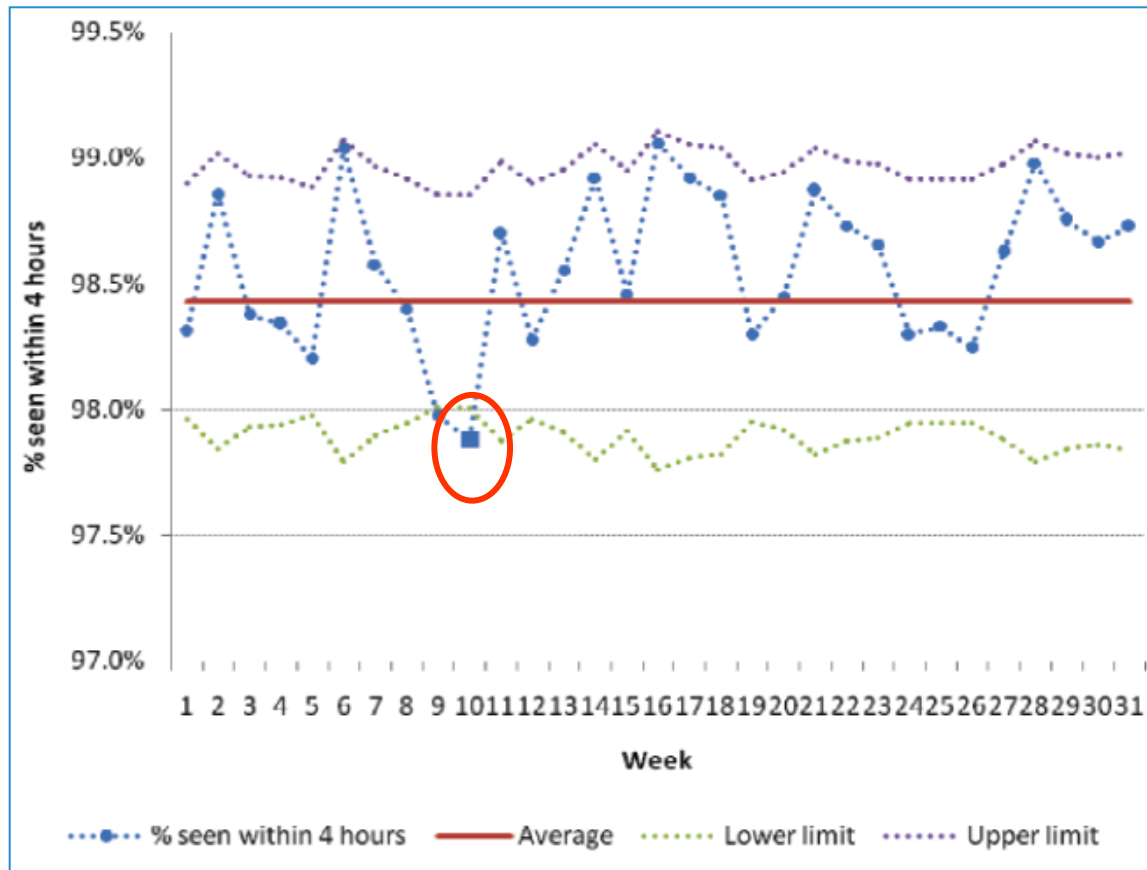
How is an indicator constructed? -the basic anatomy



