Housing Related Conditions

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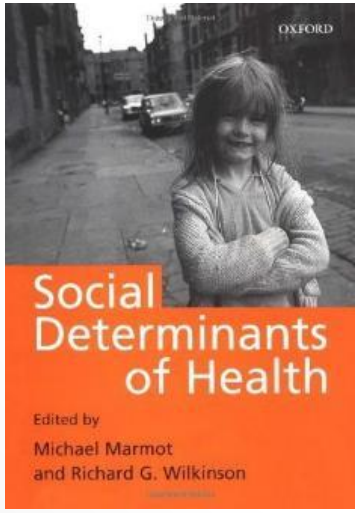
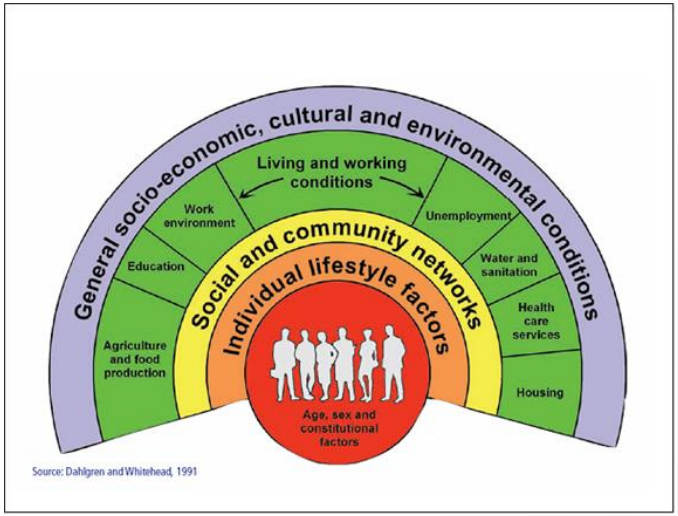
Waitemata District Health Board
Best Care for Everyone

Auckland District Health Board
Te Toka Tumai

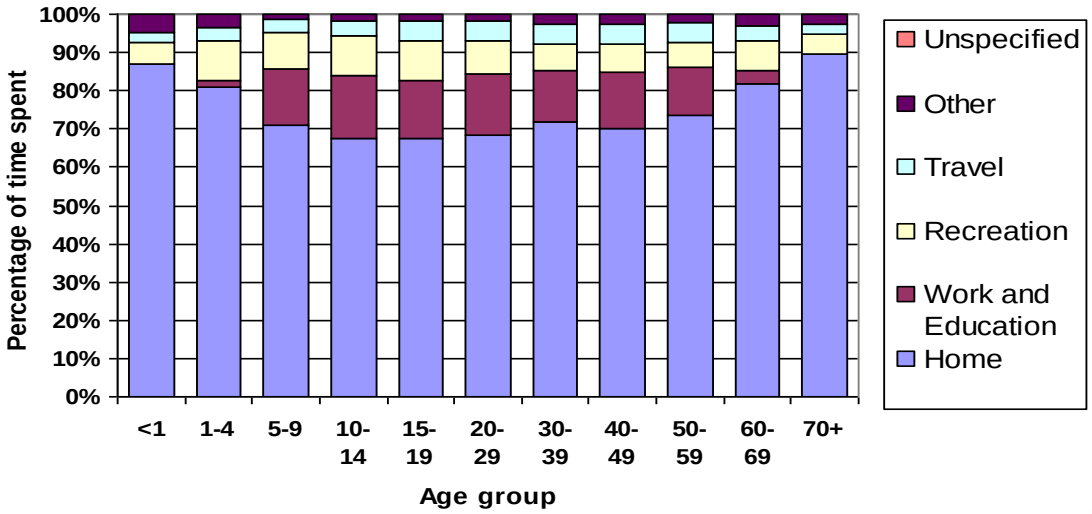
Overview

- What does "housing related condition" mean?
- What are the illnesses?
- How do these illnesses get affected by the cold and damp?
- A brief audit of bronchiectasis cases in Auckland





Where we spend our time?



