



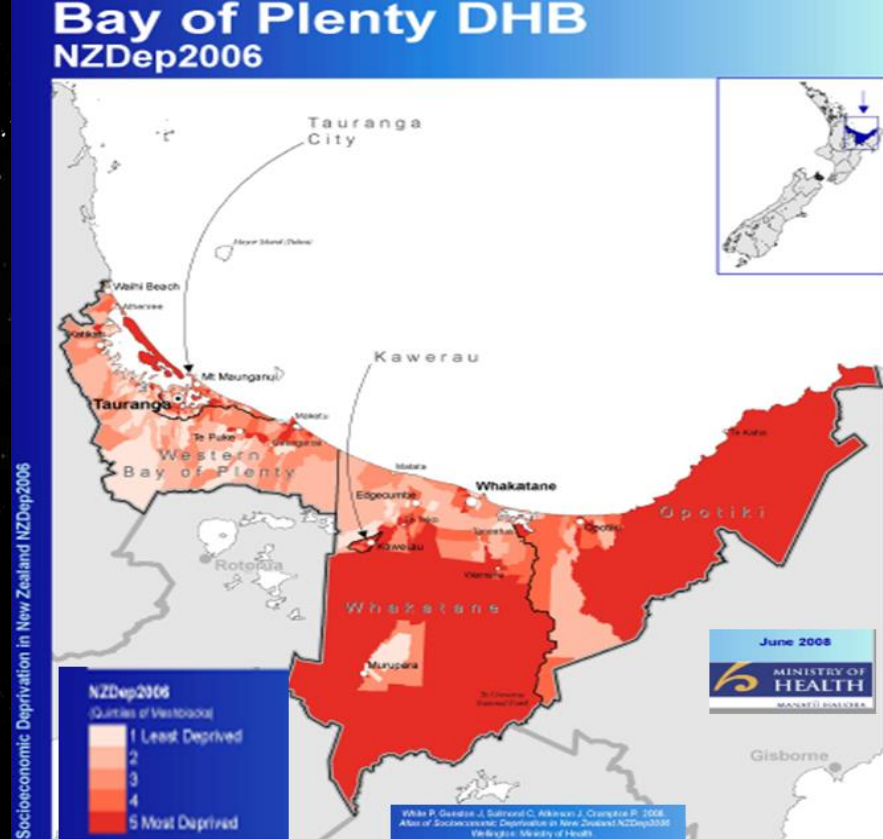
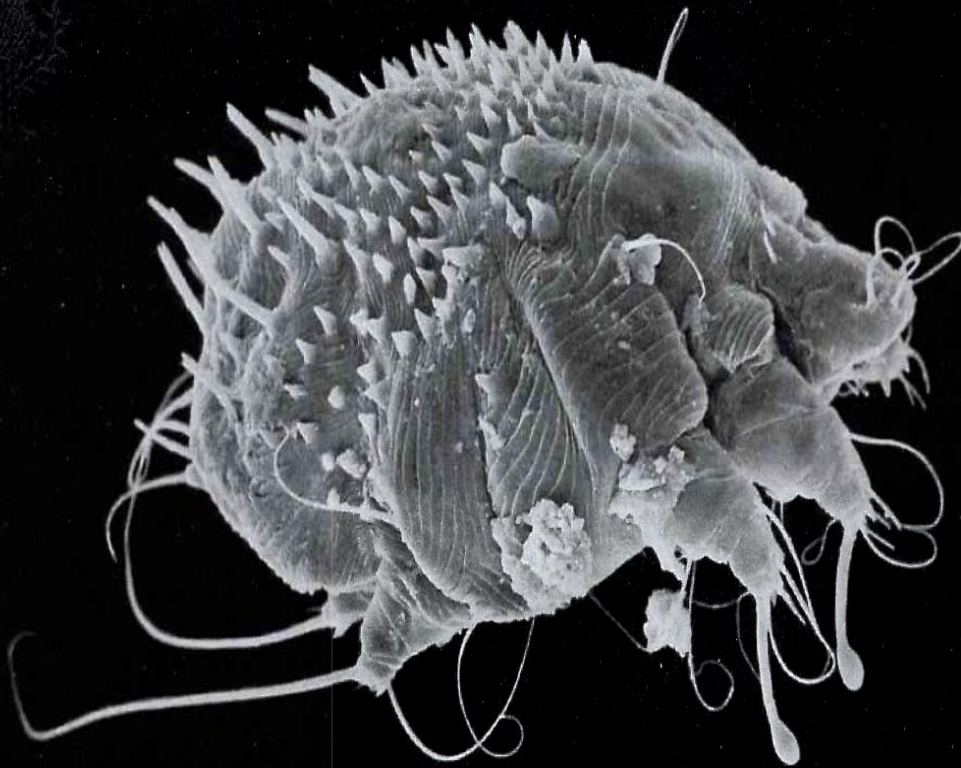
SYMPOSIUM

Friday 13th September 2019
School of Population Health, Auckland

IMPROVING SCABIES TREATMENT: A PATH TO HEALTH EQUITY IN NEW ZEALAND?