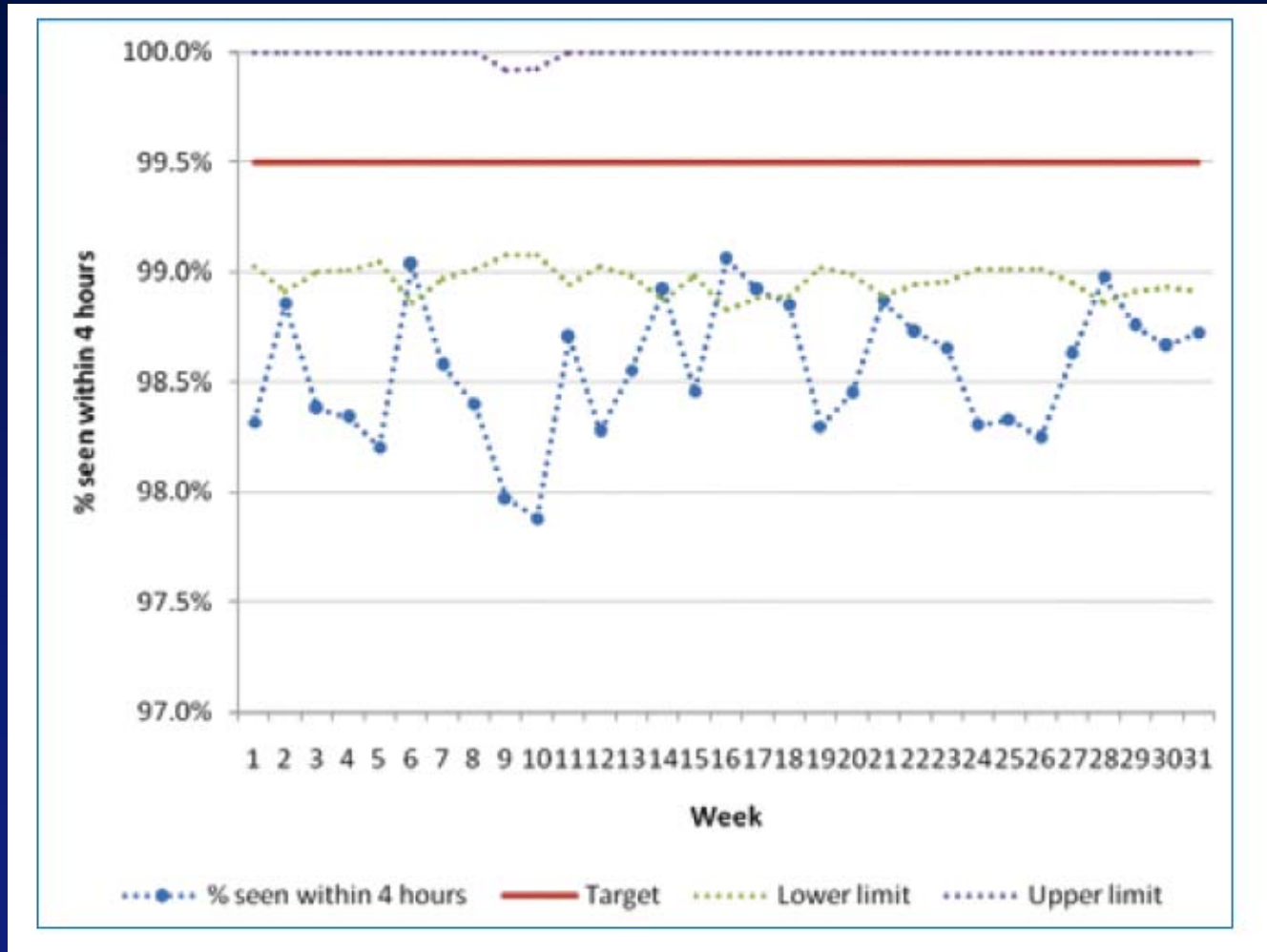
Display of indicator data

- the normal, everyday, *inevitable* (and usually unimportant), variation which is intrinsic and natural to any system – **'common cause variation'**
- and the more important variation which is indicative of something special happening and which calls for a fuller understanding and often action – **'special cause variation'**.

Display of indicator data- accident and emergency attendance in a hospital



Display of indicator data- accident and emergency attendance in a hospital



'Ultimately, the ability to lead depends on one's ability to understand variation'.

W Edwards Deming

*'I am not interested in measurement per se. I am obsessed by improvement and the role measurement has in **that** process.'*

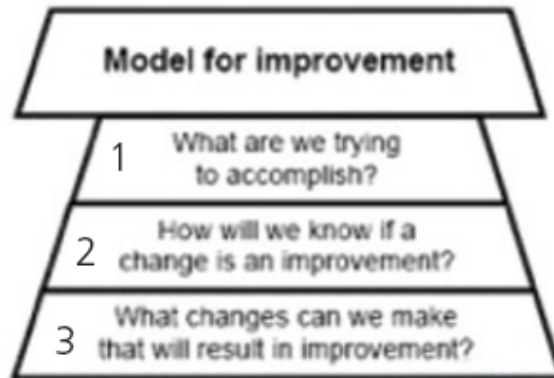
Don Berwick, Institute for Healthcare Improvement

'People change what they do less because they are given analysis that shifts their thinking, than because they are shown a truth that influences their feelings'.

Prof John Kotter,
Harvard Business School

For instance... It is usually more powerful to say that "half of all smokers will die early because they smoke" than "over 100,000 smokers die prematurely each year".

Figure 1: The Model for improvement



1. The conversation leading to agreed, measurable objectives
2. Well-designed indicators that measure the right data; in the right parts of the system; at the right time
3. Indicators that help you **understand** what part of the system to change and how

What indicators are being used now for school aged children?

Examples

- UNICEF / WHO HBSC Health Behaviour of Schoolchildren

UNICEF
Innocenti Research Centre
Report Card 7

Child poverty in perspective:

An overview of child well-being in rich countries

**A comprehensive assessment of the lives
and well-being of children and adolescents
in the economically advanced nations**

For every child
Health, Education, Equality, Protection
ADVANCE HUMANITY



The true measure of a nation's standing is how well it attends to its children – their health and safety, their material security, their education and socialization, and their sense of being loved, valued, and included in the families and societies into which they are born.