New Zealand Travel Survey, 1997-98

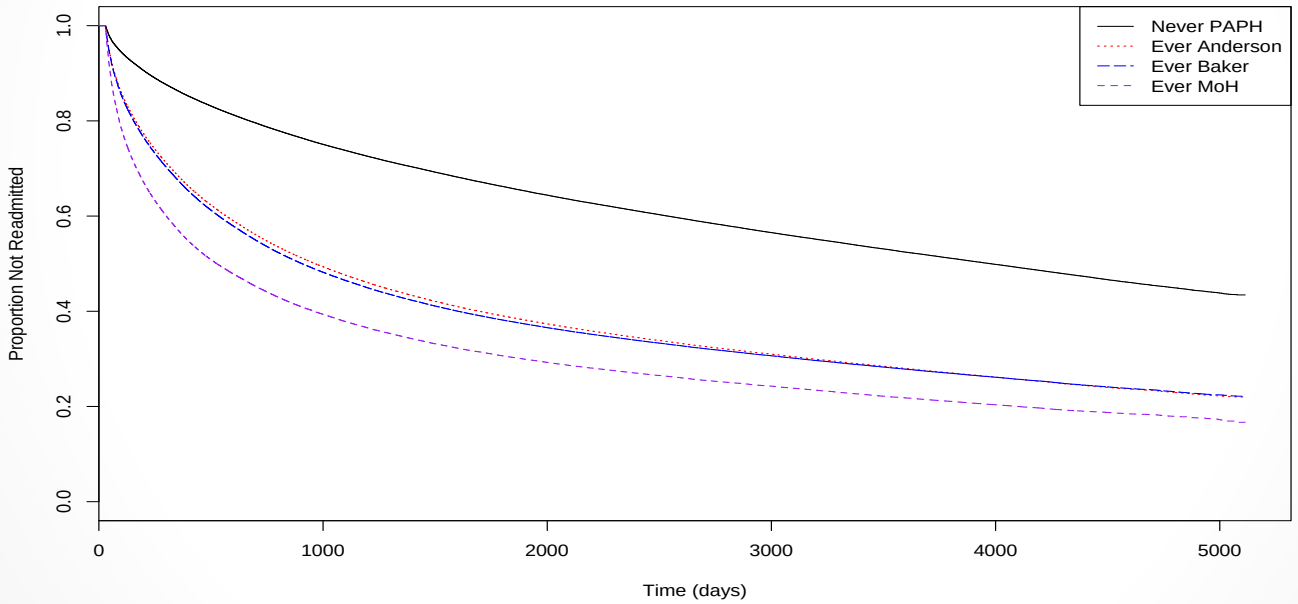
Housing related conditions

for the MoH for Healthy Homes Initiatives

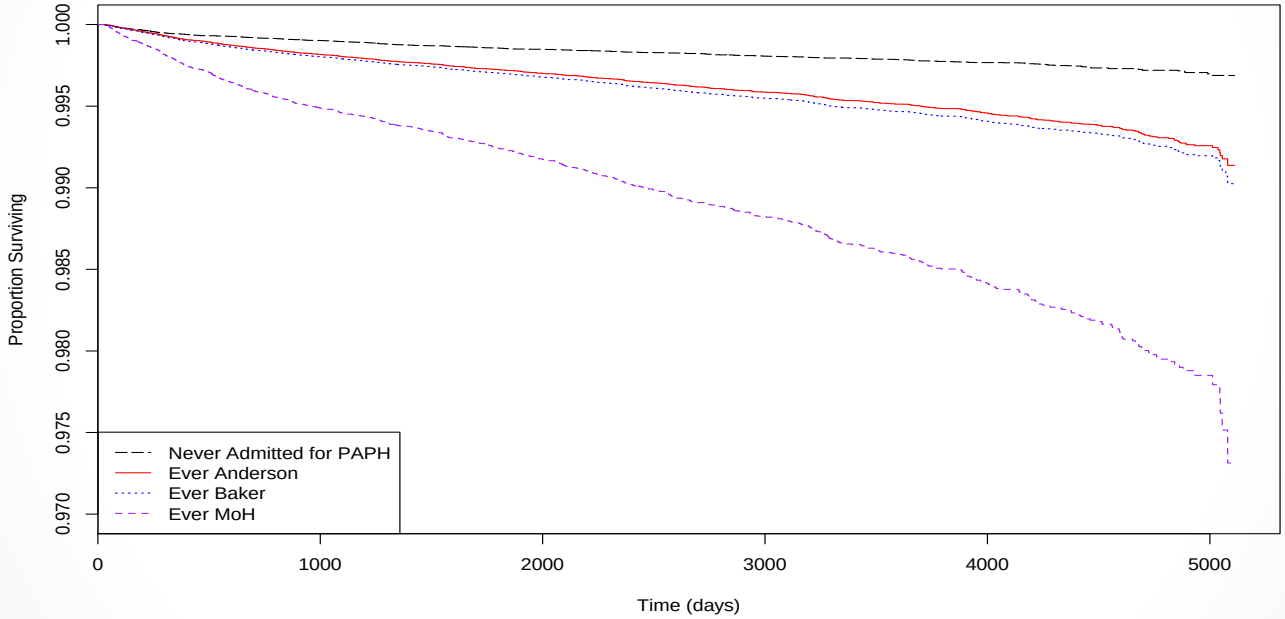
- Respiratory tract infections
- Meningitis
- Invasive and post-streptococcal disease (GAS)

Potentially Avoidable Hospitalisations

Preventing Hospitalisations



Deaths


Proportion Surviving
1.000
0.995
0.990
0.985
0.980
0.975
0.970
0
1000
2000
3000
4000
5000
Time (days)
Never Admitted for PAPH
Ever Anderson
Ever Baker
Ever MoH

Respiratory tract infections

- Acute upper respiratory infections
- Influenza
- Pneumonia
- Acute bronchiolitis

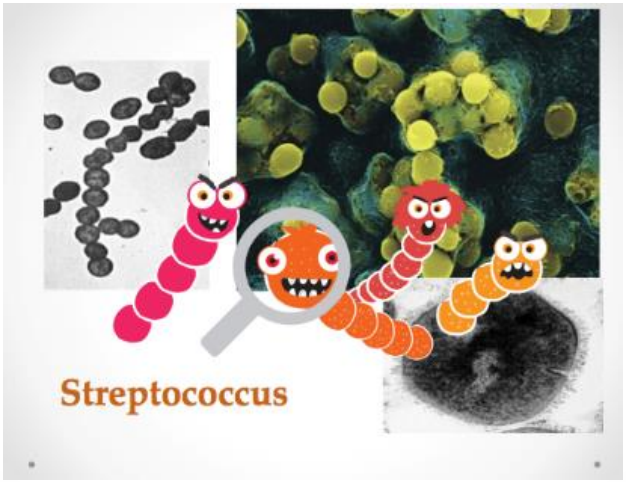
- Unspecified LRTI and bronchitis
- Bronchiectasis

Meningitis

- Meningococcal disease
- Bacterial meningitis (including pneumococcal, streptococcal and other)
- Viral meningitis
- Meningitis unspecified

Rheumatic Fever & Invasive and post streptococcal disease

- Acute nephrotic syndrome
- Septicaemia from group A streptococcus



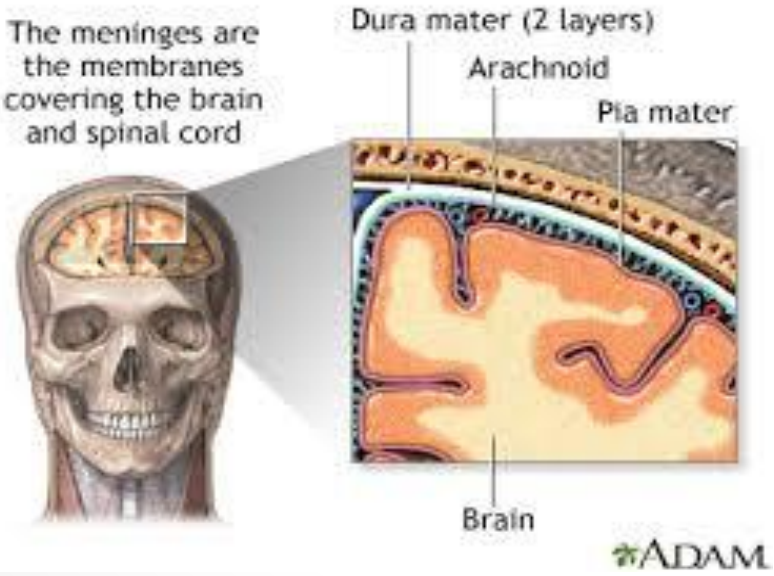
These are not part of the HHI eligibility criteria

- Restrict criteria
- Targeted service

Other housing related conditions	
4. Other respiratory conditions with infectious component	-Asthma (a proportion will be infectious exacerbations) -Otitis media, mastoiditis -Peritonsillar abscess
5. Gastroenteritis	-Specified enteric agents with presumed human sources (eg viral gastroenteritis) -Gastroenteritis of presumed infectious origin -Nausea and vomiting
6. Skin infections	-Bacterial skin infections sub-chapter, including abscess & cellulitis