**Skin Sepsis & Scabies in the Bay; If & how associated
with Bay of Plenty, Acute Rheumatic Fever!**

Acknowledge data from; James Scarfe, Toi Te Ora, Public Health Service Analyst,
Mary White Analyst, Marianne Toms, Business Intelligence Kip Mouldey HO,
Presentation by John Malcolm, Paediatrician BOPDHB



Skin Sepsis & Scabies in the Bay; If & how associated with Bay of Plenty, Acute Rheumatic Fever!

Acknowledge data from; James Scarfe, Toi Te Ora, Public Health Service Analyst,
Mary White Analyst, Marianne Toms, Business Intelligence Kip Mouldey HO,
Presentation by John Malcolm, Paediatrician BOPDHB

Talk Plan

- Background NZ ARF, skin sepsis, and scabies
- Bay of Plenty findings Scabies, skin sepsis and ARF
- BOP children sharing Scabies and ARF
- Bed-fellows or to blame ?

Conclusions.

- “And”, address causes, complications,& comorbidities
- Putting the tivaevae together
- Mea alofa , ‘ai for our to’onai
- Ko e Kai ia ‘a e Tonga. NZ enriched by Tongan wisdom
- Ma tou raurau ma taku raurau, ka kii nga manuhiri

Patai Korero; Questions and Discussion

Background Aotearoa NZ;
ARF, skin sepsis & scabies.

BENCHMARK: Pacific & Maori Climbing ARF rates, 1993-2009

Milne & Lennon JPCH 2012

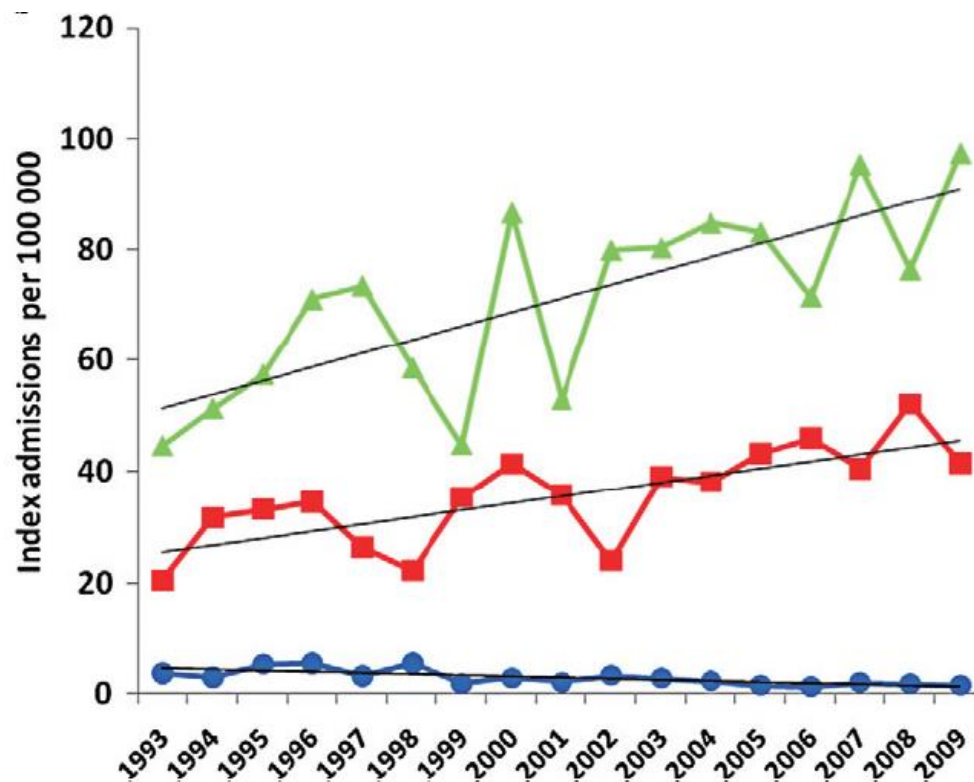


Fig. 1 Annual index cases and incidence rates for acute rheumatic fever in 1993–2009 for children 5 to 14 years of age. Māori (—■—); Pacific (—▲—); non-Māori/Pacific (—●—).

Mismatch health services & community expectations for ARF

Anneka Anderson, Briar Peat, Janine Ryland, Malakai Ofanoa , Hannah Burgess et al Aust NZ J Public Health 2019

- **Complexities** of M & PI lives
- **Focus family needs not service needs**
- **Advocate Quality affordable housing**
- Community nursing & **culturally appropriate workers**
- **Cultural training** health practitioners
- **Interpersonal care** mitigate racism
- **Adolescence** ;transition to adult services
- **Health literacy** , visual info/ jargon free/ English Maori PI languages
- **Cross agency support**
- Maori and Pacific **workforce development**
- **Nationally Coordinated patient management system**

Primordial prevention

- Need to tackle the root causes – crowding, poor housing, fuel poverty
- 45,000 children under 15yrs live in severely crowded houses in NZ
- 28% of Māori, 50% of Pacific, 22% of Indian and 5% of Pakehā children

Housing Solutions for crowded Pacific & Maori?

