Asthma + Respiratory FOUNDATION NZ

Child Asthma Guidelines (update 2017 to 2020)

Asthma and Respiratory Foundation NZ 2020

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- Consulted organisations

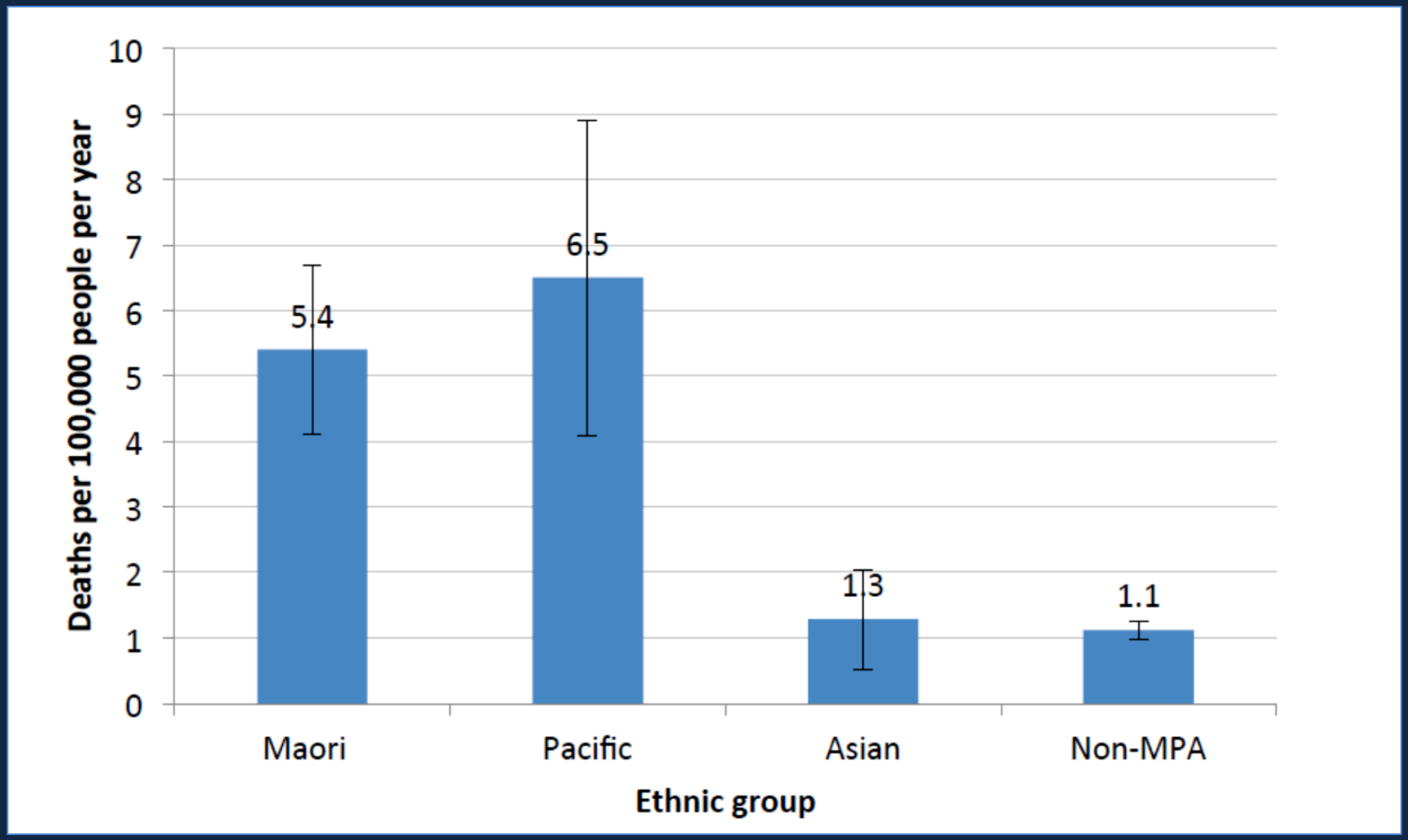
Main sources

- UK National Review of Asthma Deaths 2015
- BTS/SIGN Asthma Guideline
- Australian Asthma Handbook
- GINA guidelines
- He Māramatanga Huangō: Asthma Health Literacy for Māori Children in New Zealand 2015

Asthma Mortality

- UK national review of asthma deaths 2014 suggested deficiencies in basic care
  - > 80% deficiencies in acute or preventive care
  - 45% died without seeking help
  - Diagnostic process unclear

Asthma mortality disparities in NZ



Despite this there are also treatment disparities

- Maori and Pacific children more likely to receive oral steroids and nebulisers
- But less likely to receive ICS
- Less likely to receive asthma education
- Less likely to be given an action plan

Crengle, Thesis 2008
Gillies, Prim Care Resp J 2013

Adherence (world-wide data)

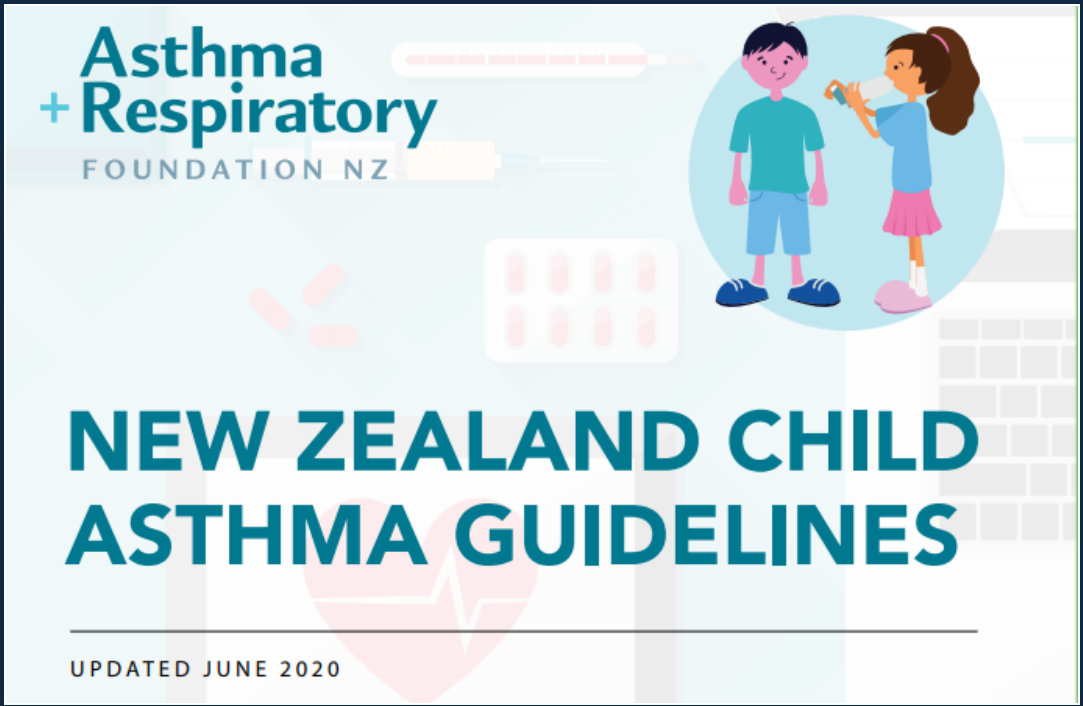
- Only 30 - 50% of asthma patients are well controlled (adults and children)
- Compliance with ICS preventers only 20-30%
- 34% of patients with uncontrolled asthma use a preventer less than once per week
- Adherence has not improved in the last 3 decades

Rabe JACI 2004
Reddell MJA 2015
Bender JACI: In Practice 2016

Bottom line

- Writing a prescription is not enough

The Guideline



Major changes for 2020

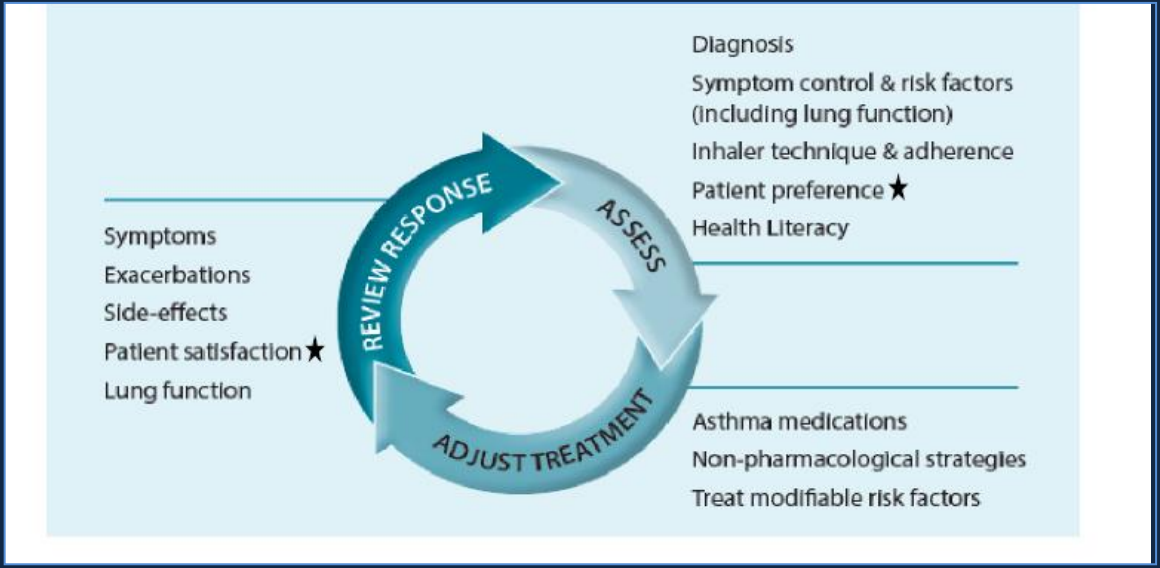
- Adolescents moved to adult guide (AIR therapy)
- Clarification of preschool diagnosis and treatment

Goals from the guideline

- All aspects of the health system will support better asthma care, aiming to decrease inequities and improve outcomes
- Māori children have asthma outcomes equal to non-Māori and non-Pasifika children
- Pacific children have asthma outcomes equal to non-Pacific & non-Māori children

Asthma management as a continuous cycle of monitoring and reassessment

- Requirement for follow up and repeated review
- Change from episodic health care
- Use of recall systems



Goal: All children who have asthma are correctly diagnosed promptly

- Diagnosis in children
  - based on having characteristic symptoms in absence of another cause
  - AND assessing response to treatment

Likelihood of Asthma

Table 1: Clinical features that increase or decrease the probability of asthma in children

A. Asthma more likely

- More than one of the following:
  - Wheeze (most sensitive and specific symptom of asthma)
  - Breathlessness
  - Chest tightness
  - Cough
- Particularly if:
  - Typically, worse at night or in the early morning
  - Provoked by exercise, cold air, allergen exposure, irritants, viral infections, stress and aspirin
  - Recurrent or seasonal
- Personal history of atopic disorder or family history of asthma
- Widespread wheeze heard on chest auscultation
- Otherwise unexplained expiratory airflow obstruction on spirometry
- Otherwise unexplained blood eosinophilia or raised exhaled nitric oxide
- Bronchial hyper-responsiveness on challenge testing at appropriate age
- Positive response to bronchodilator (clinical or lung function).

B. Asthma less likely

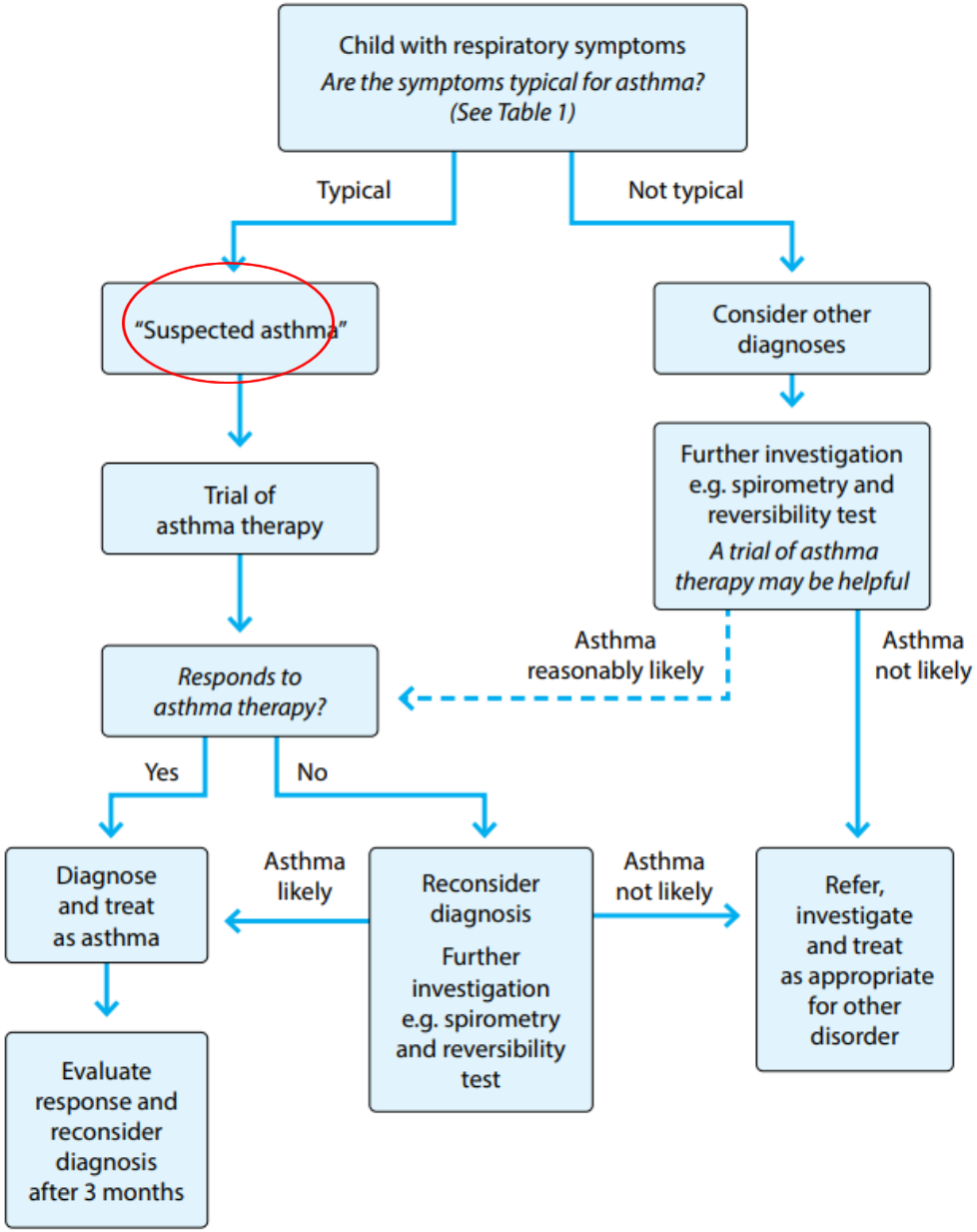
- Isolated cough in absence of wheeze or difficulty breathing
- History of wet, moist or productive cough
- No wheeze or repeatedly normal physical examination when symptomatic
- Normal spirometry or peak flow (PEF) when symptomatic
- No response to trial of asthma treatment
- Features that point to an alternative diagnosis (see C below).

Red Flags

C. Red flags suggesting alternate diagnoses*

- Daily symptoms from birth
- Frequent or daily wet, moist-sounding or productive cough
- Digital clubbing
- Chest wall deformity
- Failure to thrive
- Heart murmur
- Spilling, vomiting or choking
- Asymmetrical chest findings
- Stridor as well as wheeze
- Persistent ear, nose or sinus infection
- Family history of unusual chest disease
- Symptoms much worse than objective signs or spirometry.

Figure 1B: Diagnostic pathway for asthma and wheeze in children 5 - 11 years



What age do we diagnose asthma?

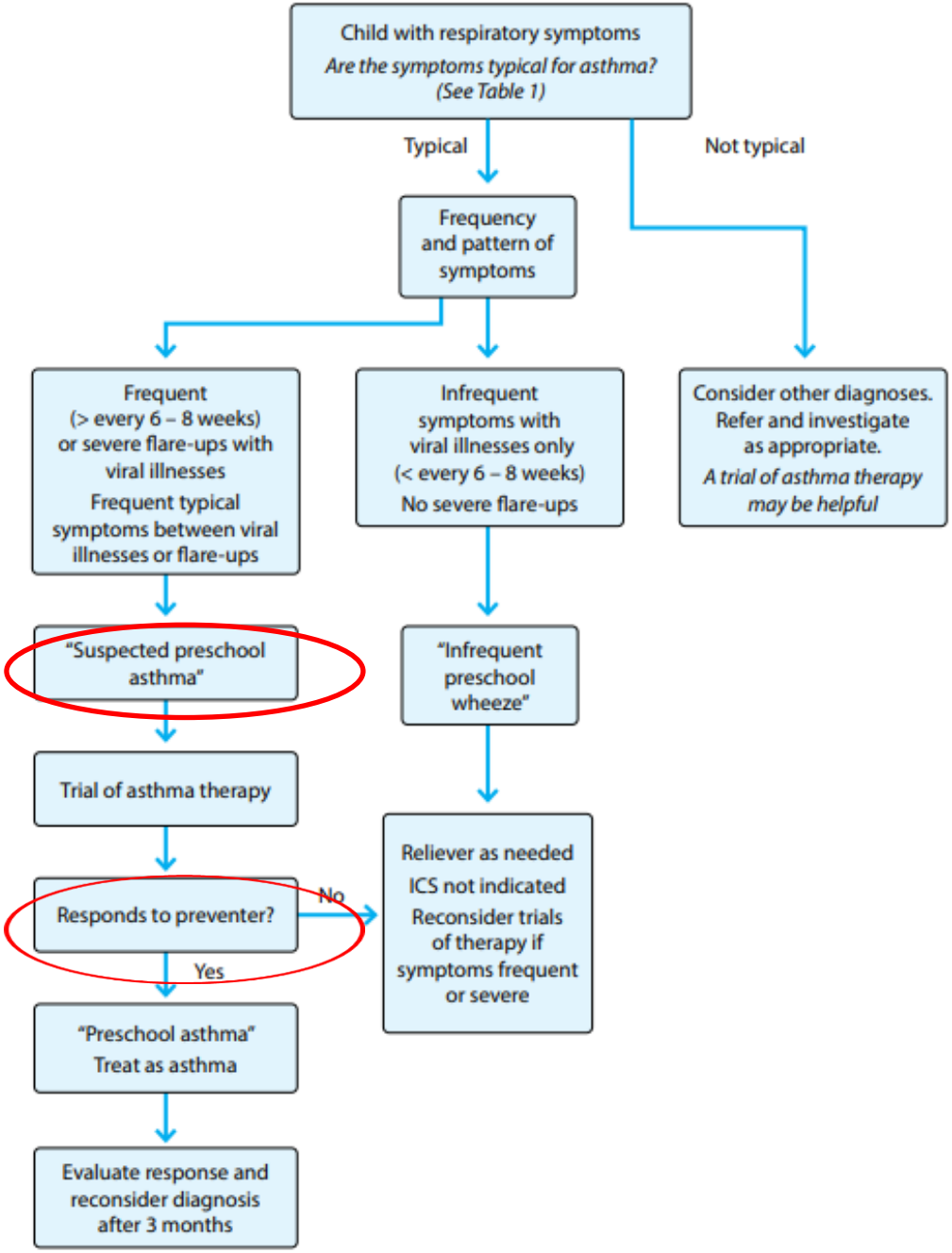
- Current paradigm
  - < 1 year “acute bronchiolitis”
  - 1 – 4 year “pre-school wheeze”
  - > 4 year asthma

Pre-School Wheeze

- Two distinct groups
  - Those who only wheeze with viruses (infrequent)
  - Those with frequent wheeze
  - Pattern does not predict later asthma or not

- Only regular wheezers (incl those with frequent viral exacerbations) benefit from preventers → treat as asthma
- Can swap groups – review and trial off meds each 3 months

Figure 1A: Diagnostic pathway for asthma and wheeze in children 1 - 4 years[6,8]



Goal: All children with asthma are assessed for their severity, control and future risk

Table 2 GINA assessment of asthma symptom control in children 5 - 11 years (See Table 3)[1]

(GINA recommends assessment of risk factors as an essential part of the assessment of asthma control)

A. Asthma symptom control			**Level of asthma symptom control**		
In the past 4 weeks, has the patient had:			**Well controlled**	**Partly controlled**	**Uncontrolled**
• Daytime asthma symptoms more than twice/week?	Yes ☐	No ☐	None of these	1-2 of these	3-4 of these
• Any night waking due to asthma?	Yes ☐	No ☐			
• Reliever needed for symptoms* more than twice/week?	Yes ☐	No ☐			
• Any activity limitation due to asthma?	Yes ☐	No ☐			

(Modified with permission of GINA)

Goal: The right step of medicine in the right device is used for the age and symptoms of the child

- Maximize quality of life (reduce symptoms)
- Reduce risk of flare ups
- Avoid adverse treatment effects
- Utilising a step-wise approach to management

Figure 3: Stepwise approach to treatment of children with wheeze 1 - 4 years

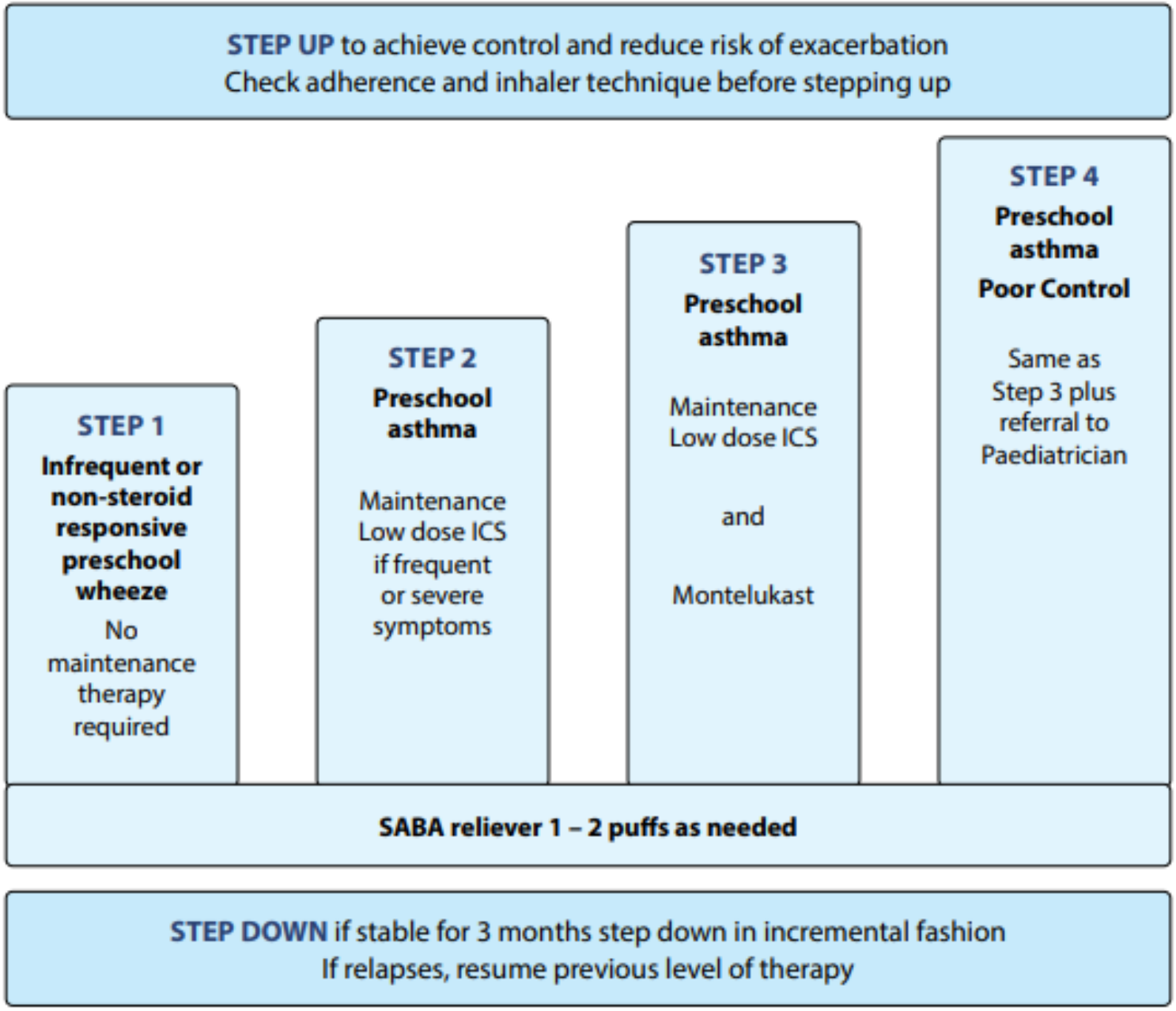


Figure 4: Stepwise approach to treatment of children with asthma 5 - 11 years

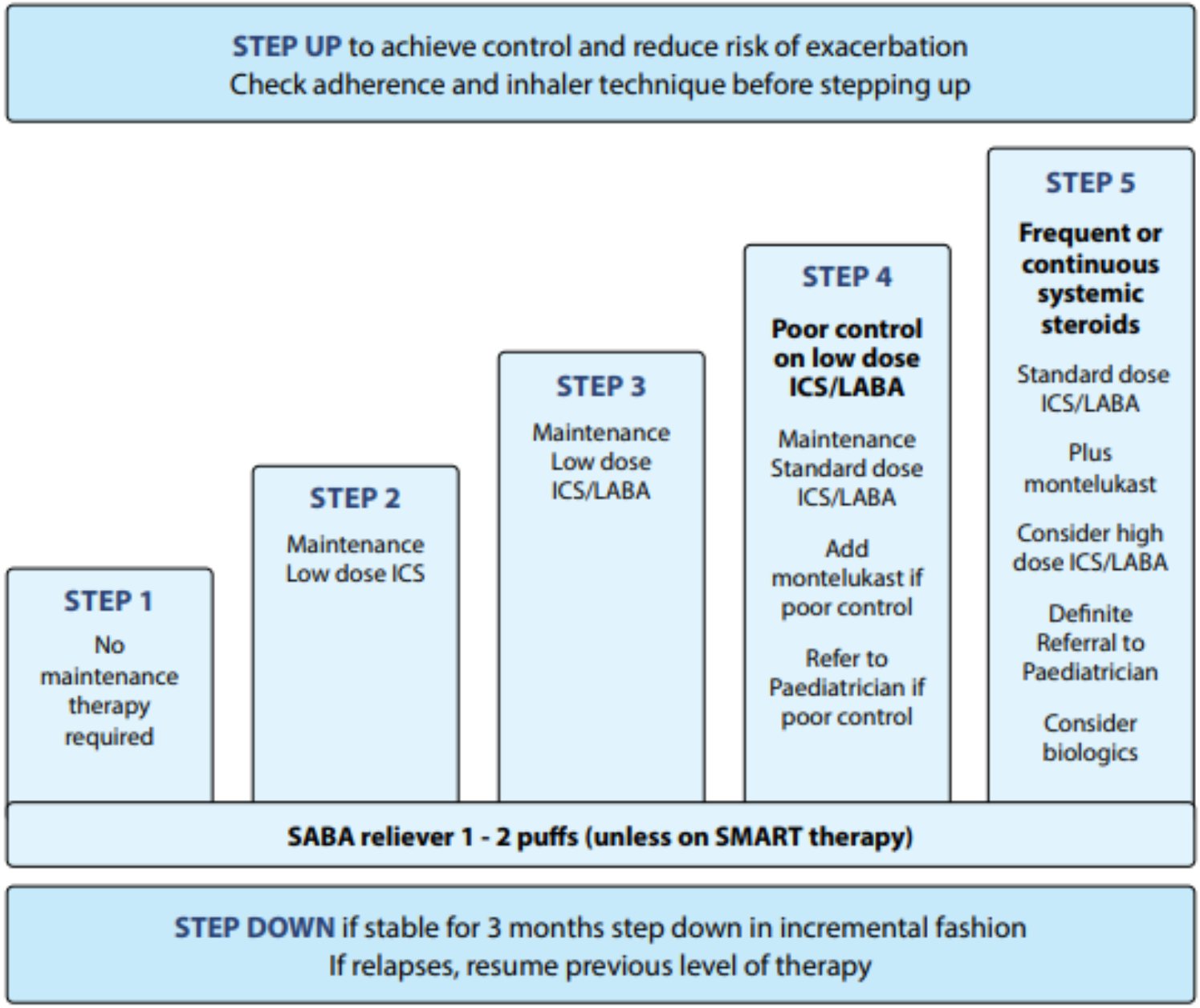
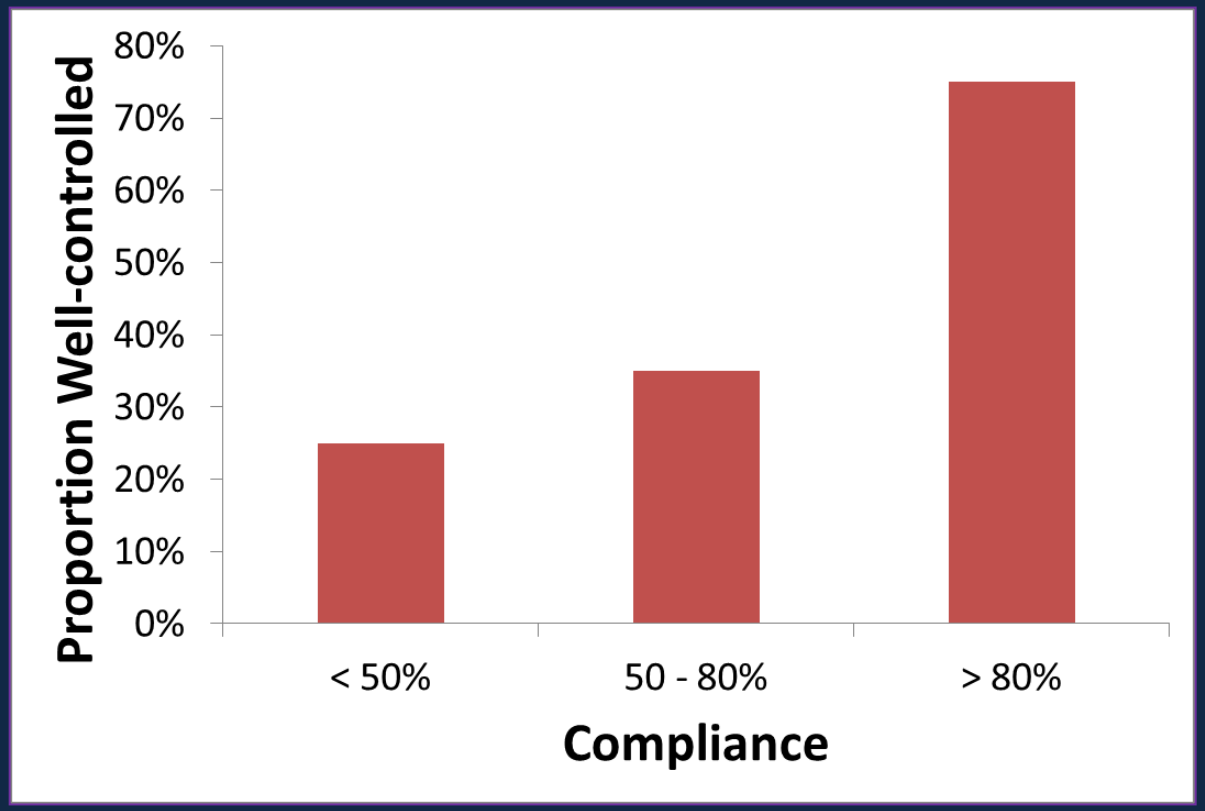


Table 5: The recommended low and standard daily dose of ICS in children with asthma. "High" doses are double the standard doses (see Tables 4 and 5)

Low dose		Standard dose	
Beclomethasone dipropionate	200 mcg/day	Beclomethasone dipropionate	400-500 mcg/day
Beclomethasone dipropionate ultrafine	100 mcg/day	Beclomethasone dipropionate ultrafine	200 mcg/day
Budesonide	200 mcg/day	Budesonide	400mcg/day
Fluticasone propionate	100 mcg/day	Fluticasone propionate	200-250mcg/day

Goal: For all children with asthma it should be clear if ICS should be prescribed, and if so, a prescription given <u>and the medicine taken</u>



Klok, ERJ, 2014

Assessing adherence

- Prescribing records
  - At the Practice
  - Pharmacy database
- Self report – “How often do you forget to take your inhaler in a week?”
- Physician judgement
- Electronic monitoring devices

Goal: The correct inhaler device is considered and age appropriate

- Spacer with mask – < 2 years

- Spacer no mask – transition 2 – 4 years
  - Improved lung deposition by 60%
  - Not when severe exacerbation

- Turbuhaler - from 5 - 7 years

- MDI alone – never (possible from 8 years)

NZ children

- Only 80% of children under 6 use a spacer
- Only 30% of children over 7 use a spacer
- Less than 35% given an action plan

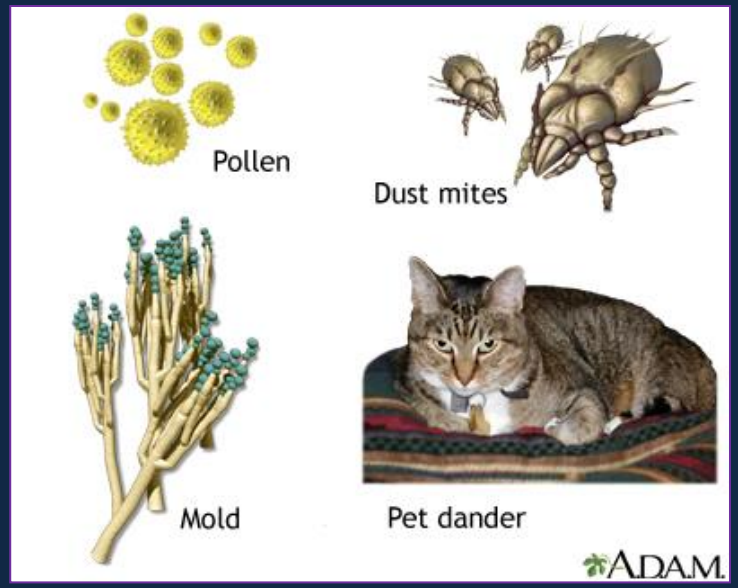
Crengle NZMJ 2011
Crengle Thesis 2008

Assessing inhaler technique: Check every visit

- Only 7 - 22% have had technique tested
- 20 - 50% of health professionals incorrect technique!
  - up to 85% for dry powder inhalers
- Repeated education necessary
- Dry powder inhalers take 3 sessions
- Skills decay over 2-6 weeks

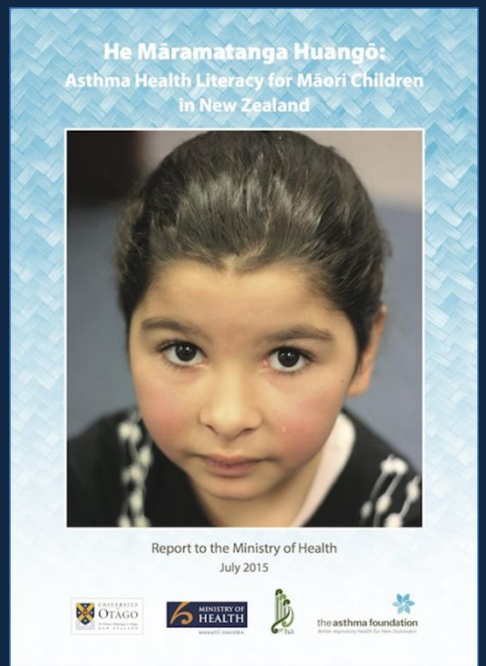
Goal: Identify and address personal, whānau or environmental factors which may be unsettling asthma

- Influenza vaccination
- Smoke exposure
- Allergen avoidance
- Anxiety and psycho-social triggers
- Associated conditions
  - Rhinitis/OSA



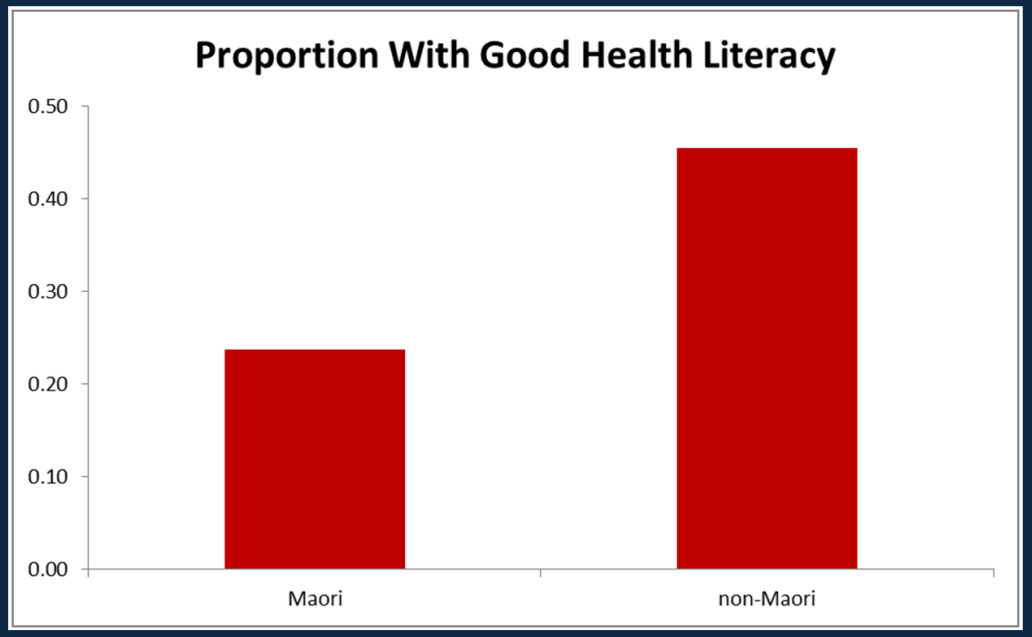
Goal: Achieving effective self/family education and management

- Good asthma education
  - Enhances health-literacy
  - Enhances self-efficacy
- Asthma Health Literacy for Maori Children in NZ Report 2015



Whanau reported:

- Not having adequate knowledge
- < 50% understood what asthma is
- 1/3 not knowing how to seek urgent help
- Not being listened to
- Too much information at once
- Not being taught “why”



“The responsibility for health literacy lies primarily with health professionals”

- Asthma Health Literacy For Maori Children Report 2015

Education takes time and repeated effort

- Education at every visit (chunks)
- Incorporate a variety of media
- Build rapport by building partnership
- Use a shared language for better understanding
  - “Puffers”
  - “Relievers and Preventers”
  - “Flare ups”
- Goal is improved self-management

Goal: All children with asthma should be provided with an asthma action plan

Well

When I'm well:

- I have no cough
- I play just like other children
- I use my reliever puffer less than 2 times a week

My puffers are:

Preventer: I take this every day even when I'm well.
The name of my preventer is _____ The colour is _____
I take _____ puffs in the morning and _____ puffs at night through a spacer.

Reliever: I take this only when I need it
The name of my reliever is _____ The colour is _____
I take _____ puffs through a spacer when I wheeze, cough or when it's hard to breathe.

If I find it hard to breathe when I exercise I should: Take _____ puffs of my reliever

Worse

When my asthma is getting worse:

- I cough or wheeze and it's hard to breathe, or
- I'm waking at night because of my asthma, or
- I cough or wheeze when I play, or
- I need my reliever inhaler to control my asthma more than 2 times per week

If my asthma gets worse I should:

Keep taking my preventer every day as normal and take _____ puffs of my reliever every 4 hours
If I'm not getting better doing this I should see my doctor today

Contact:

Worried

My asthma is a worry when:

- My reliever isn't helping, or
- I'm finding it hard to breathe, or
- I'm breathing hard and fast, or
- I'm sucking in around my ribs/throat, try looking under my shirt
- I'm looking pale or blue

- Sit me down and try to stay calm
- Give me 6 puffs of reliever through a spacer, taking 6 breaths for each puff
- **If I don't start to improve I need help now**

Emergency

DIAL 111 and ask for an ambulance

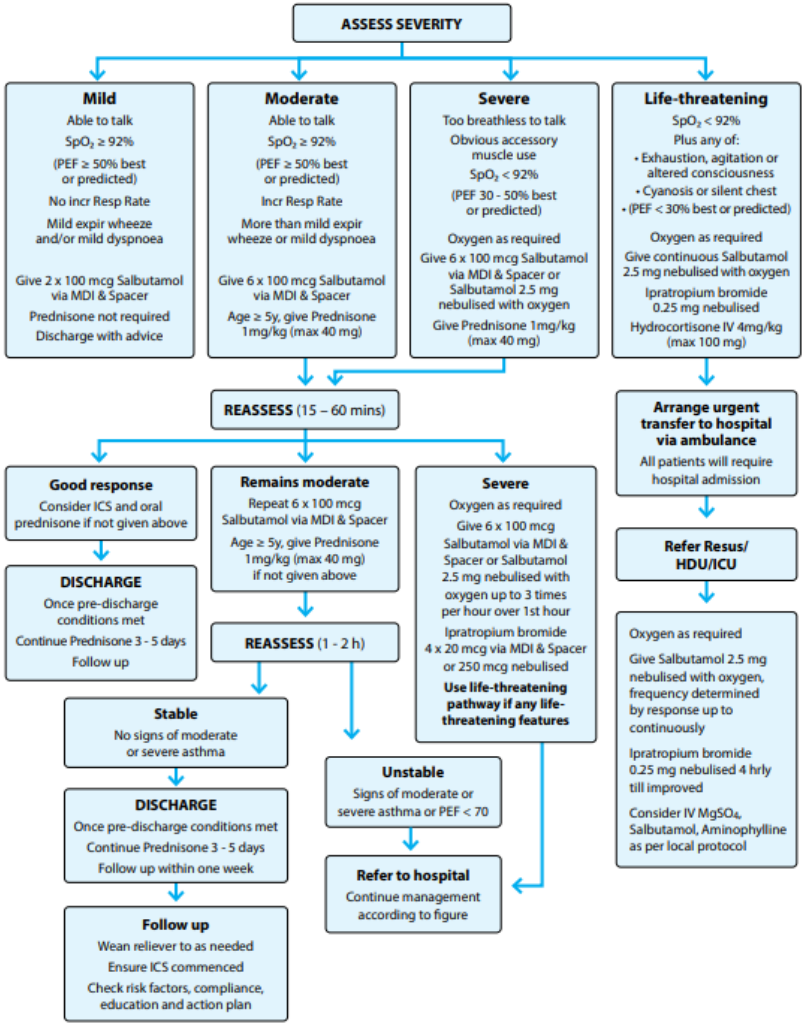
WHILE YOU'RE WAITING:

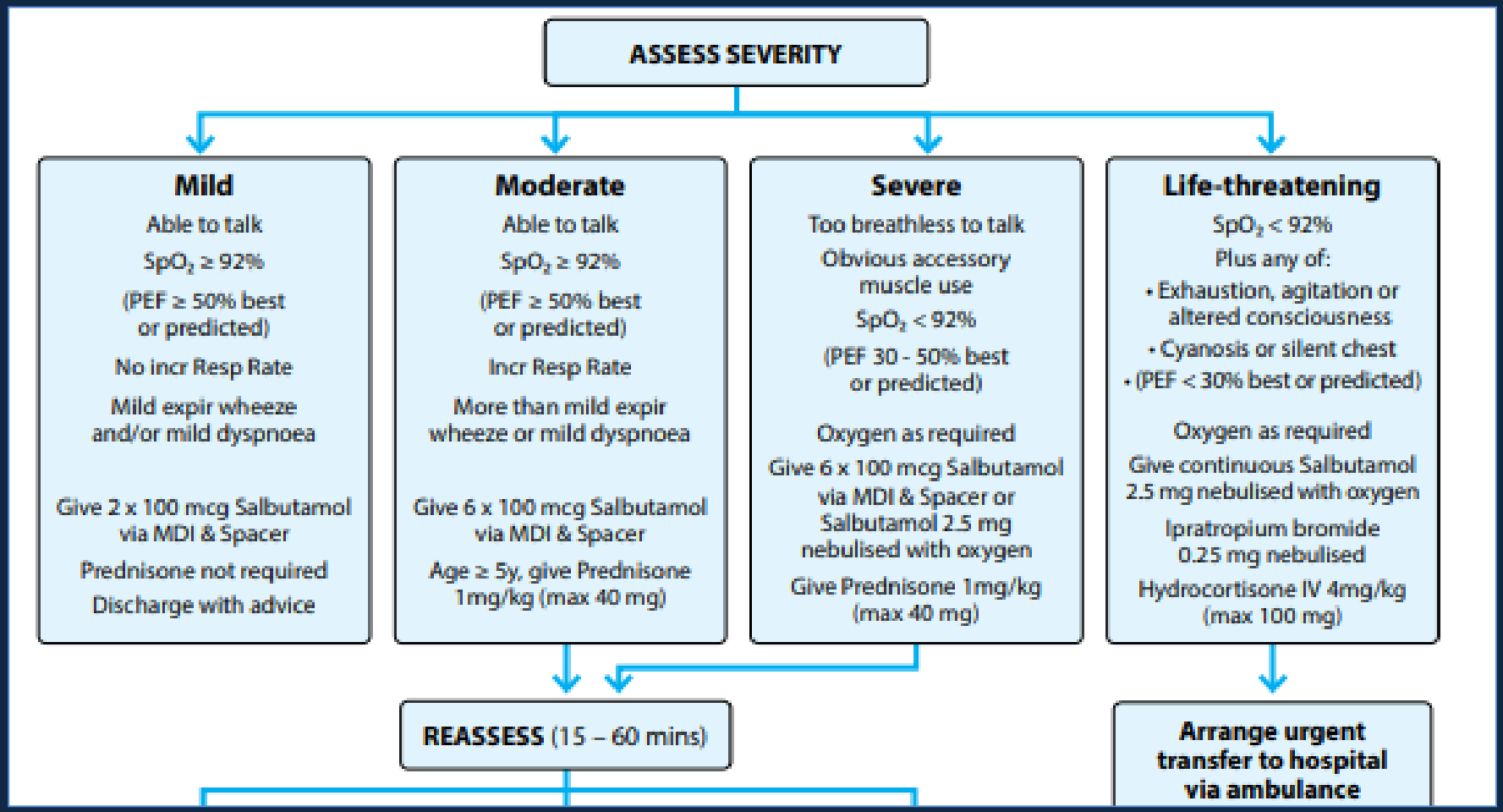
- Try to stay calm and keep me sitting upright
- Give 6 puffs of reliever through a spacer every 6 minutes with 6 breaths for each puff until help arrives

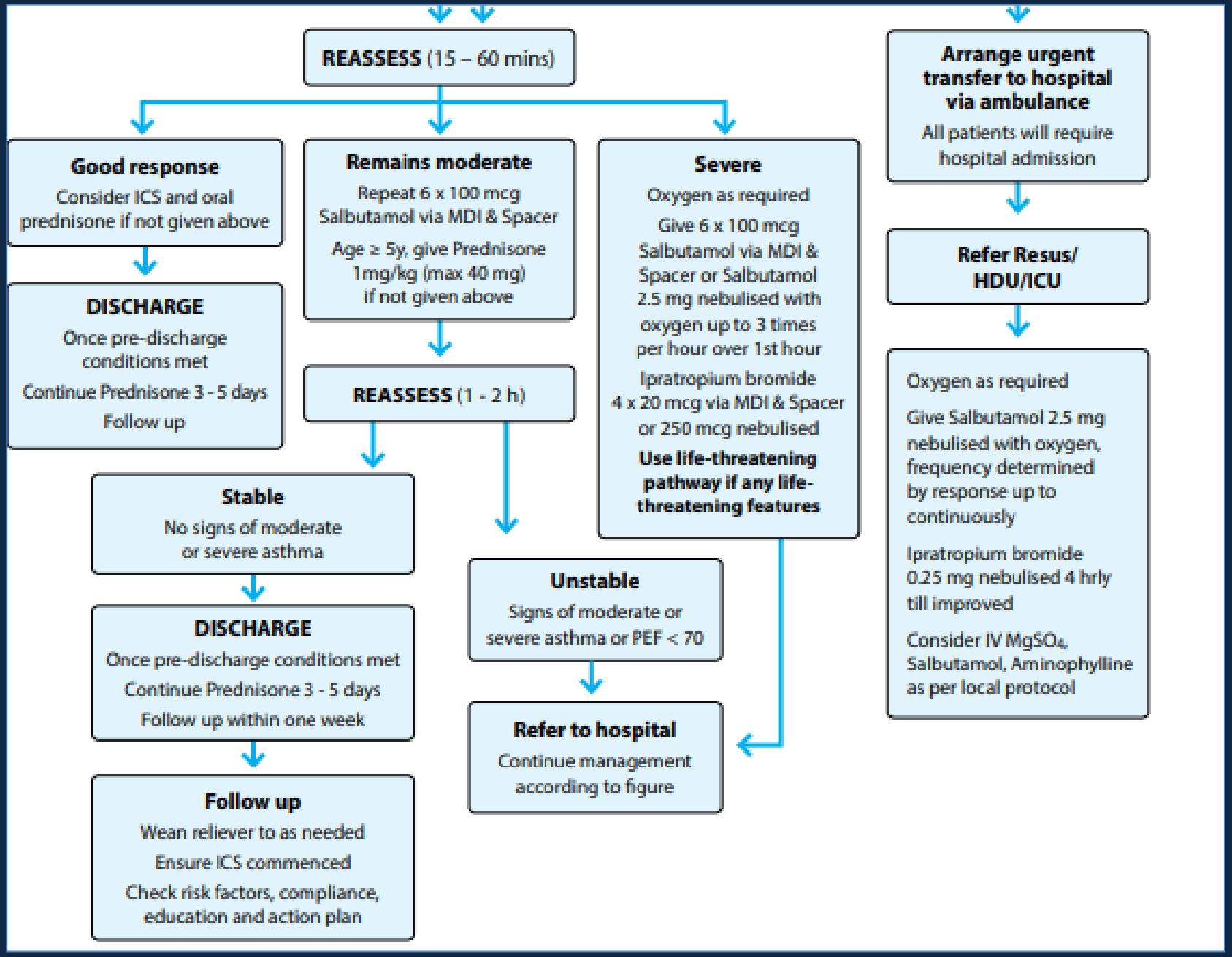
Date Prepared: _____ Doctors Signature: _____ Plan to be reviewed when treatment changed

Goal: All children should be managed to avoid life-threatening asthma or death

Figure 5: Algorithm for community management of moderate, severe and life-threatening acute asthma in children 4 – 11 years.




ASSESS SEVERITY
Mild
Able to talk
SpO2 ≥ 92%
(PEF ≥ 50% best or predicted)
No incr Resp Rate
Mild expir wheeze and/or mild dyspnoea
Give 2 x 100 mcg Salbutamol via MDI & Spacer
Prednisone not required
Discharge with advice
Moderate
Able to talk
SpO2 ≥ 92%
(PEF ≥ 50% best or predicted)
Incr Resp Rate
More than mild expir wheeze or mild dyspnoea
Give 6 x 100 mcg Salbutamol via MDI & Spacer
Age ≥ 5y, give Prednisone 1mg/kg (max 40 mg)
Severe
Too breathless to talk
Obvious accessory muscle use
SpO2 < 92%
(PEF 30 - 50% best or predicted)
Oxygen as required
Give 6 x 100 mcg Salbutamol via MDI & Spacer or Salbutamol 2.5 mg nebulised with oxygen
Give Prednisone 1mg/kg (max 40 mg)
Life-threatening
SpO2 < 92%
Plus any of:
• Exhaustion, agitation or altered consciousness
• Cyanosis or silent chest
• (PEF < 30% best or predicted)
Oxygen as required
Give continuous Salbutamol 2.5 mg nebulised with oxygen
Ipratropium bromide 0.25 mg nebulised
Hydrocortisone IV 4mg/kg (max 100 mg)
REASSESS (15 – 60 mins)
Arrange urgent transfer to hospital via ambulance


REASSESS (15 – 60 mins)
Good response
Consider ICS and oral prednisone if not given above
DISCHARGE
Once pre-discharge conditions met
Continue Prednisone 3 - 5 days
Follow up
Remains moderate
Repeat 6 x 100 mcg Salbutamol via MDI & Spacer
Age ≥ 5y, give Prednisone 1mg/kg (max 40 mg) if not given above
REASSESS (1 - 2 h)
Stable
No signs of moderate or severe asthma
DISCHARGE
Once pre-discharge conditions met
Continue Prednisone 3 - 5 days
Follow up within one week
Follow up
Wean reliever to as needed
Ensure ICS commenced
Check risk factors, compliance, education and action plan
Unstable
Signs of moderate or severe asthma or PEF < 70
Refer to hospital
Continue management according to figure
Severe
Oxygen as required
Give 6 x 100 mcg Salbutamol via MDI & Spacer or Salbutamol 2.5 mg nebulised with oxygen up to 3 times per hour over 1st hour
Ipratropium bromide 4 x 20 mcg via MDI & Spacer or 250 mcg nebulised
Use life-threatening pathway if any life-threatening features
Arrange urgent transfer to hospital via ambulance
All patients will require hospital admission
Refer Resus/ HDU/ICU
Oxygen as required
Give Salbutamol 2.5 mg nebulised with oxygen, frequency determined by response up to continuously
Ipratropium bromide 0.25 mg nebulised 4 hrly till improved
Consider IV MgSO4, Salbutamol, Aminophylline as per local protocol

Summary

- Ensure and review diagnosis
- Manage disparity and inequity
- At every visit:
  - Check control
  - Check adherence
  - Check technique
  - Check action plan
  - Provide a chunk of education
- During acute care ensure preventive care provided