Definitions and word roots

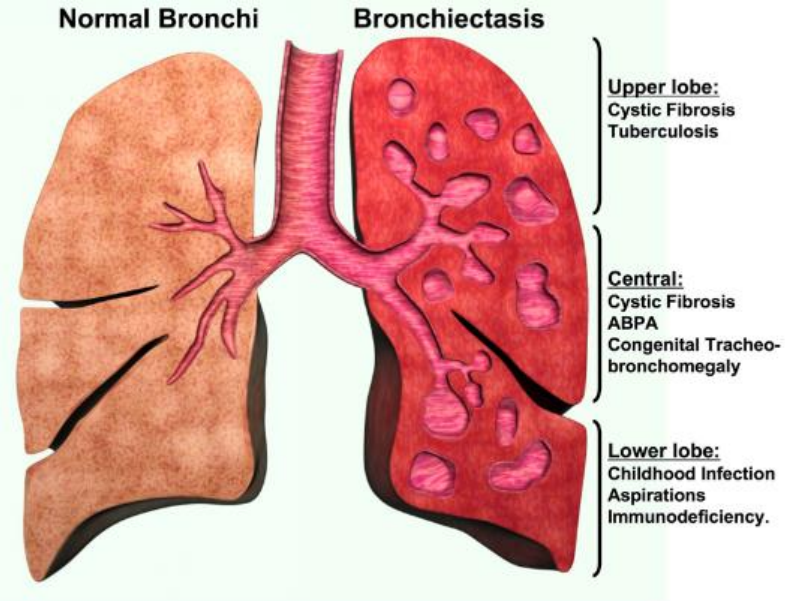
itis: **suffix meaning** inflammation



Some examples are:

- Meninges >Meningitis
- Tonsils >Tonsilitis

ectasis: **suffix meaning** "dilatation or expansion"

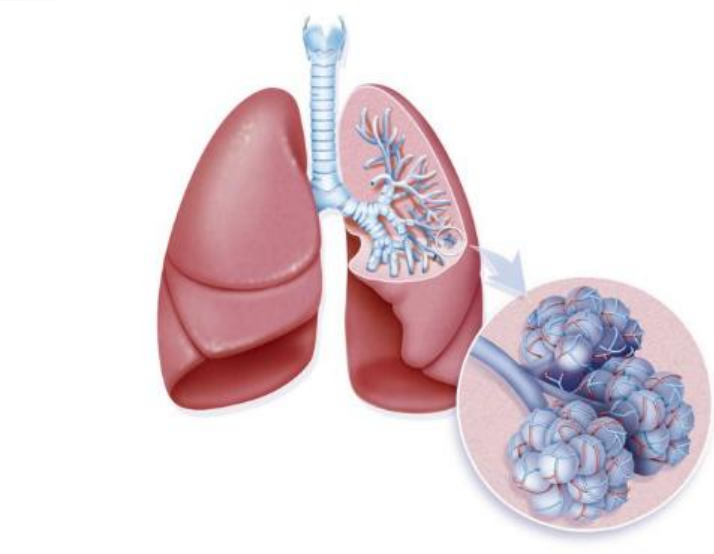


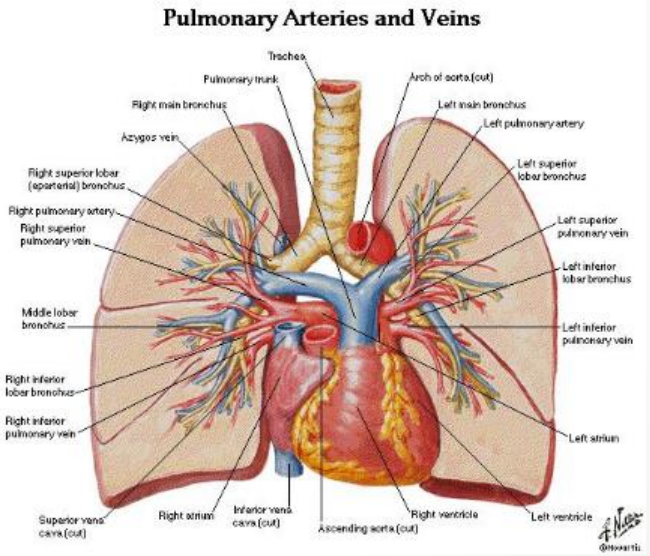
Sepsis: **refers** to a bacterial infection in the bloodstream or body tissues

-broad term

-many types of microscopic disease-causing organisms

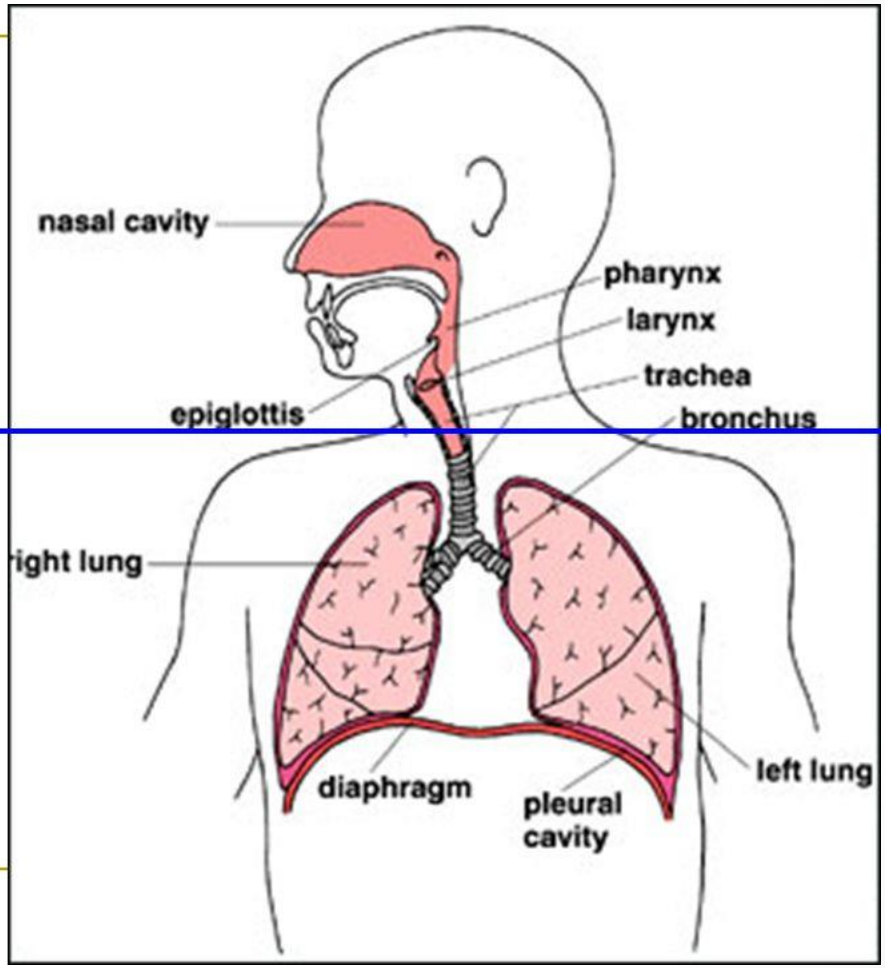
Anatomy




Pulmonary Arteries and Veins
Trachea
Pulmonary trunk
Arch of aorta (cut)
Right main bronchus
Left main bronchus
Left pulmonary artery
Azygos vein
Left superior lobar bronchus
Right superior lobar (eparterial) bronchus
Right pulmonary artery
Right superior pulmonary vein
Left superior pulmonary vein
Left inferior lobar bronchus
Middle lobar bronchus
Left inferior pulmonary vein
Right inferior lobar bronchus
Right inferior pulmonary vein
Left atrium
Superior vena cava (cut)
Right atrium
Inferior vena cava (cut)
Ascending aorta (cut)
Right ventricle
Left ventricle