How was wellbeing defined?

| Dimensions of child well-being | Average ranking position (for all 6 dimensions) | Dimension 1 Material well-being | Dimension 2 Health and safety | Dimension 3 Educational well-being | Dimension 4 Family and peer relationships | Dimension 5 Behaviours and risks | Dimension 6 Subjective well-being |
|--------------------------------|---|------------------------------------|----------------------------------|---------------------------------------|--|-------------------------------------|--------------------------------------|
| Netherlands | 4.2 | 10 | 2 | 6 | 3 | 3 | 1 |
| Sweden | 5.0 | 1 | 1 | 5 | 15 | 1 | 7 |
| Denmark | 7.2 | 4 | 4 | 8 | 9 | 6 | 12 |
| Finland | 7.5 | 3 | 3 | 4 | 17 | 7 | 11 |
| Spain | 8.0 | 12 | 6 | 15 | 8 | 5 | 2 |
| Switzerland | 8.3 | 5 | 9 | 14 | 4 | 12 | 6 |
| Norway | 8.7 | 2 | 8 | 11 | 10 | 13 | 8 |
| Italy | 10.0 | 14 | 5 | 20 | 1 | 10 | 10 |
| Ireland | 10.2 | 19 | 19 | 7 | 7 | 4 | 5 |
| Belgium | 10.7 | 7 | 16 | 1 | 5 | 19 | 16 |
| Germany | 11.2 | 13 | 11 | 10 | 13 | 11 | 9 |
| Canada | 11.8 | 6 | 13 | 2 | 18 | 17 | 15 |
| Greece | 11.8 | 15 | 18 | 16 | 11 | 8 | 3 |
| Poland | 12.3 | 21 | 15 | 3 | 14 | 2 | 19 |
| Czech Republic | 12.5 | 11 | 10 | 9 | 19 | 9 | 17 |
| France | 13.0 | 9 | 7 | 18 | 12 | 14 | 18 |
| Portugal | 13.7 | 16 | 14 | 21 | 2 | 15 | 14 |
| Austria | 13.8 | 8 | 20 | 19 | 16 | 16 | 4 |
| Hungary | 14.5 | 20 | 17 | 13 | 6 | 18 | 13 |
| United States | 18.0 | 17 | 21 | 12 | 20 | 20 | - |
| United Kingdom | 18.2 | 18 | 12 | 17 | 21 | 21 | 20 |

OECD countries with insufficient data to be included in the overview: Australia, Iceland, Japan, Luxembourg, Mexico, New Zealand, the Slovak Republic, South Korea, Turkey.

Material wellbeing

| | COMPONENTS | INDICATORS |
|---------------------|-------------------------|---|
| Material well-being | relative income poverty | – percentage of children living in homes with equivalent incomes below 50% of the national median |
| | households without jobs | – percentage of children in families without an employed adult |
| | reported deprivation | – percentage of children reporting low family affluence – percentage of children reporting few educational resources – percentage of children reporting fewer than 10 books in the home |

Health and Safety

| | COMPONENTS | INDICATORS |
|-------------------|------------------------------|---|
| Health and Safety | health at age 0-1 | <ul style="list-style-type: none">- number of infants dying before age 1 per 1,000 births- percentage of infants born with low birth weight (<2500g.) |
| | preventative health services | <ul style="list-style-type: none">- percentage of children age 12 to 23 months immunized against measles, DPT, and polio |
| | safety | <ul style="list-style-type: none">- deaths from accidents and injuries per 100,000 aged 0 - 19 |

Educational wellbeing

| | COMPONENTS | INDICATORS |
|------------------------|------------------------------|--|
| Educational well-being | school achievement at age 15 | <ul style="list-style-type: none">- average achievement in reading literacy- average achievement in mathematical literacy- average achievement in science literacy |
| | beyond basics | <ul style="list-style-type: none">- percentage aged 15-19 remaining in education |
| | the transition to employment | <ul style="list-style-type: none">- percentage aged 15-19 not in education, training or employment- percentage of 15 year-olds expecting to find low-skilled work |

Family and Peer relationships

| | COMPONENTS | INDICATORS |
|---------------|----------------------|---|
| Relationships | family structure | <ul style="list-style-type: none">- percentage of children living in single-parent families- percentage of children living in stepfamilies |
| | family relationships | <ul style="list-style-type: none">- percentage of children who report eating the main meal of the day with parents more than once a week- percentage of children who report that parents spend time 'just talking' to them |
| | peer relationships | <ul style="list-style-type: none">- percentage of 11, 13 and 15 year-olds who report finding their peers 'kind and helpful' |

Behaviours and Risks

| | COMPONENTS | INDICATORS |
|---------------------|------------------------|---|
| Behaviours and risk | health behaviours | <ul style="list-style-type: none">- percentage of children who eat breakfast- percentage who eat fruit daily- percentage physically active- percentage overweight |
| | risk behaviours | <ul style="list-style-type: none">- percentage of 15 year-olds who smoke- percentage who have been drunk more than twice- percentage who use cannabis- percentage having sex by age 15- percentage who use condoms- teenage fertility rate |
| | experience of violence | <ul style="list-style-type: none">- percentage of 11, 13 and 15 year-olds involved in fighting in last 12 months- percentage reporting being bullied in last 2 months |

Subjective wellbeing

| | COMPONENTS | INDICATORS |
|-----------------------|---------------------|---|
| Subjective well-being | health | – percentage of young people rating their own health no more than 'fair' or 'poor' |
| | school life | – percentage of young people 'liking school a lot' |
| | personal well-being | – percentage of children rating themselves above the mid-point of a <i>'Life Satisfaction Scale'</i> – percentage of children reporting negatively about personal well-being |

Value and limitations of inter-country comparison?