Reduced acute hospitalisation with the healthy housing programme J Epi CH 2009,65,7,588

Gary Jackson, ,Simon Thornley, Jude Woolston, Dean Papa, Alan Bernacchi, Tracey Moore

- Healthy homes good evidence
- Insulation; Kainga ora Howden-Chapman
- Heating Kainga ora Howden-Chapman
- Retrofits; Coleman
- Warrant of Fitness; Greens vs Collins Cars
- Kiwibuild (for whom); Twyford
- Social housing /Rentals like Europe post WW2; Eaquib
- Shared equity; Fletchers

Towards an integrative ARF approach

Family, skin, throat, heart health ;Whanau,kiri, korokoro, manawa ora

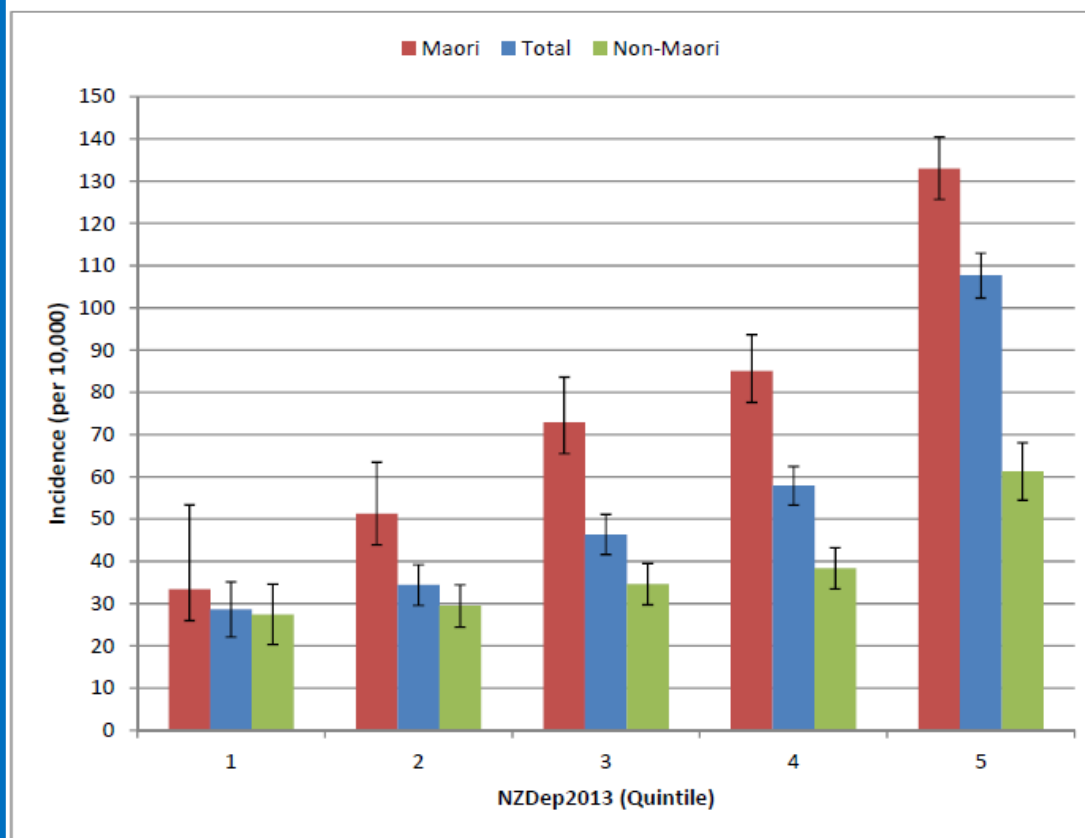
<<Rheumatic fever is an indicator of child health, (Lennon NZMJ Editorial 2017) a visible and significant marker of inequality;

- **While awaiting child centred society better housing and fair wage for all; Treat pharyngitis, role skin sepsis 10% of Rx.**
- GPs 1997“no role”;new paradigms school clinics,whanau ora;
- Auckland rate flat for Maori after previously rising.
- 2/3 rolls Pasifika in 50% high risk schools with no clinic
- **Skin is a likely reservoir for GAS**
- **Ongoing control of GAS prevalence a marker for ARF.**
- At ARF risk one third of NZ children mainly Maori & Pasifika
- Goal **pathways to less poverty and inequity; OECD 2011>>**

