

### Supplementary Appendix One: Interview Schedule

- Ensure patient confidentiality (private room, minimize interruptions)
- Introduction. Note that interview will be recorded, and all data will be confidential
  
- I understand that XXX (child) was admitted to hospital with asthma.
- What prompted you to bring your child to the emergency department?
  - What was your main concern?
  
- Have you been to hospital for asthma before?
  - How was this time any different from your previous experiences?
  
- Which part of XXX's hospital admission was most worrying for you? (*e.g. ambulance, on way to hospital, in emergency department, in ICU, on the ward*)
  - [if patient went to ICU]
    - *What was it like when you were told XXX needed to go to intensive care?*
    - *What was your experience of intensive care?*
  
- What was the communication like during your hospital stay?
  - What did the doctors and nurses explain to you about the treatment that was being provided to your child?
  - Did you feel confident to ask the health care team questions about your child's condition?
  
- What do you know now that you didn't know prior to coming to hospital?
  
- What do you think are the most important aspects of care and treatment that doctors and nurses should focus on?
  
- As a parent, what would you consider to be the most important to parents / families if their child was in a similar situation?

- What treatment do you consider to be the most effective for XXX when they are really unwell?
- Based on your experience this time, is there anything that you would want to happen differently if you were in the same situation again?
- What treatment options that you have experienced do you prefer for child? E.g. avoiding IV therapy, non-invasive ventilation, something different/new?
- What information were you given for discharge home? Did you feel you were provided with enough education to manage asthma at home?
- If we were doing research looking at a new or different treatment for children with a bad attack of asthma, what do you think are the most important things for us to look at?
  - If we were going to introduce a new treatment, how do you think we could tell it was doing a good job? [*Explanation (if needed) – examples of process outcomes (time to treatment, communication), clinical outcomes (change in symptoms) and psychological outcomes (reassurance)*]. Why are these things important?
- Conclude interview. Check for any missing concepts, anything else the interviewee would like to say.
- Questions regarding involvement in later follow-up work.
- Thank participant.

Date of interview    \_ / \_ / \_

Setting:              Ward              Intensive care              Outpatients

Language interview conducted in: \_\_\_\_\_

Who was interviewed:

Mother

Father

Sibling

Child

Uncle

Aunt

Other (specify) \_\_\_\_\_

### Supplementary Appendix Two: Data Collection Form

Verbal consent obtained?          Yes          No

Patient age:                            \_\_\_

Patient DOB:                          \_\_ / \_\_ / \_\_\_

Interview number:                    \_\_\_\_\_

Age asthma was first diagnosed:   \_\_\_\_\_

Number of previous hospital attendances with asthma / wheeze:        \_\_\_\_\_

Number of previous hospital admissions with asthma / wheeze:        \_\_\_\_\_

Number of previous ICU admissions with asthma / wheeze:                \_\_\_\_\_

Family history of asthma / wheeze:      Mother      Yes      No

    Father      Yes      No

    Siblings    Yes      No

    Other      Yes      No

Usual asthma medications:

\_\_\_\_\_

#### **This hospital admission:**

Date of arrival        \_\_ / \_\_ / \_\_\_                            Date of discharge \_\_ / \_\_ / \_\_\_

Hospital length of stay (hours) \_\_\_\_\_

Presented by ambulance?            No      Yes

Given IV bronchodilator?            No      Yes

        Magnesium?                        No      Yes

        Aminophylline?                    No      Yes

        Terbutaline?                        No      Yes

        Salbutamol?                         No      Yes

        Other?                                No      Yes (specify medications): \_\_\_\_\_

Given IV corticosteroid?            No      Yes (specify medications): \_\_\_\_\_