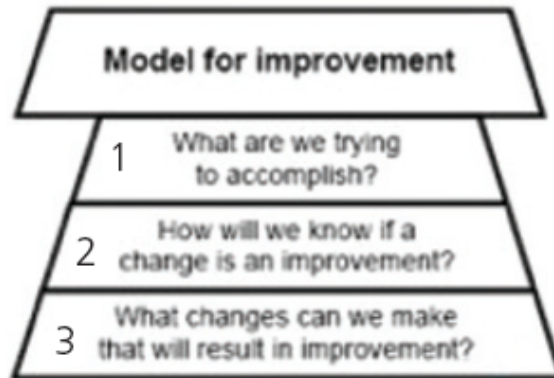


Correlation between income inequality and the Unicef index of child wellbeing in 23 rich countries

Issues re behaviours

- e.g. **eating fruit** : access and pricing variations may account for differences
- Sampling **sexual activity** not always included and sample sizes very small 15-38% original sample
- **Physical activity** variations in formal organisation of PE , children's mode of travel to school, availability and accessibility of leisure facilities

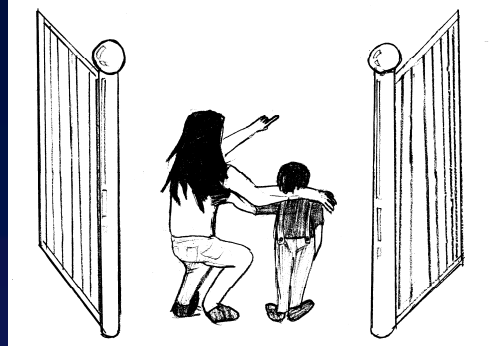
Figure 1: The Model for improvement



1. The conversation leading to agreed, measurable objectives
2. Well-designed indicators that measure the right data; in the right parts of the system; at the right time
3. Indicators that help you **understand** what part of the system to change and how

The “conversation” around school entrants in the UK

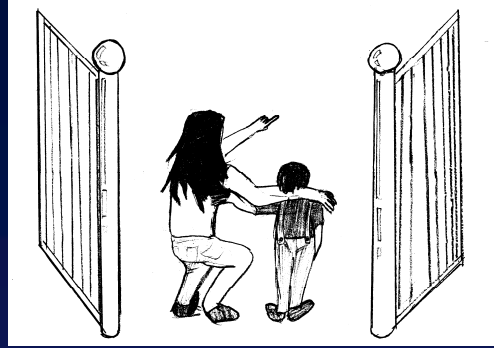
C.H.A.S.E.



AIMS

- To develop a **multi-professional consensus** on the components of children's health and well being.
- To use this consensus to develop a comprehensive **questionnaire to capture the multiple dimensions of health** in London's children.
- To assess the **feasibility, data quality, reliability and validity** of the questionnaire.

C.H.A.S.E.



Method

Interviews

- Community paediatricians,
- School nurses
- Health promotion specialists,
- Community Practitioners and Health Visitors Association
- Office of National Statistics, the Social Services Inspectorate
- Healthy Schools programme.

To obtain views on:

- how questionnaire could be used
- how it should be constructed
- areas to include
- age of assessment

Delphi

79 participants with a variety of child health expertise

| Group | Participants (n) |
|--|------------------|
| Academic | 8 |
| Children's charities | 10 |
| Government education policy | 2 |
| Government health policy | 8 |
| Government social/education and health promotion initiatives | 13 |
| Health informatics | 6 |
| Independent health policy | 4 |
| Local education/ social services | 2 |
| Local government | 2 |
| Mental health and well being | 2 |
| Paediatricians/epidemiologists/public health | 13 |
| Professional organisations in the field of education | 6 |
| School health services | 3 |

Themes from initial interviews

| <i>Category</i> | <i>Theme</i> |
|------------------------|---|
| health determinants | economic |
| | ethnicity |
| | environment |
| | nutrition, hygiene and physical activity significant life events |
| physical health status | growth |
| | chronic, serious illness |
| | development, disability and learning |
| | general morbidity |
| | toileting |
| mental health status | psychological well being |
| | |

Delphi

Round 1 – 56/79 (71%) Participants rated 54 items grouped into themes

Items divided into 4 categories:

- included; measurement method agreed
- included; measurement method not agreed
- no consensus
- excluded