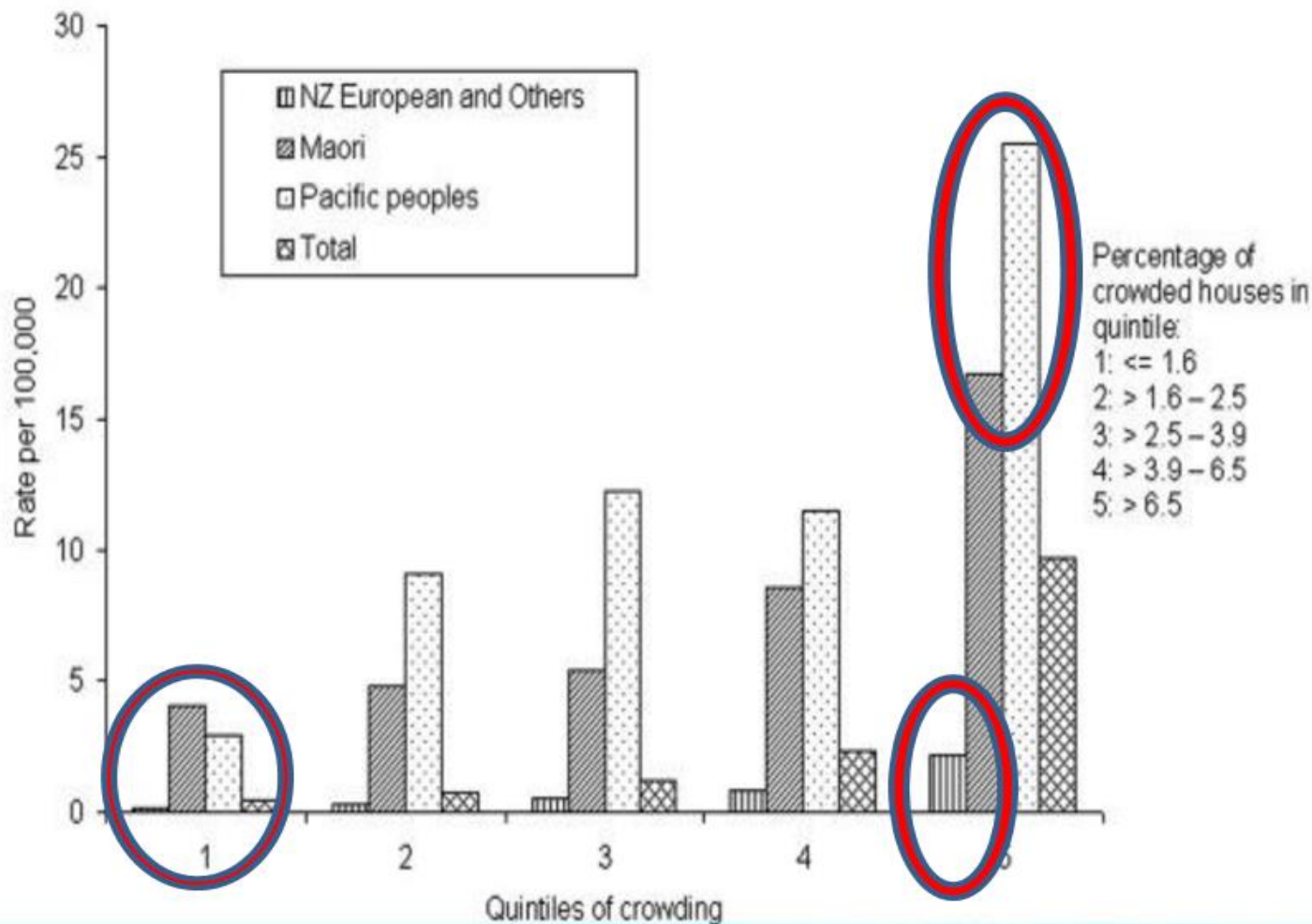
Deprivation, Ethnicity;NZ Skin sepsis admissions 0-14yr

A Lim, R Rumball-Smith, R Jones, I Kawachi ;Epidemiol. Infect 2016

Figure 9: Average incidence of serious skin infection by socioeconomic deprivation 2011-2016 in Toi Te Ora



Effect of Crowding on ARF, by Ethnicity



Acute Rheumatic Fever; Pathogenesis

J Carapetis M McDonald N Wilson Lancet 2005

Hypothesis; If ARF is mediated by scabies, preschool Strep A might prime the immune response