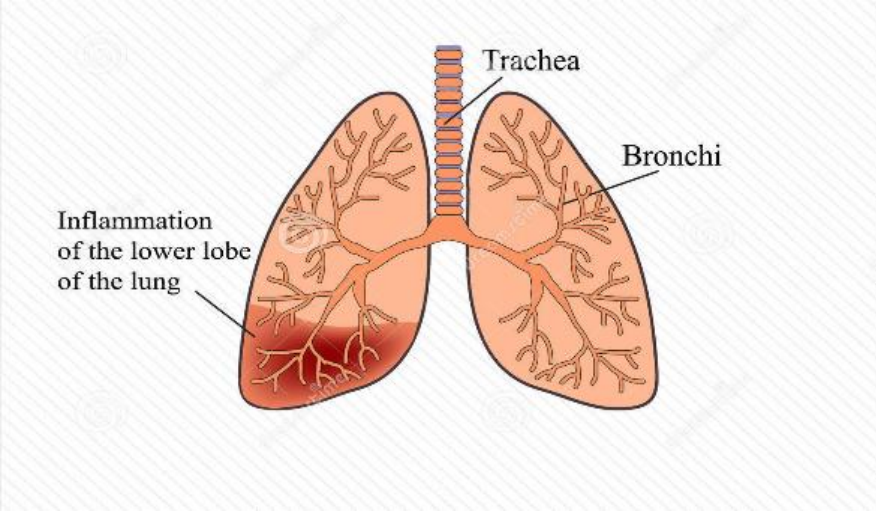
Upper Respiratory Tract

Lower Respiratory Tract

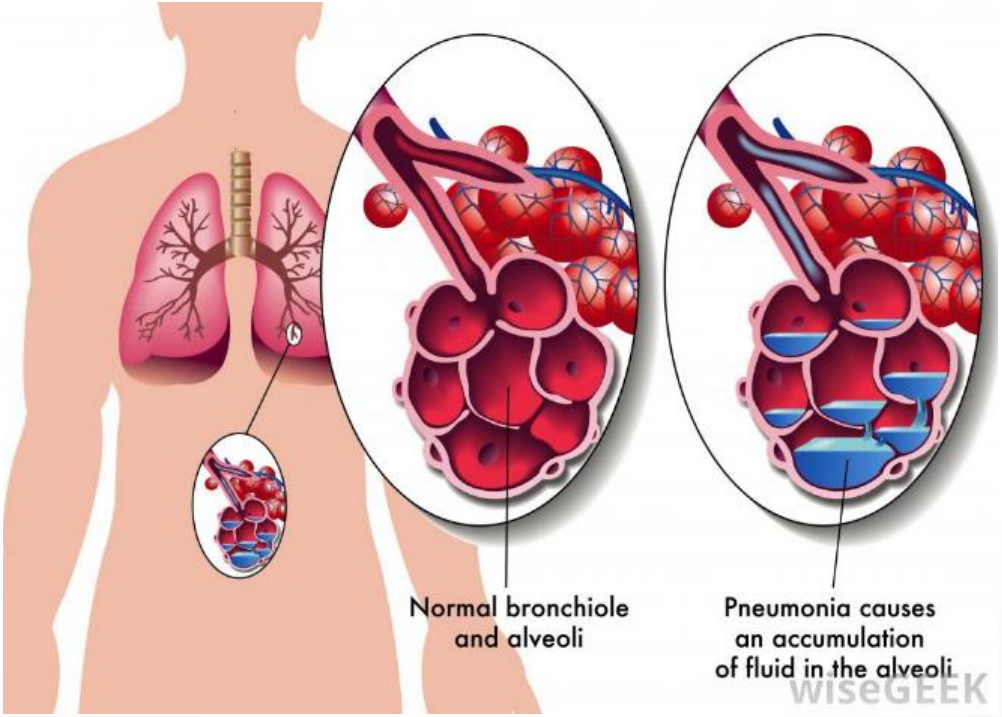


PNEUMONIA

New – moan – ee - a

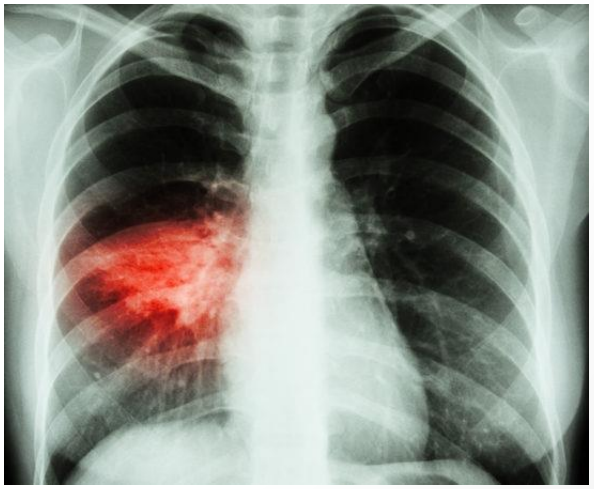


- Any age
- Aveoli (air sacks) get inflamed
- Viral or bacterial



Symptoms

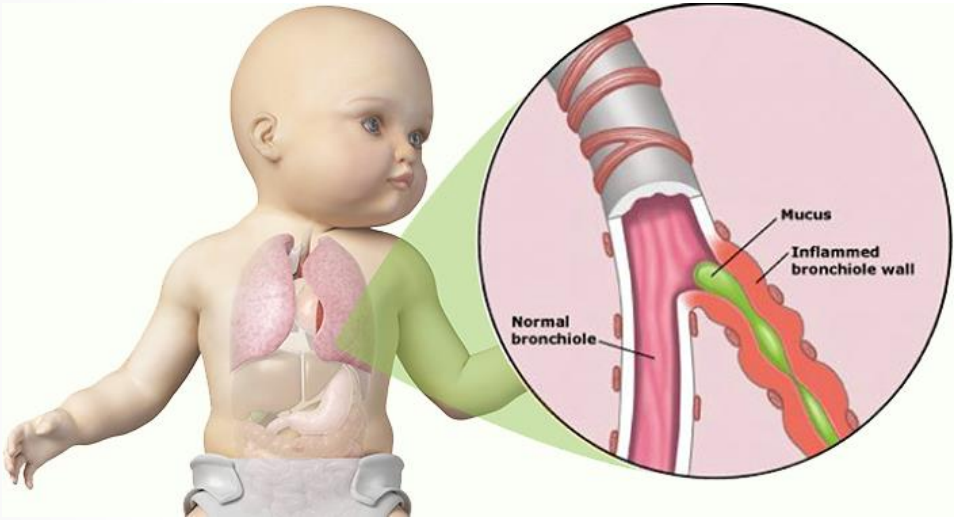
- Increased breathing rate
- Cough
- Fever
- Sputum
- Shortness of breath