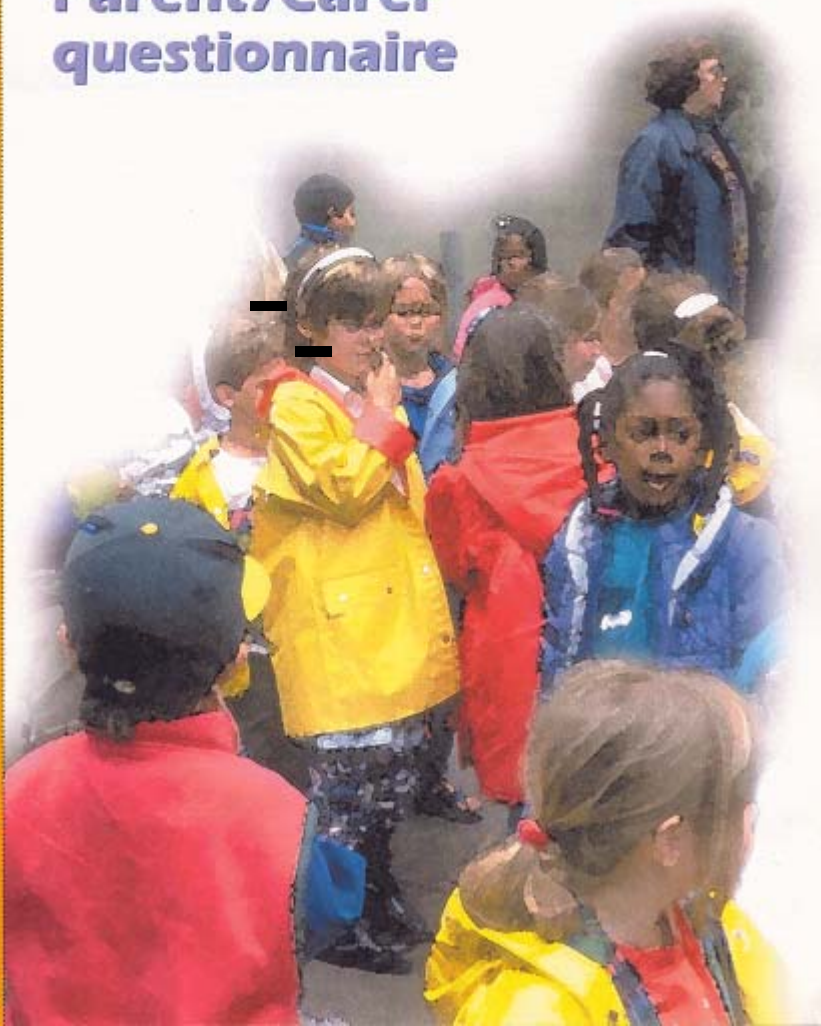
Round 2 – 37/56 (66%) procedure repeated and items altered

-----→ Final QUESTIONNAIRE

CHASE

The Child Health Assessment
at School Entry project

Parent/Carer
questionnaire



Child Health Assessment
at School Entry Project



The Royal College of
Paediatrics and Child Health

About your child's general health

(please tick or write in the appropriate boxes)

1. In general would you say your child's health is:

- Excellent
- Very good
- Good
- Fair
- Poor

2. Does your child have any longstanding illness or disability?

(by this we mean anything that has troubled them over a period of time or is likely to affect them over a period of time)

- Yes (go to question 3)
- No (go to question 4)

3. If YES, please tell us what the illness or disability is:

(only include conditions which have been diagnosed by a doctor or other health professional such as asthma, epilepsy, sickle cell disease, learning or physical difficulties, hearing or visual impairment, ADHD, - if there is more than one diagnosis please give all of them)

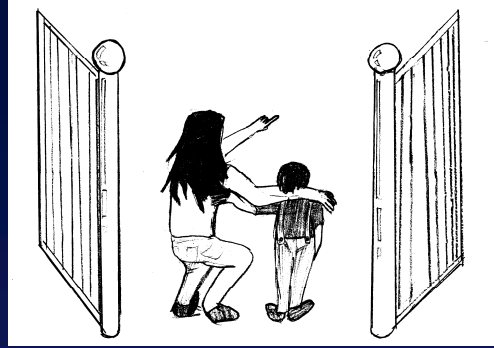
My child has:

4. The following question asks about physical activities your child might do during a day.

During the *past 4 weeks*, has your child been limited in any of the following activities due to *health problems*?

| | Yes, limited a lot | Yes, limited some | Yes, limited a little | No, not limited |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Doing things that take <i>a lot</i> of energy, such as playing soccer or running? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Doing things that take <i>some</i> energy such as riding a bike or skating? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Bending, lifting or stooping? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

C.H.A.S.E.



Results

Pilot

10 schools from 2 London boroughs

Year 1 pupils, $n = 278$

Pilot

Response rate:

61%, range 25-85%

Association between free school meals and response rate $r = -0.62$, $p = 0.05$

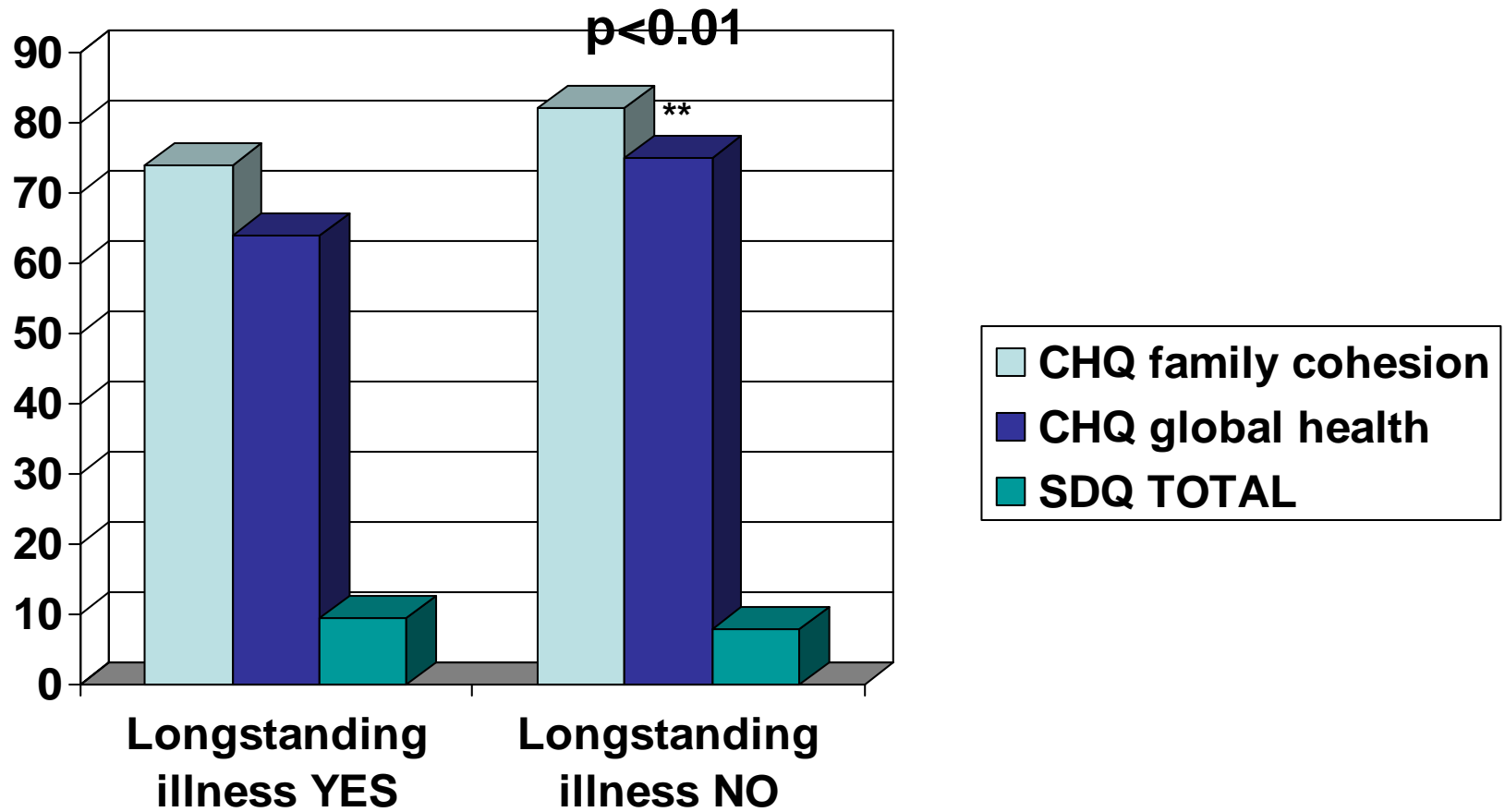
no association between percentage of children with low fluency in English and response rate to the questionnaire ($r = 0.35$, $p = 0.56$).

Data quality:

Parents questionnaire: mean 98% complete

School nurse completed questionnaire: mean 82% complete

Longstanding illness

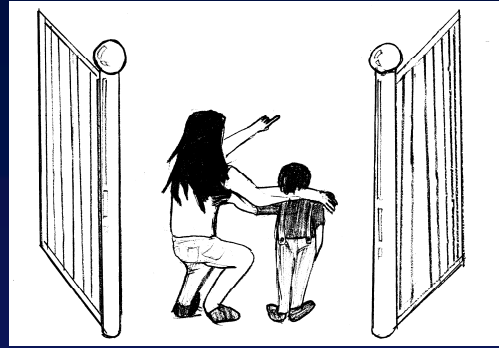


| <i>Indicator</i> | <i>Response</i> | <i>School 1 n (%)</i> | <i>Total n</i> | <i>School 2 n (%)</i> | <i>Total n</i> | <i>Norm (%)</i> |
|---|--|---------------------------|--------------------|---------------------------|--------------------|---------------------|
| Response rate | | 23 (82) | 28 | 36 (74) | 49 | - |
| Longstanding illness or disability | Yes | 3 (14) | 21 | 6 (17) | 36 | 13 |
| Immunisations: MMR 1 | Uptake | 16(70) | 23 | 35 (97) | 34 | 84 |
| Temporary accommodation in last 2 years | Yes | 1 (5) | 22 | 1 (3) | 36 | 2 |
| BMI | Overweight (>85 th centile) | 4 (17) | 23 | 15 (44) | 34 | 18.7 |
| SDQ Hyperactivity | Borderline | 1 (5) | 22 | 1 (3) | 34 | 7.7 |
| | Abnormal | 4 (18) | | 2 (6) | | 16 |
| CHQ-PF28 self-esteem | | Mean 83 | 22 | Mean 93 | 35 | Mean 87 |

Action?