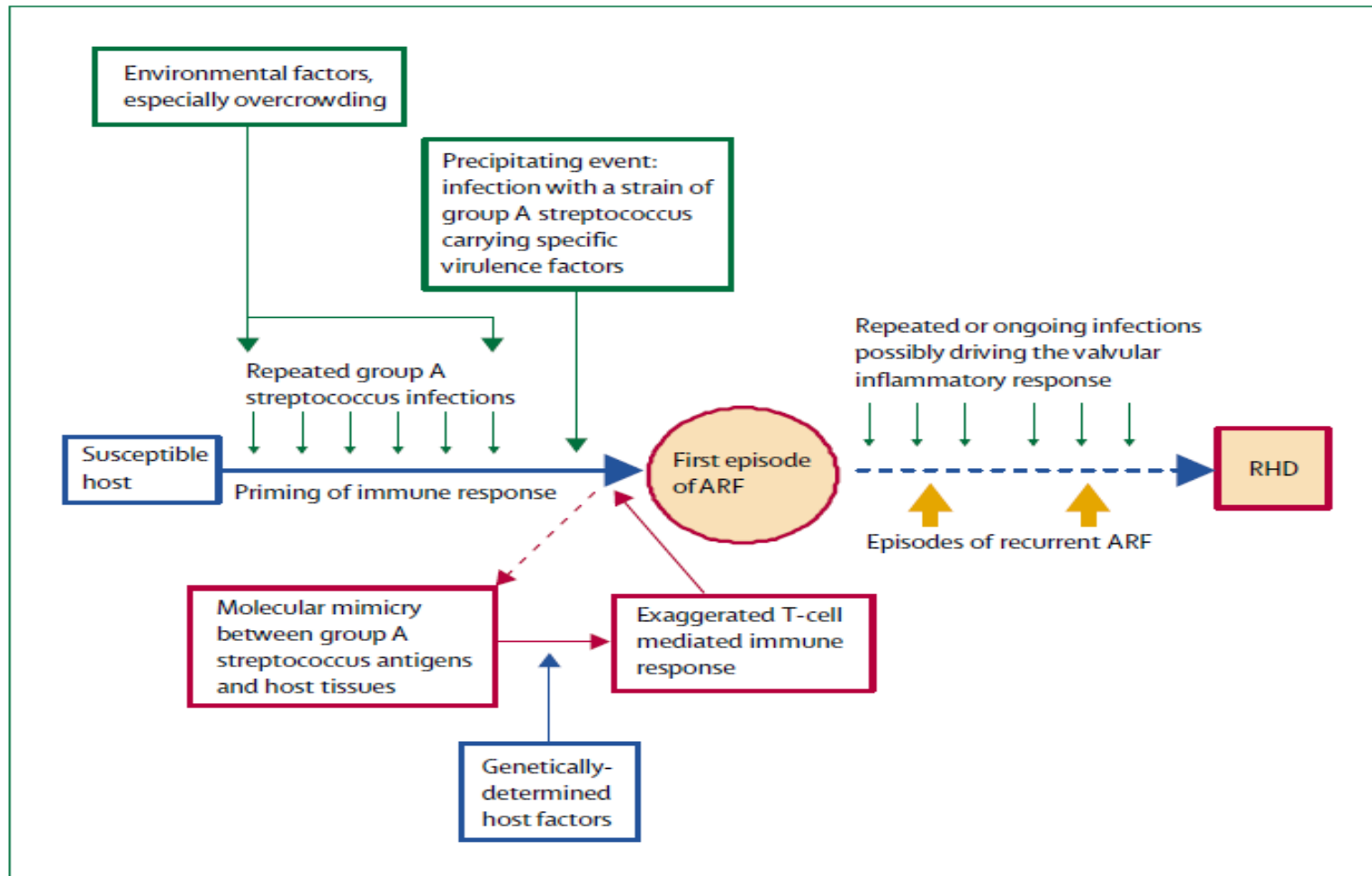


Figure 2: Pathogenetic pathway for ARF and RHD

Selected works heralding Public Health Kiri Ora, Healthy Skin programmes

- O'Sullivan, C. E. & Baker, M. G. (2010). **Proposed epidemiological case definition for serious skin infection in children**. Journal Paediatrics & Child health, 46(4), 176-183.
- O'Sullivan, C. E., Baker, M. G., & Zhang, J. (2011). Increasing hospitalizations for serious skin infections in NZ children, 1990–2007. Epidemiology & Infection, 139(11), 1794-1804.
- Anderson, P, King, J, Moss, M, Light, P, McKee, T, Farrell, E, Lennon, D. (2016). Nurse-led **school-based clinics for rheumatic fever prevention and skin infection management**: evaluation of **Mana Kidz** programme in Counties Manukau. NZ Med J, 129(1428), 36-45.
- Lim, A., Rumball-Smith, J., Jones, R., & Kawachi, I. (2017). The **rise and fall of hospitalizations for skin infections in NZ, 2004–2014**: trends by ethnicity and socioeconomic deprivation. Epidemiology & Infection, 145(4), 678-684.
- Toi Te Ora Public Health. (2018). **Childhood admissions to hospital for serious skin infections in the Toi Te Ora Public Health area** (Rep.). New Zealand, Tauranga: Toi Te Ora Public Health. Retrieved June 26, 2019, from <https://www.toiteora.govt.nz/vdb/document/2089>

Sentinel NZ Scabies to ARF challenge

Simon Thornley & BOP initial response

- ARPH data-linkage; 10 scabies admissions in 435 ARF/RHD
- Hazard Ratio for scabies and ARF/ RHD 3.43(1.85-6.37)
- **But how big or little is the attributable risk ?**
- Bigger if childhood scabies doesn't itch/is missed
- Bigger if scabies is treated in community before ARF admission

BOP view

- **Scabies is Important for own sake and co-morbidity roles;**
A /secondary sepsis; contact sharing Strep A, Staph, & Scabies
B/ Strep load shared; less skin sepsis, less throat GAS (ASID2015)
C/ Less GAS throat prevalence parallels less ARF (ASID2015)
- **Driving towards health equity** for all, Pacific, Maori;
Address ARF co-morbidities whether causal or not.

Sentinel Auckland Scabies ARF linkage

Simon Thornley

Scabies is strongly associated with acute rheumatic fever in a cohort study of Auckland children.

A Pacific boy, SES challenged, 4.5% risk ARF by 16yr
Same boy, with scabies, cumulative incidence 14%

Thornley S, Marshall R, Jarrett P, Sundborn G,
Reynolds E, & Schofield G.

Journal of Paediatrics and Child health (2018).

Show of hands; audience survey.

- Who has not had scabies?
- Who has had scabies ?
- Leave you hand up please, if it wasn't itchy!