BRONCHIOLITIS

Bron – key – o – lite –is

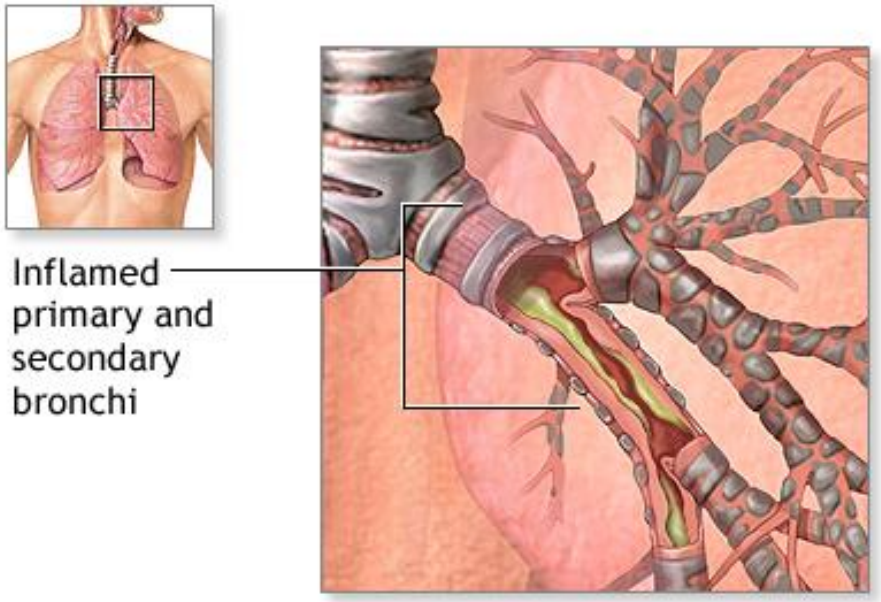
Bronchiolitis



Symptoms

- Wheeze
- Cough
- Fever
- Difficulty breathing
- Difficulty feeding

Acute bronchitis & unspecified acute LRTI



Acute bronchitis usually results from an infection such as a cold or flu

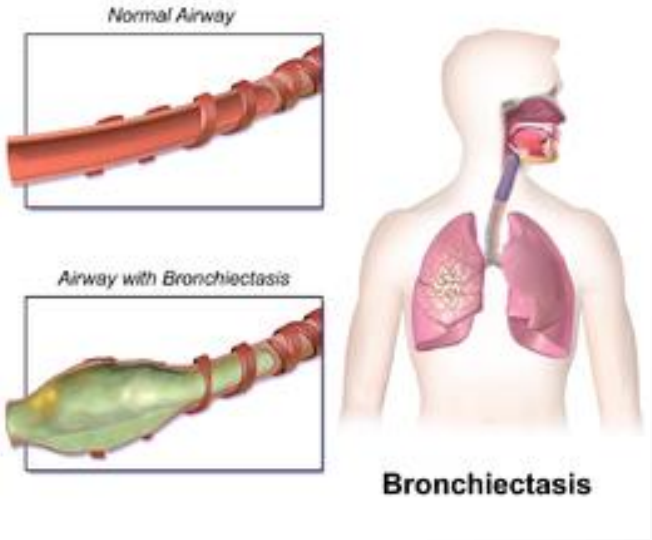
A.D.A.M.

BRONCHIECTASIS

Bron – key – eck –tar – sis

What is it?

- from *chronic* inflammatory secretions and microbes
- *permanent* dilation and distortion of airway walls
- *recurrent* infection



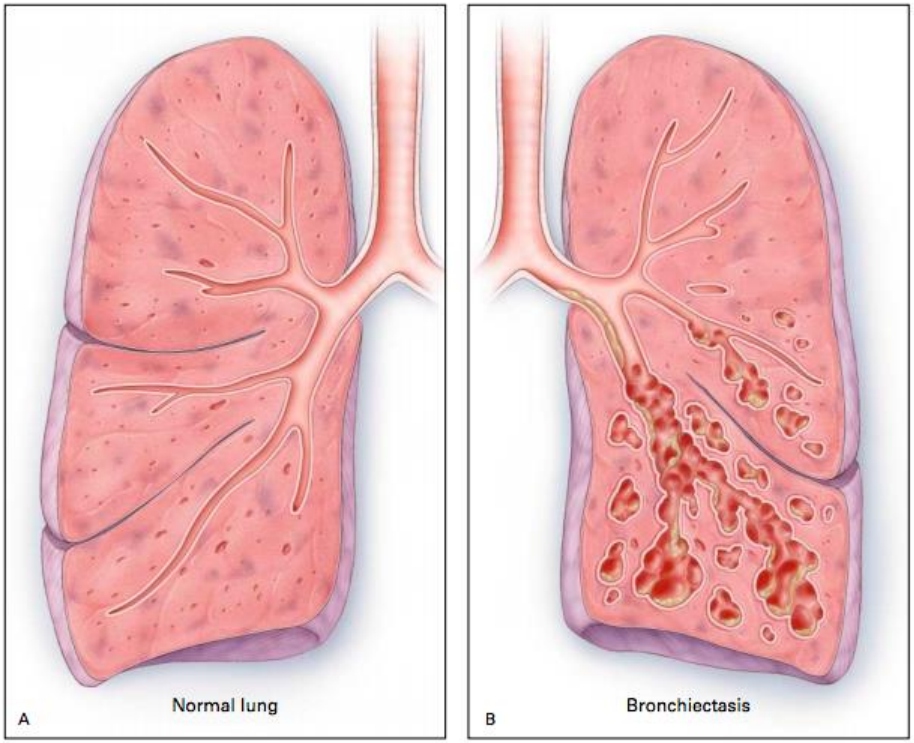


Figure 2. Normal Lung and Airways (Panel A) and the Lung of a Patient with Bronchiectasis (Panel B).
In Panel B, bronchiectasis is primarily in the lower lobe, which is the most common distribution. The saccular dilatations and grape-like clusters with pools of mucus are signs of severe bronchiectasis.