- Pastoral care support/counsellor
- Special educational needs /school nurse support
- Obesity prevention
- Immunisation campaign
- Outreach to temporary accomodation

C.H.A.S.E.



Conclusions

Consensus reached from a wide range of stakeholders

Constrained by need to ensure data collection practical

Questionnaire was acceptable to parents, school nurses and head teachers, and feasible to implement

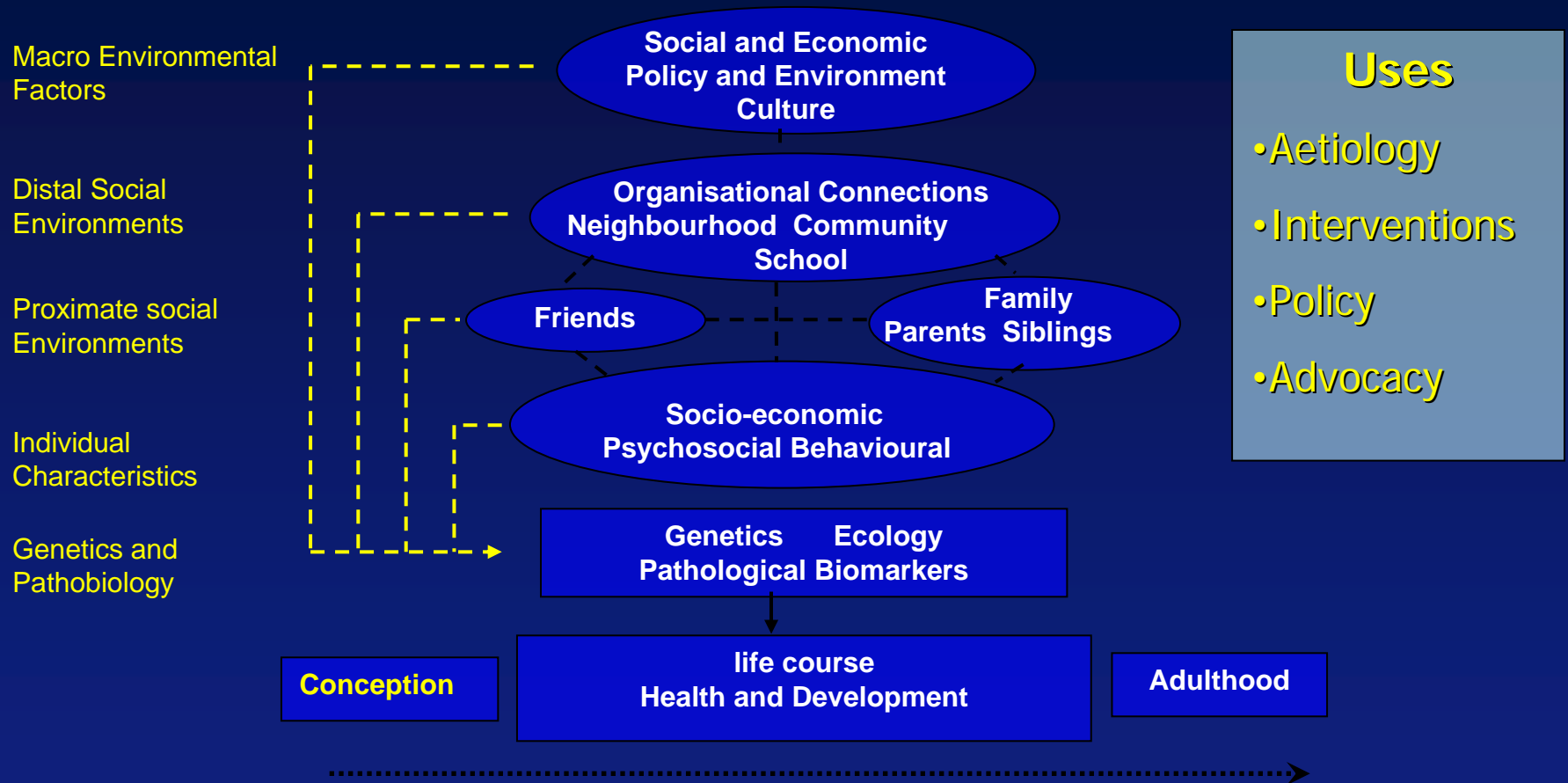
Data quality, reliability and validity were acceptable

The questionnaire has the potential to inform interventions and service provision at school and borough level, and public health trends over time

Conclusions

- Indicators are powerful tools which act as a spotlight on specific aspects of health in school aged children
- Indicator choice and display of results needs to be carefully considered to maximise impact
- Local use of standard survey at school / locality level useful in starting dialogue on policy and action

Ecological model of health and development across the life course



Lynch, J. 2000. Australasian Epidemiologist; 7: 7-15

5. Accident status

Children have accidents or injuries sometimes. Has your child had an accident in the last year that required medical attention? (i.e. swallowing bleach, having a serious fall cut or burn, being injured on the road or other type of serious injury).

Yes

No

If YES,

(i) Can you tell us about the accident?