Q Is Scabies very itchy? A; Usually acquired via skin contact occasionally via bedding



[Home](#) [Topics A-Z](#) [Images](#) [Browse](#) [Glossary](#) [CME](#)

[Home](#) » [Topics A-Z](#) » [Scabies](#)



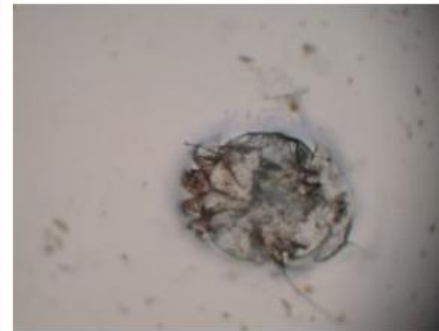
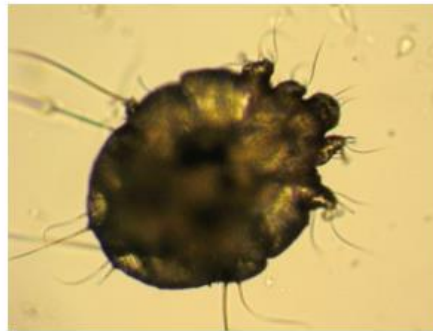
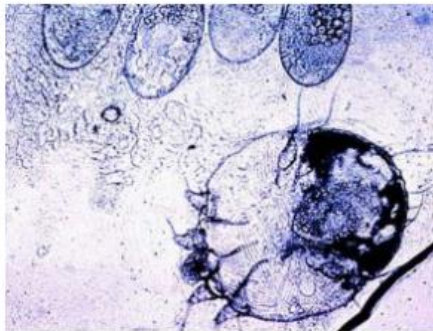
Scabies

Author: Hon A/Prof Amanda Oakley, Dermatologist, Hamilton, New Zealand, 1997. Updated September 2015.

What is scabies?

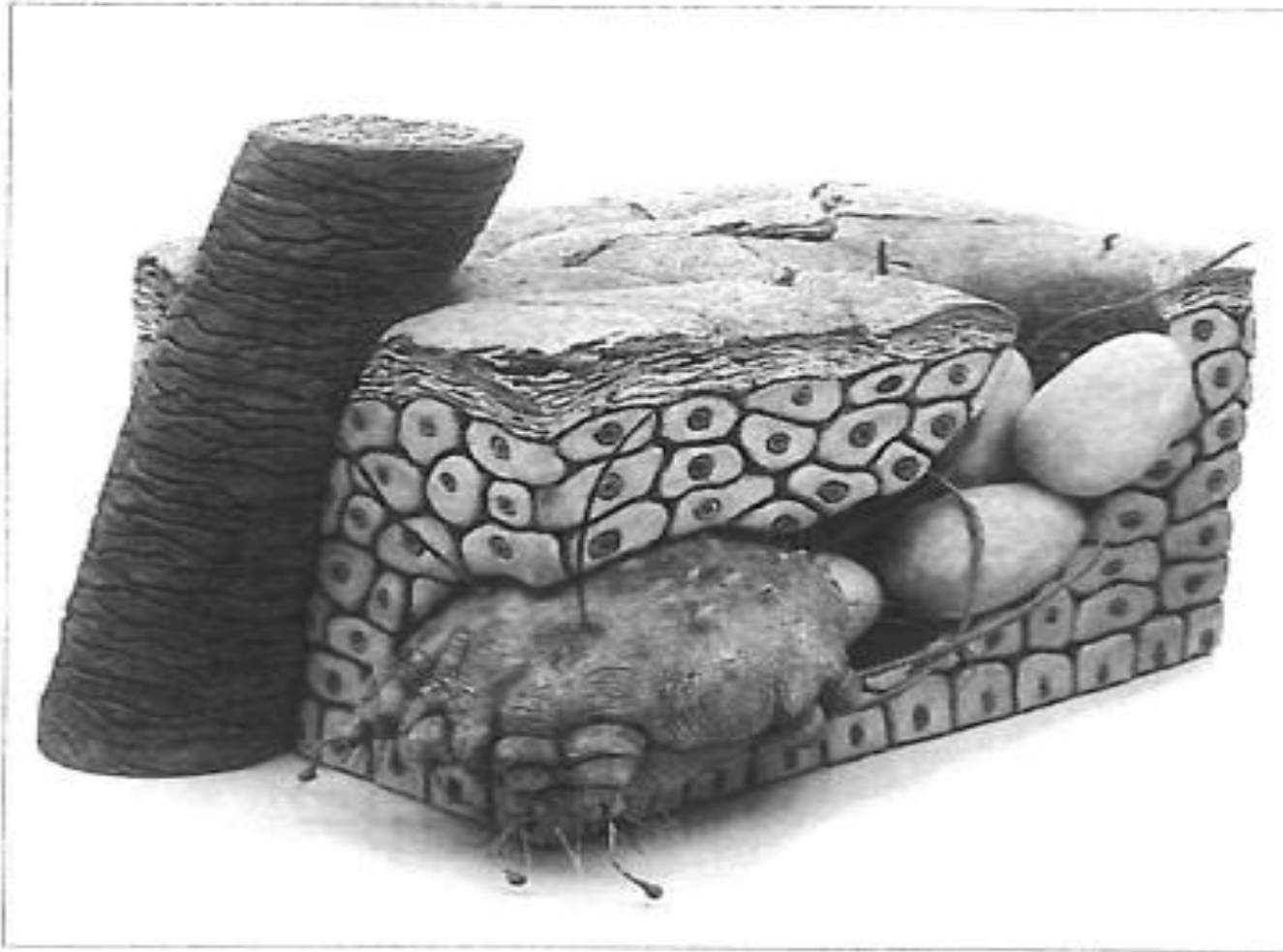
Scabies is a very itchy rash caused by a parasitic mite that burrows in the skin surface. The human scabies mite's scientific name is *Sarcoptes scabiei* var. *hominis*.