Given nebulised magnesium?            No      Yes

Given non-invasive ventilation?      No      Yes

Given High-flow nasal oxygen?      No      Yes

Admitted to ICU?	No	Yes
Intubated?	No	Yes

### Supplementary Appendix Three: Clinical characteristic of included children, by country<sup>2</sup>

Country, n	Paraguay 21	Argentina 6	Costa Rica 5	China 4	USA 4	Australia 3
Age in years (median)	6	7	8	4.5	8	7
Previous ED attendances with asthma (median)	4	4	2	3	1.5	3
Number of previous hospital admissions (median)	1	2	2	2	4.5	3
Number of children with previous ICU admission (n,%)	1 (5)	0 (0)	1 (20)	0 (0)	2 (50)	2 (67)
Family history of asthma in first degree relative (n,%)	12 (57)	3 (50)	3 (60)	4 (100)	2 (50)	1 (33)
Usual treatment for asthma						
Inhaled short-acting beta-agonist (n,%)	(0)	6 (100)	3 (60)	3 (75)	2 (50)	2 (67)
Inhaled corticosteroid (n,%)	6 (29)	4 (67)	3 (60)	4 (100)	2 (50)	1 (33)
Montelukast (n,%)	(0)	(0)	(0)	1 (25)	2 (50)	(0)
LABA / steroid combined inhaler (n,%)	2 (10)	1 (17)	(0)	1 (25)	(0)	(0)
No usual medications for asthma (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Arrived by ambulance (n,%)	(0)	(0)	(0)	(0)	2 (50)	(0)
Length of stay in hospital (hours) (median)	27 ()	22.5 ()	107 ()	192 ()	16.5 ()	85 ()
Treatment while in hospital						
Intravenous corticosteroids (n,%)	17 (81)	(0)	4 (80)	(0)	2 (50)	2 (67)
Intravenous bronchodilator (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Magnesium (n,%)	4 (19)	(0)	4 (80)	(0)	4 (100)	2 (67)
Aminophylline (n,%)	(0)	(0)	2 (40)	3 (75)	(0)	1 (33)
Salbutamol (n,%)	(0)	(0)	4 (80)	4 (100)	(0)	1 (33)
Ipratropium bromide (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
High-flow oxygen therapy (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Intravenous antibiotics (n,%)	(0)	(0)	(0)	(0)	4 (100)	(0)
Non-invasive ventilation (n,%)	(0)	(0)	(0)	1 (25)	(0)	1 (33)
Nebulised magnesium (n,%)	(0)	(0)	(0)	1 (25)	(0)	(0)
ICU / HDU admission (n,%)	(0)	(0)	(0)	1 (25)	(0)	2 (67)

Country, n	Singapore 3	Canada 2	Nigeria 2	United Kingdom 2	Spain 1	Qatar 1
Age in years (median)	4	8	3	8	9	5
Previous ED attendances with asthma (median)	5	5	2	5	3	5
Previous hospital admissions (median)	5	1	2	2.5	1	1
Previous ICU admission (n,%)	1 (33)	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)
History of asthma in first degree relative (n,%)	(0)	1 (50)	1 (50)	1 (50)	(0)	(0)
Usual treatment for asthma						
Inhaled short-acting beta-agonist (n,%)	3 (100)	(0)	2 (100)	1 (50)	1 (100)	1 (100)
Inhaled corticosteroid (n,%)	3 (100)	(0)	(0)	1 (50)	1 (100)	1 (100)
Montelukast (n,%)	3 (100)	(0)	(0)	(0)	(0)	1 (100)
LABA / steroid combined inhaler (n,%)	1 (33)	(0)	(0)	(0)	(0)	(0)
No usual medications for asthma (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Arrived by ambulance (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Length of stay in hospital (hours) (median)	37 ()	72 ()	85 ()	73 ()	48 ()	5 ()
Treatment while in hospital						
Intravenous corticosteroids (n,%)	2 (67)	1 (50)	(0)	2 (100)	1 (100)	(0)
Intravenous bronchodilator (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Magnesium (n,%)	1 (33)	1 (50)	(0)	2 (100)	1 (100)	(0)
Aminophylline (n,%)	1 (33)	(0)	(0)	2 (100)	(0)	(0)
Salbutamol (n,%)	2 (67)	(0)	(0)	2 (100)	1 (100)	(0)
Ipratropium bromide (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
High-flow oxygen therapy (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Intravenous antibiotics (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
Non-invasive ventilation (n,%)	1 (33)	(0)	(0)	(0)	(0)	(0)
Nebulised magnesium (n,%)	(0)	(0)	(0)	(0)	(0)	(0)
ICU / HDU admission (n,%)	(0)	(0)	(0)	(0)	(0)	(0)

Supplementary Appendix Four: Comparison of themes identified in interviews from Paraguay (n=21) and those from all other countries (n=33).

	Identified in Paraguay interviews	Identified in other interviews
Decision to seek hospital care	Yes	Yes
Transit to hospital	Yes	Yes
Costs of care	Yes	Yes
Waiting times	Yes	Yes
Readiness for discharge and length of stay		Yes
Intravenous treatment is a “step up” but is also a distressing experience	Yes	Yes
Intensive care unit / high-dependency unit admission	Yes	Yes
Effective communication and frequent reassessment is associated with satisfaction with care.	Yes	Yes
Work of breathing	Yes	Yes
Length of stay and speed of recovery	Yes	Yes
Side effects of treatment	Yes	Yes
Satisfaction with treatment		Yes