MENINGITIS

Men – in – gi – tis

- **Inflammation of the membrane around your brain and spinal cord**
- **Bacterial or viral or not specified**

MENINGOCOCCAL DISEASE

Men – in – joe –cock – ill

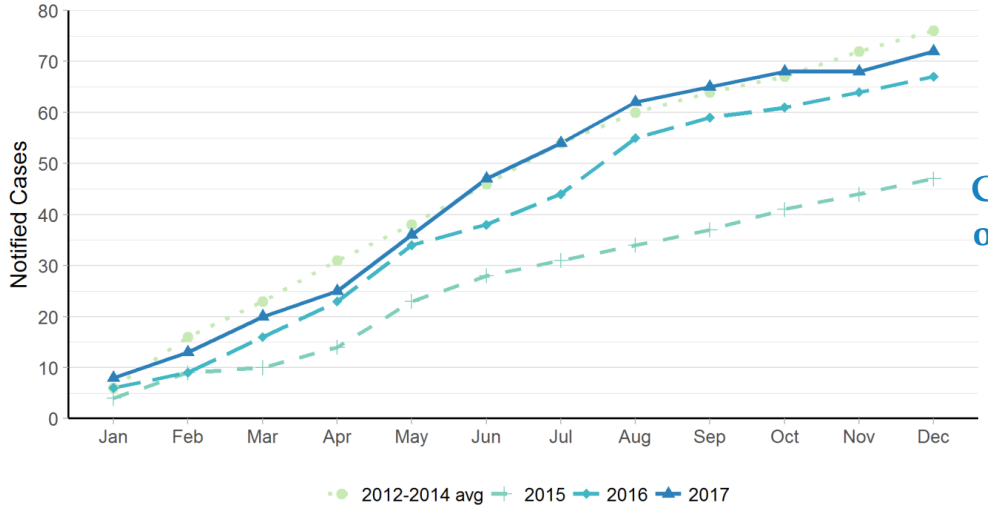
RHEUMATIC FEVER (RhF)

Rue – mat – ick

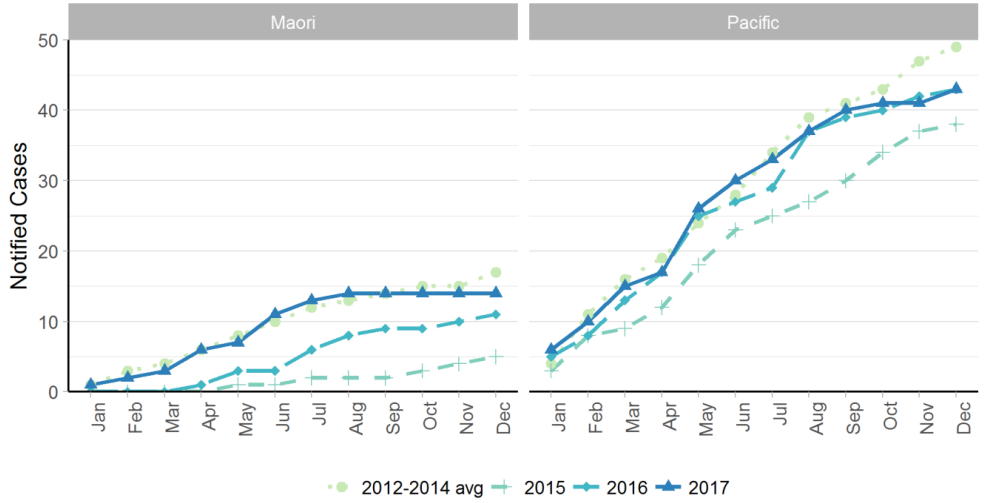
Rheumatic Fever

"An auto-immune consequence of infection of a bacterium of Group A streptococcus (GAS) which causes an acute generalised inflammatory response and an illness that affects certain parts of the body; the heart, joints, brain and skin"

NZ has 3rd world rates for our Maori and Pacific population



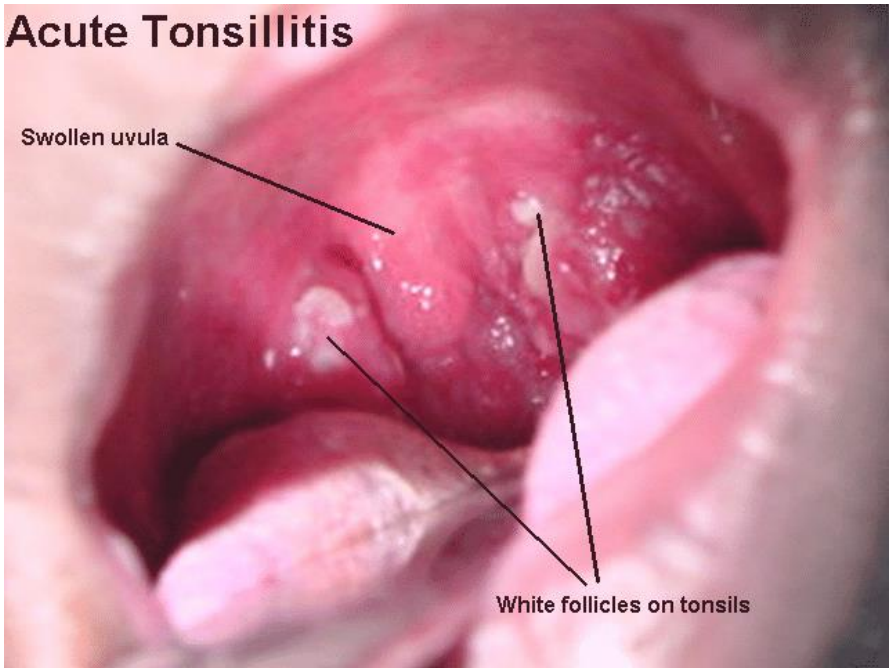
Cumulative monthly count of ARF cases by year, 2012-2017, Auckland region



Cumulative monthly count of ARF cases, Māori and Pacific 0 to 19 year olds by year, 2012-2017, Auckland region

STOP
SORE THROATS
HURTING HEARTS

Preventing Rheumatic Fever



How does rheumatic fever affect the body?

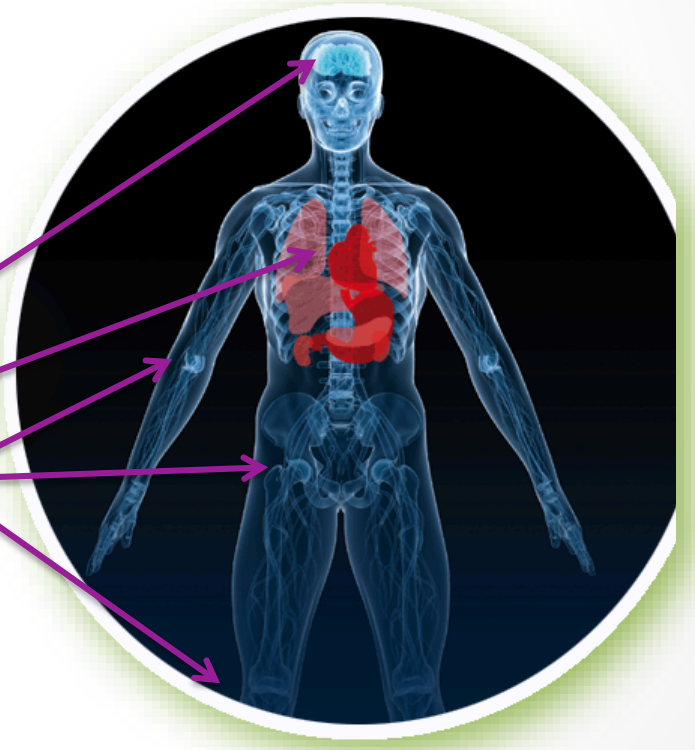
Acute rheumatic fever

affects 3 organ systems

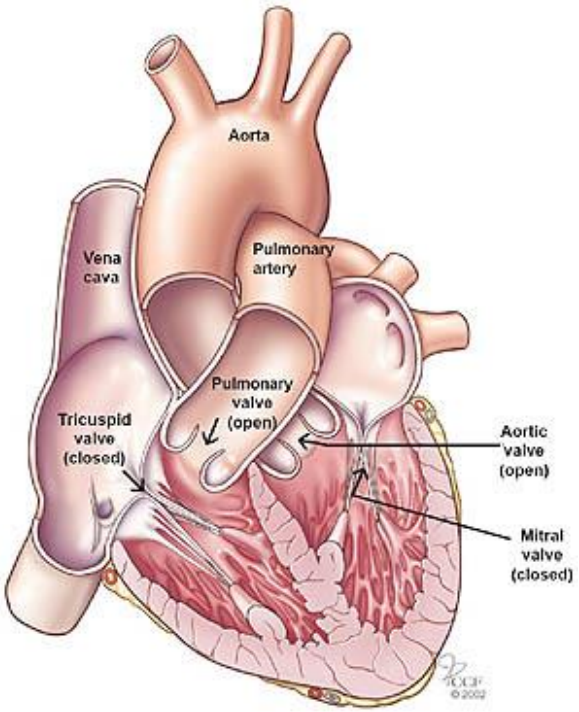
Brain

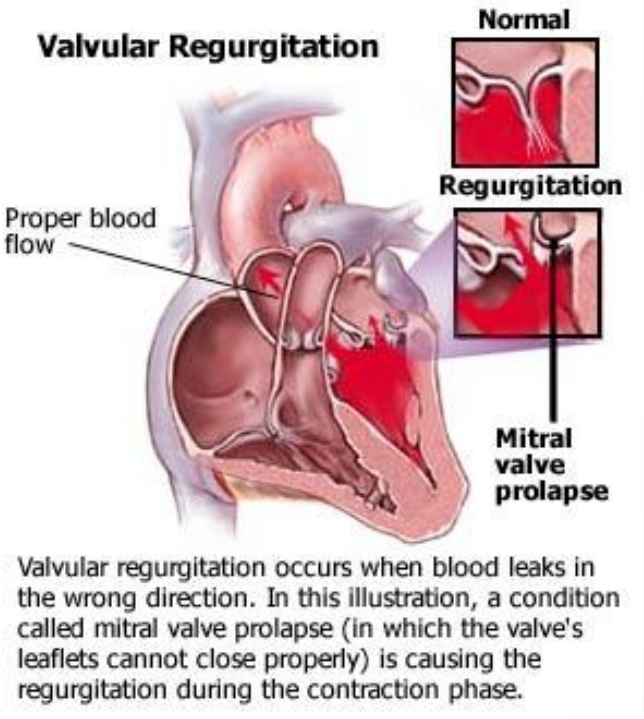
Heart

Joints (arthritis)