Sarcoptes scabiei



Scabies burrowing through the skin!

B Harris LOGIC June 2013



*Illustration of a scabie under the skin laying eggs in its burrow.
Image: www.scabiehelp.com*

Where do we see signs of scabies?

Nga tohu o tenei mauui o te kiri [www DermNet](http://www.DermNet)



- Itch onset hours to 4-6 weeks
- Night, mild 10-20 mites, web spaces warm places.
- Crusted No itch immune compromised 10 million mites prisons nursing homes; Eosin, IgE, G, CD8
- **Hypersensitivity** reaction onset weeks later; lasts due mite, scratch, Rx emollient cream & steroid
- Red papules, dermatitis, hives, blisters pustules
- Wash with water removes most mites, live 72hrs
- Washing Temperature no effect on numbers killed
- Sunlight kills, or sealed bag 4/7

Consensus criteria Delphi expert study

Engleman D, Fuller LC, Steer AC, Plos Neg trop dis doi.org/10.1371;2018

International Alliance for Control of Scabies IACS 2018

A: *Confirmed* scabies is diagnosed if there is at least one of:

A1: Mites, eggs or faeces on light microscopy of skin samples

A2: Mites, eggs or faeces visualized on an individual using a high-powered imaging device

A3: Mite visualised on an individual using dermoscopy.

96% agreement

B: *Clinical* scabies is diagnosed if there is at least one of:

B1: Scabies burrows

B2: Typical lesions affecting male genitalia

B3: Typical lesions in a typical distribution and two history features.

93% agreement

C: *Suspected* scabies is diagnosed if there is one of:

C1: Typical lesions in a typical distribution and one history feature

C2: Atypical lesions or atypical distribution and two history features.

100% agreement

History features are:

H1: Itch

H2: Close contact with an individual who has an itch or typical lesions in a typical distribution.

Notes

1. These criteria should be used in conjunction with the full explanatory notes and definitions (in preparation by IACS).
2. Diagnosis can be made at one of the three levels (A, B or C).
3. A diagnosis of clinical and suspected scabies should only be made if other differential diagnoses (such as eczema and impetigo) are considered less likely than scabies.

Paediatricians' clinical diagnosis mainly **grade “B3”**!

Delphi Plos; International Alliance for Control of Scabies IACS 2018

A: *Confirmed* scabies is diagnosed if there is at least one of:

A1: Mites, eggs or faeces on light microscopy of skin samples

A2: Mites, eggs or faeces visualized on an individual using a high-powered imaging device

A3: Mite visualised on an individual using dermoscopy.

B: *Clinical* scabies is diagnosed if there is at least one of:

B1: Scabies burrows

B2: Typical lesions affecting male genitalia

B3: Typical lesions in a typical distribution and two history features.

C: *Suspected* scabies is diagnosed if there is one of:

C1: Typical lesions in a typical distribution and one history feature

C2: Atypical lesions or atypical distribution and two history features.

History features are:

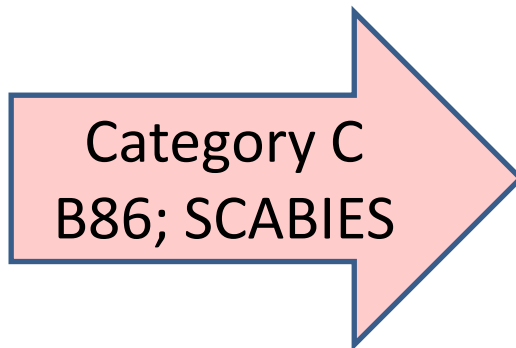
H1: Itch

H2: Close contact with an individual who has an itch or typical lesions in a typical distribution.

Notes

1. These criteria should be used in conjunction with the full explanatory notes and definitions (in preparation by IACS).
2. Diagnosis can be made at one of the three levels (A, B or C).
3. A diagnosis of clinical and suspected scabies should only be made if other differential diagnoses (such as eczema and impetigo) are considered less likely than scabies.

O'Sullivan Baker 2010 Improved reports serious skin infection;
 Primary bacterial skin infections A; Typical B; Atypical sites
 C; Secondary to other bugs, excema D; Trauma