(ii) Where did the accident occur? (i.e. home, street, etc)

(iii) Are there any lasting effects? Please tick one of the following:

No lasting effects

Doubtful as to lasting effects

Lasting effects

Your child's emotional well being

6. This next question is about your child's emotional well being. None of the answers on their own are significant but they are grouped together to give a number of scores. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

For each item, please mark the box for Not True, Somewhat True or Certainly True.

| | Not True | Somewhat True | Certainly True |
|---|--------------------------|--------------------------|--------------------------|
| Considerate of other people's feelings | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Restless, overactive, cannot stay still for long | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Often complains of headaches, stomach-aches or sickness | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shares readily with other children (treats, toys, pencils etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Often has temper tantrums or hot tempers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Rather solitary, tends to play alone | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Generally obedient, usually does what adults request | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Many worries, often seems worried | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Helpful if someone is hurt, upset or feeling ill | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Constantly fidgeting or squirming | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Has at least one good friend | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Often fights with other children or bullies them | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Often unhappy, down-hearted or tearful | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Generally liked by other children | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Easily distracted, concentration wanders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Nervous or clingy in new situations, easily loses confidence | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Kind to younger children | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Often lies or cheats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Picked on or bullied by other children | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Often volunteers to help others (parents, teachers, other children) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Thinks things out before acting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Steals from home, school or elsewhere | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Gets on better with adults than with other children | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Many fears, easily scared | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sees tasks through to the end, good attention span | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. Your child's general sense of well being
The following ask about your child's satisfaction with self, school and others.
It may be helpful if you keep in mind how other children your child's age might feel about these areas.

During the *past 4 weeks*, how satisfied do you think your child has felt about:

| | Very satisfied | Somewhat satisfied | Neither satisfied nor dissatisfied | Somewhat dissatisfied | Very dissatisfied |
|-------------------------|--------------------------|--------------------------|------------------------------------|--------------------------|--------------------------|
| His/her school ability? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| His/her friendships? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| His/her life overall? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8. Sometimes families may have difficulty getting along with one another.
They do not always agree and they may get angry. In general, how would you rate your family's ability to get along with one another?

- Excellent
- Very good
- Good
- Fair
- Poor

Further information about your child

9. Is your child, or has your child been, homeless or in temporary accommodation (e.g. B&B, hostel) during the last two years?

- Yes
- No
- Don't know

10. Is your child currently registered with a GP?

- Yes
- No
- Don't know

11. Has your child visited the dentist in the last 12 months?

- Yes, for treatment
- Yes, for check up/inspection only
- No, not at all
- Don't know

12. What is your child's cultural background - please choose one section from A to E and then tick the appropriate box.

A White

- British
- Irish

Any other white background (please write in)

B Mixed

- White and Black Caribbean
- White and Black African
- White and Asian

Any other Mixed background (please write in)

C Asian or Asian British

- Indian
- Pakistani
- Bangladeshi

Any other Asian background (please write in)

D Black or Black British

- Caribbean
- African

Any other Black background (please write in)

E Chinese or other ethnic group

- Chinese

Any other ethnic background (please write in)

About yourself

13. What is your relationship to the child you are answering this questionnaire for? Please tick the most appropriate box.

- Natural parent
- Step parent
- Foster parent
- Adoptive parent
- Guardian
- Other (please specify)

14. Are you

- male
- female

15. How old were you when you left full time education?

- Under 16 years old
- 16 to 18 years old
- More than 18 years old

16. Which of these qualifications do you have?

Please tick all the qualifications that apply or if your qualifications are not listed tick the nearest equivalent (e.g. for NVQ's, qualifications from another country).

- GCSE's, O levels or equivalent
- A levels or equivalent
- First degree (e.g. BA, BSc.)
- Postgraduate qualification
- No qualifications

Thank you very much for taking the time to complete this questionnaire.
You can either post it back along with the completed consent form to Sarah Edmunds, Project Co-ordinator, Royal College of Paediatrics and Child Health, 50 Hallam Street, London, W1N 6DE (in the envelope provided; no stamp is required), or give it to one of the project team at the meeting about the study that will be held at your child's school.



Child Health Assessment
at School Entry Project

CHASE project data sheet

Unique study
number
(for office use)

School _____ Class _____

Surname _____ First name _____

Date of birth _____ Gender boy girl

Residential postcode _____

Special Educational Needs

- No Special Educational Need
- School Action
- School Action Plus
- Request for Statutory Assessment
- Statement of Special Educational Need

Baseline Educational Assessment result

Score 1-4

Reading A: reading for meaning and enjoyment _____

Reading B: letter knowledge _____

Reading C: phonological awareness _____

Writing _____

Speaking and listening _____

Mathematics A: number _____

Mathematics B: using mathematical language _____

Personal and social development _____

Height _____ (to nearest completed millimetre) Date measured _____

Weight _____ (to nearest 100g) Date weighed _____

Vision

- within normal limits Date tested _____
- referred
- not tested

Audiology

- pass Date tested _____
- fail
- not tested

Immunisation history

| | Yes | No | Not recorded |
|-----------|--------------------------|--------------------------|--------------------------|
| Polio | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| DTP - Hib | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| MenC | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| MMR 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| DTaP | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| MMR 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |