

Ngõoio nui

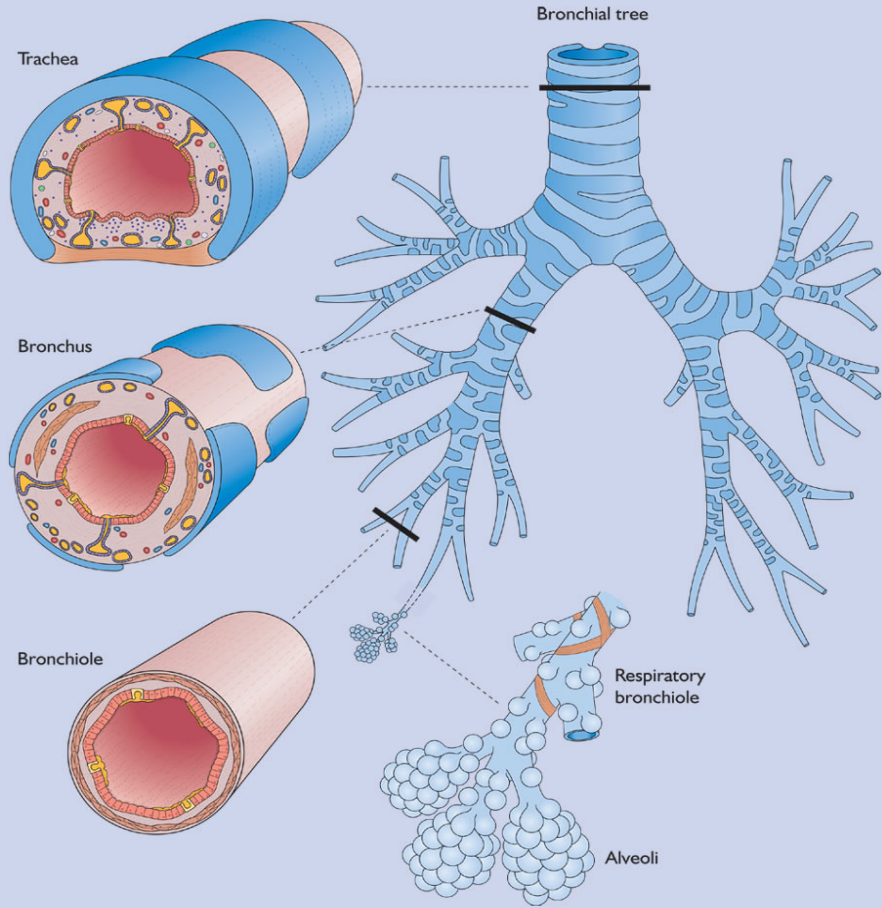
asthma

Steph Parker

2009

Function of the Respiratory system

- Provide a pathway for air to travel and gas to be exchanged.

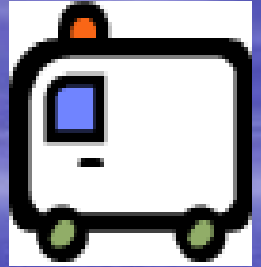


Asthma DEFINITION:

- **REVERSABLE**

- Bronchiole Spasm
- Oedema
- Secretions

The airways of asthmatic patients are **hyper-responsive**, being obstructed when subjected to stimuli that do not produce such an effect in “normal” persons



Inflammatory process

Early asthma response due to:

Allergen binds to mast cell, release histamine which triggers bronchial smooth muscle contraction.

Occurs about 20mn post exposure.

Responsive to reliever and usually avoided/reduced by use of preventer

Inflammatory process

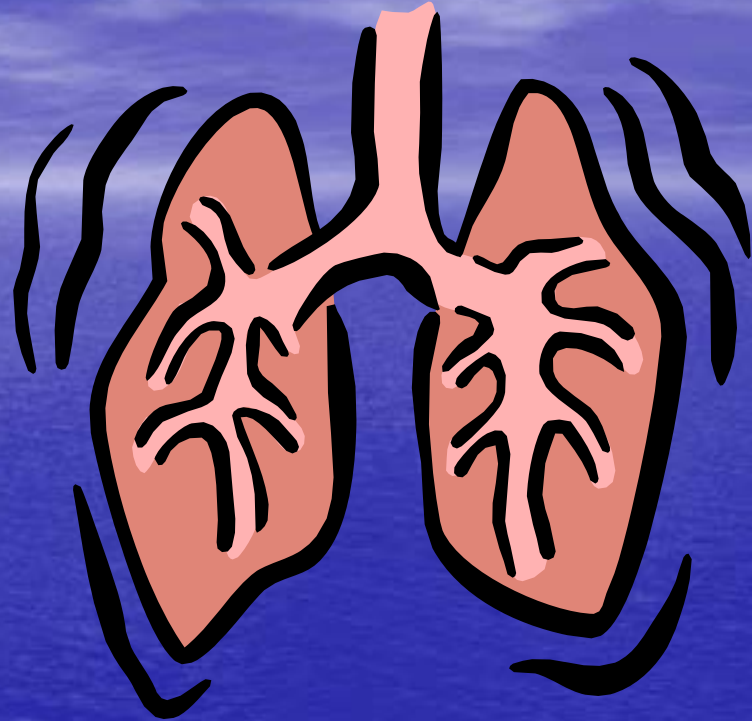
Late asthmatic response

Mucosal swelling

Oedema and cellular infiltrates, especially eosinophils along with

Mucous hyper-secretion

Diagnosis



- Age
- History
- Allergies
- Night cough
- Exercise
- Peak flow (PEFR)
- Spirometry 15% improvement with ventolin
- Nitric oxide (by product of eosinophyllic activity)

Diagnosis of preschoolers

- Most physicians do not diagnose under 2yrs
- Family history
- Atophy
- Lung health/ prematurity
- Wheezy response to ventolin

Childrens' chest

Shape of diaphragm flatter.

Soft cartilaginous ribs.

Alveoli numbers far less born, subdivide until around 3yrs old then increase in size.

Proportion of work of breathing wasted by sucking in chest rather than moving air.



Aim of asthma treatment

- **Keep the airway patent for oxygen exchange.**
- Reduce the swelling
- Stop the spasm
- Facilitate clearing phlegm

E.D. and Ward Management of asthma

- **PAEDIATRICS**

follow Starship protocols (copy in your handout)
Use Asthma Assessment tool. Copy in your handouts

- **ADULTS**

follow Emergency Department protocol and ward care-map (copy in your handout)

- **YOU** MUST FAMILIARIZE **YOURSELF** WITH THESE PROTOCOLS

Triage a child with Acute asthma

Symptoms	Mild	Moderate	Severe
conscious	Not altered	Not altered	drowsy
Muscle use	no	minimal	yes
Talks in	sentences	phrases	Words or
Resp rate	normal	increased	extreme
Pulse rate	Below 100	100-200	Over 200
wheeze	variable	moderate	Often quiet
Central cyanosis	absent ↓	absent	Likely to be present ↑
SaO ₂ in air	Over 94%	94%-90%	Below 90%

Blood tests in children

- O₂ sat more indicative of progress
- Not generally indicated in children
- Fever of unknown origin

Blood tests in adults

- ABG if saturations <90% on air
- Increased need for O₂
- Increased need for nebulisation
- General decline

Indications for X -ray

- Unexplained breathlessness
- Fever of unknown origin
- Crepes or crackles
- Difficult to hear
- First asthma episode
- Suspected inhalation



Prednisolone use in children

- 2mg/kg up to 60mg/day
- Interrupts the immunological inflammatory response:
- Reduction in inflammation
- Reduction of mucous secretions
- Reduction in broncho-restriction
- (Rowe 2006)

Oxygen

- Oxygen saturation to be kept up to a level of 94%
- Nasal prongs at 2 liters or mask 4 liters plus as required.
- Always get oxygen charted by a medical doctor.

Inhaled Beta-agonist

- Salbutamol : has a high specificity for beta 2 receptors found on the smooth muscle of blood vessels, the uterus, and bronchioles. When it binds with these receptors it causes relaxation of smooth muscle resulting in vasodilation, cessation of uterine contractions and bronchodilation. Lowers serum potassium
- (Drown, 2002)

Anticholinergics



- Atrovent : ipatropium bromide
- Vagal nerve blocker, bronchodilator
- Used in acute asthma only for both adults and children
- Mainly useful for COPD and under one year olds as a routine bronchodilator instead of a beta-agonist
- (Rodrigo, 2002)

Chronic illness...Asthma

- ❖ Chronic airway inflammation

symptoms	mild	moderate	severe
Wheeze, cough	occasional	Most days	Every day
Nocturnal cough	absent	Once week	>once week
waking	absent	<once week	>once week
ED admission	no	Usually not	More than 1
Previous Life T.A	no	no	yes
Broncho- dilator use	<twice week	Most days	.3-4 /day