Heart Anatomy

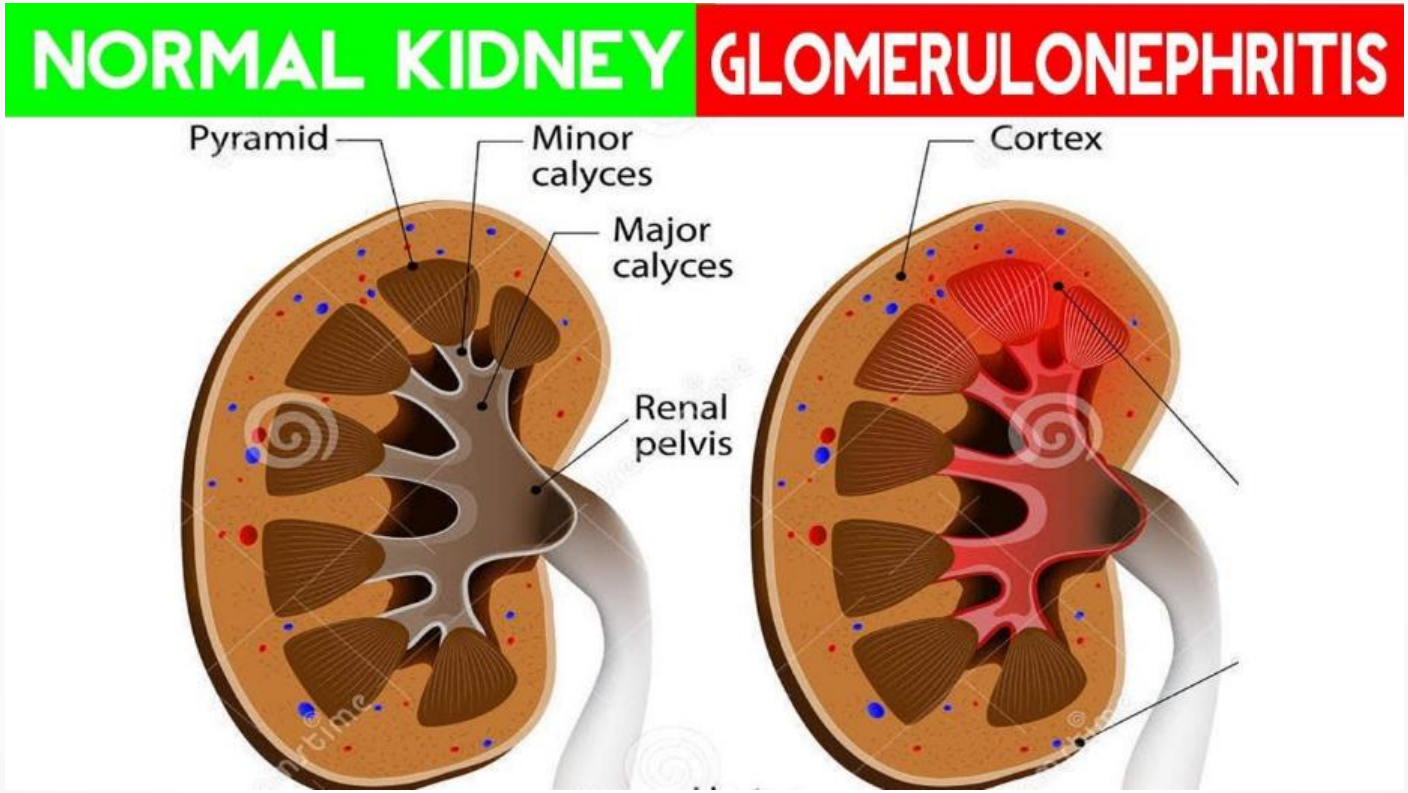




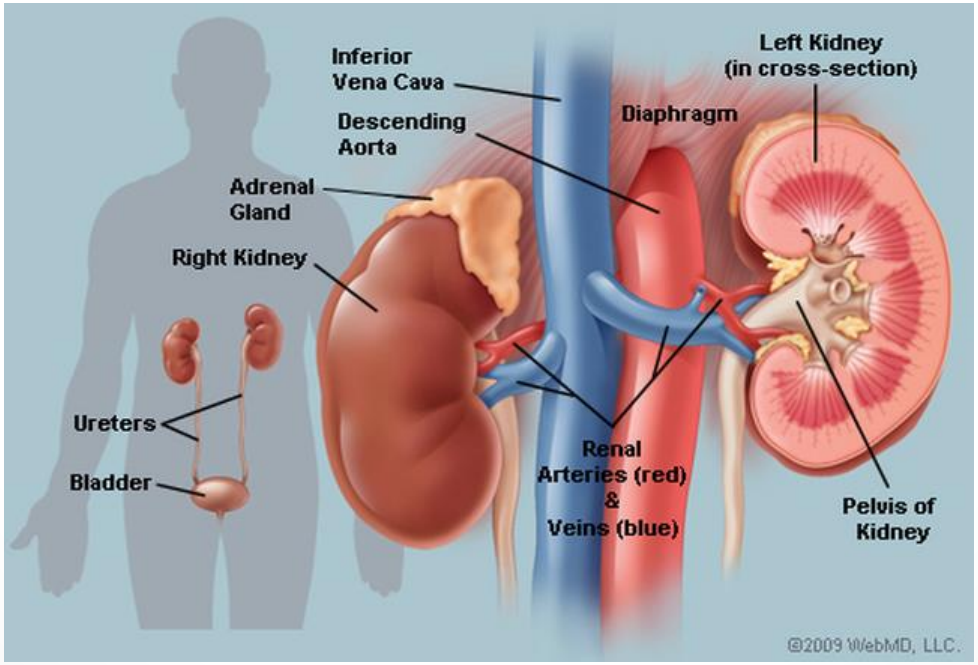
Valvular regurgitation occurs when blood leaks in the wrong direction. In this illustration, a condition called mitral valve prolapse (in which the valve's leaflets cannot close properly) is causing the regurgitation during the contraction phase.

POST STEP GN (glomerulonephritis)

Glom-er-ue – lo-nef – right – is


NORMAL KIDNEY
GLOMERULONEPHRITIS
Pyramid
Minor calyces
Major calyces
Renal pelvis
Cortex

- Glomerulonephritis: group of diseases that injure the part of the kidney that filters blood (called glomeruli)
- Injured kidney cannot get rid of wastes and extra fluid in the body

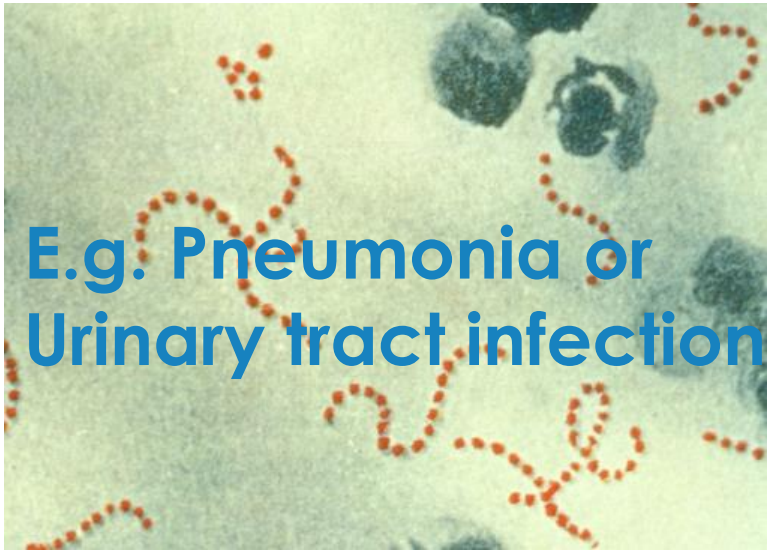


GAS SEPSIS

Gaz – sep –sis

or Group A strep

Infection (anywhere) caused by group A streptococcus



Why are these disease associated with cold, damp and crowded living conditions?

- Many studies report that damp housing conditions are associated with respiratory symptoms
- Less is known about mechanisms
- But we know lung function in asthmatics is dramatically decreased below 12C
- And that this group of vulnerable children die at 10x the rate of the average population
- And get readmitted to hospital 3-4x more often
- And that these children live in poor housing

And we know that improving the thermal envelope will allow a house to be heated more effectively

A **damp dwelling** is **more difficult to heat** and a poorly heated dwelling more susceptible to damp

Cold air has a higher relative humidity (**damper**), increasing the risk of condensation indoors and providing a **more favourable** environment for the growth of moulds and micro-organisms"

Overcrowded housing is more likely to be **damp**, especially if poorly aired or shut in bad weather

Evidence that improving housing works

- Counties study (published in 2009) showed "reduced acute hospitalisation with the healthy housing programme"
- Multple studies from Otago Clinical School in Wellington
- 20 years of research into how housing affects health
  - Housing, insulation & health study
  - Housing heating & health study
  - Housing injury prevention study
  - Warm homes for elderly New Zealanders
  - Warm Up New Zealand evaluation
  - NEST study
  - Social housing outcome study
  - Housing outcome and mould evaluation
  - HEART rheumatic fever study
  - …and more
- Bronchiectasis audit 2018

Staff noted that the bronchiectasis children were in less – ward and school staff

Bronchiectasis

- Nurse Specialist -AWHI eligibility assessment with 130/171 families in Auckland
- 40 referred to AWHI
- Complete data on 24 cases

Health utilisation

- *All* hospital **admissions** were counted 18 months prior and 18 months after the stated day of moving or having the home improvements completed

- *All* **antibiotic** use was counted 18 months prior and 18 months after the stated day of moving or having the home improvements completed.

Decrease in admissions
Decrease in course of antibiotics prescribed

	Admissions 18m before *No. & average*	Admissions 18m after		Antibiotics 18m before	Antibiotics 18m after
New Home (10 children)	(15) 1.5	(9) 0.9		(49) 4.9	(31) 3.1
Work done (13 children)	(28) 2.1	(15) 1.15		(75) 5.8	(41) 3.1
Total (23 children)	42	24		124	72


(Nurses note)
"M has been very good, attending school now. Our warm home has made a difference"
"From a chest perspective M has been fantastic. No significant chest infection or hospital admission" (Drs clinic notes)
Mum said "G has been much better since their house got insulated"