Long term
Treatment regime

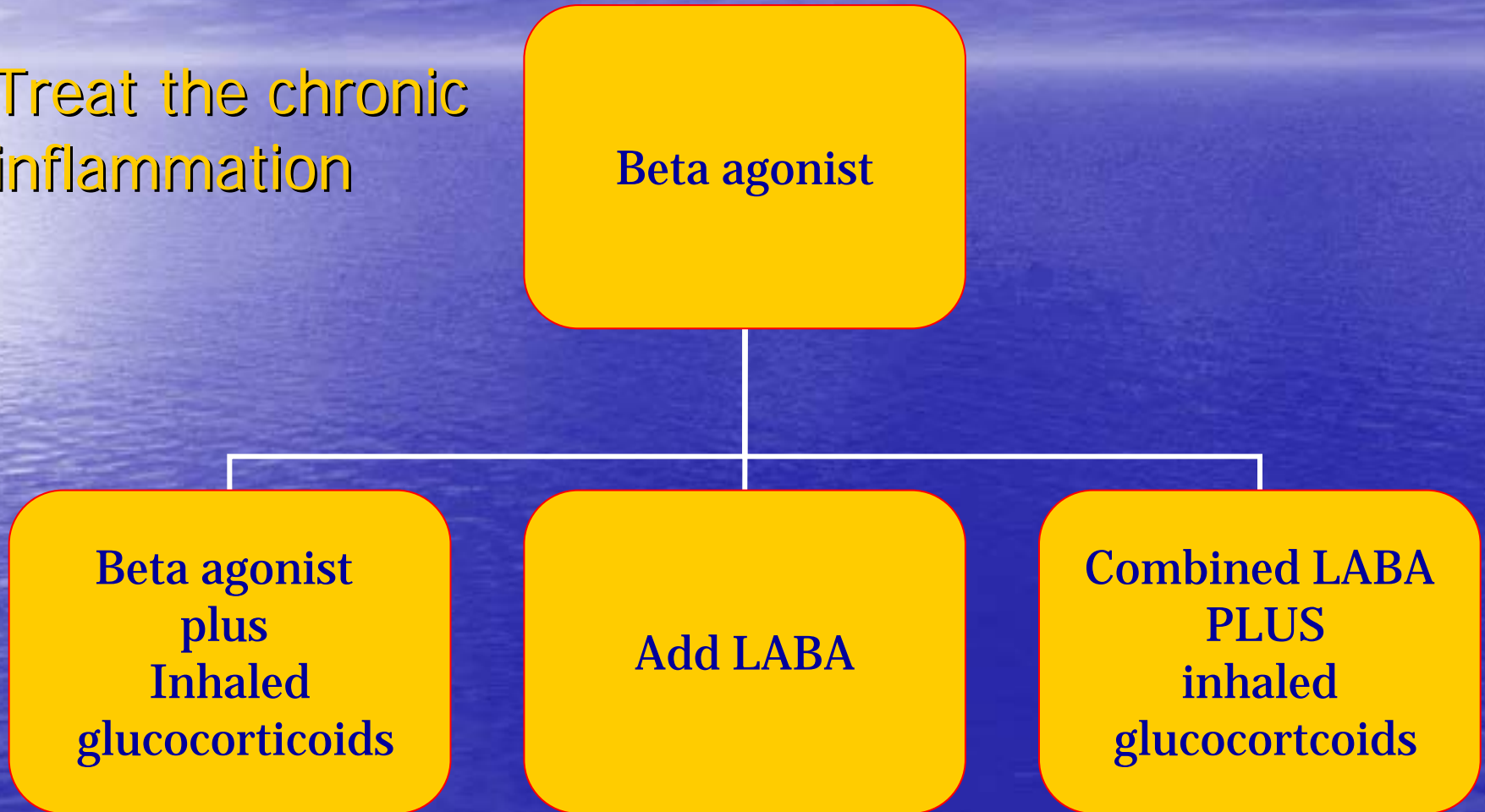


No no
no

- As needed
bronchodilators

Avoid airway remodelling

- Treat the chronic inflammation



DELIVERY DEVICES

- MDI WITH SPACER
- TURBUHALER
- ACCUHALER





Action Plans



- Simple
- Layman's language
- knowledge
- Control

Peak flow

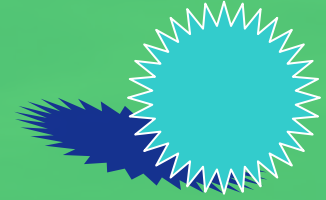
Mild : > 90% of best

Moderate : 60-80%

Severe : <80% of best



Follow up



All Patients
MUST have
FOLLOW UP.

Tit Bits from Dunedin lifestyle study of 35 yrs

- More boys have asthma levels off around age 20.
- 50% have an allergy (dust mite and cats highest)
- Breast feeding. Poor evidence BF is a deterrent to asthma
- Farming kids have less asthma
- Cat.40%lower risk of atophy
- Birth order.oldest more prone
- Brown bread, lower rate asthma
- Mediterranean diet lowest asthma rate
- Uk/NZ highest rate

***Phil Silva /Patricia Buckfield 1967-1973 12000
births in Dunedin***

References:

Daley, B. 2007 Course Content. Auckland University

Holt, S. & Beasley, R. 2002 *The Burden of Asthma in New Zealand.*

Larsen, G.,. 2000 Journal of Allergy Clinical Immunology. *Differences between adult and childhood asthma.* 153-157

Szefer, S. 2000 Journal of Allergy Clinical Immunology. *The changing faces of asthma.* 139-143

Starship Protocols

www.asthmanz.co.nz

www.paediatrics.co.nz