Category A ICD-10 codes (serious skin infection of typical sites)	
L01.0, L01.1	impetigo
L02.0–L02.9	cutaneous abscess, furuncle and carbuncle
L03.01–L03.9	cellulitis
L0.40–L04.9	acute lymphadenitis
L05.0	pilonidal cyst with abscess
L08.0	pyoderma
L08.1, L08.8, L08.9	other infections of skin and subcutaneous tissue
Category B ICD-10 codes (serious skin infections of atypical anatomical sites)	
A46	erysipelas
H00.0	hordeolum/cellulitis/abscess eyelid
H60.0–H60.3, H62.0, H62.4	abscess/cellulitis external ear and infective otitis externa
J34.0	abscess/cellulitis nose
K61.0	anal abscess/cellulitis (excludes rectal, ischiorectal or intersphincteric regions)
H05.0	acute inflammation/cellulitis/abscess of orbit
N48.2, N492, N49.9	other inflammatory disorders of penis, scrotum and unspecified male genital organ (excludes deeper tissues)
N76.4	abscess/cellulitis of vulva
Category C ICD-10 codes (serious skin infections secondary to primary skin disease)	
B01.8	varicella with other complications
B86	scabies
L30.8, L30.9, L30.3 0	dermatitis unspecified and other specified (eczema) and infective eczema
Category D ICD-10 codes (serious skin infections secondary to external trauma)	
S10.13, S10.83, S10.93, S20.13, S20.33, S20.43, S20.83, S30.83, S30.93, S40.83, S50.83, S60.83, S70.83, S80.83, S90.83, T00.9, T09.03, T11.08, T13.03, T14.03, T14.03, T63.3, T63.4	insect/spider bites
T79.3	post-traumatic wound infection not elsewhere classified
T89.01, T89.02	open wound infection with foreign body ± infection and open wound with infection

Bay of Plenty Public Health service

Toi te Ora
2018

Skin Infection Diagnosis	2011 - 2013	2014 - 2016	Total 2011 - 2016
Category A - Skin infections of typical sites	875	741	1616
Impetigo	85	77	162
Cutaneous abscess, furuncle and carbuncle	258	213	471
Cellulitis	442	356	798
Acute lymphadenitis	35	40	75
Pilonidal cyst with abscess	7	4	11
Pyoderma	3	8	11
Other infections of skin and subcutaneous tissue	45	43	88
Category B - Skin infections of atypical sites	81	65	146
Erysipelas	2	1	3
Hordeolum/cellulitis/abscess eyelid	18	14	32
Abscess/cellulitis external ear and infective otitis externa	16	12	28
Abscess/cellulitis nose	5	3	8
Anal abscess/cellulitis (excludes rectal, ischiorectal or intersphincteric regions)	12	16	28
Acute inflammation/cellulitis/abscess of orbit	4	6	10
Other inflammatory disorders of penis, scrotum and unspecified male genital organ (excludes deeper tissues)	5	5	10
Abscess/cellulitis of vulva	19	8	27
Category C - Skin infections secondary to primary disease of the skin	419	368	787
Varicella with other complications	23	7	30
Scabies	85	34	119
Dermatitis unspecified and other specified (eczema) and infective eczema	311	327	638
Category D - Skin infections secondary to trauma	133	129	262
Insect/spider bites	24	27	51
Post-traumatic wound infection not elsewhere classified	23	18	41
Open wound infection with foreign body (+ infection) and open wound with infection	86	84	170

Supporting Parents' response to increasing severity of girls skin sepsis; Health Promotion

HEALTHY SKIN

Clean hands often * Cut fingernails *

Cover sores and cuts with plaster * Keep skin clean



Well child

- Good food and nutrition is important for healthy skin
- Keep skin clean
- Wear clean clothes
- Keep house clean inside and out
- Wash sheets and towels regularly
- Treat animals for fleas regularly
- Wash hands with soap and water often



Child with minor cut, sore or other skin condition

- Wash hands with soap and water often
- Clean and cover cuts and sores with plasters
- Cut and file fingernails
- Care for other skin conditions e.g. eczema - use your creams and lotions
- Use own sheets and towels
- If you need help, ask the nurse or other health worker



Child with minor skin infection

- See the doctor or nurse today if the sore or redness has any of the following:
- is the size of a 10c piece or bigger
 - has pus
 - is getting bigger
 - has red marks
 - is not getting better within 2 days
 - Is near the eye



Child with skin infection that is getting worse

- See the doctor and get a prescription for medicine (antibiotics)
- Get medicine from the pharmacy straight away
- Take the full course of medicines (antibiotics) as prescribed
- Don't share medicines with others
- Supervise children taking medicine
- Go back to doctor if not getting better



Child with serious skin infection

- Your child will be sore and very sick
 - Will need to go to hospital
 - May need surgery
- Skin infections, if left untreated, can lead to serious and life-threatening illness.

HEALTHLINE 0800 611 116

Acknowledgement: Regional Public Health Lower Hutt

For skin infection information and resources visit
www.ttophs.govt.nz/healthyskin

Kōi Te Ora
Public Health Service
BAY OF PLENTY DISTRICT HEALTH BOARD
Whānau Ora | Te Ora Māori | Te Ora Kōwhiri

Tautoko nga matua, nga kaiako hoki; he panui

KIRI ORA

Kia kaha te horoi ringa * Tapahia ngā maikuku *

Uhia ngā mamae me ngā motunga ki te tākai * Kia mā tonu atu te kiri



He tamaiti ora

- He mea nui te kai ora e ora ai te kiri
- Kia mā tonu te kiri
- Mauria ngā kākahu mā
- Kia mā tonu te whare rāroto, rāwaho hoki
- Kia kaha te horoi i ngā hīti me ngā tāora
- Kia kaha te patu i ngā puruhi a ngā kararehe
- Kia kaha te horoi ringa ki te hopi me te wai



He tamaiti e pāngia ana ki te motunga iti, te mamae, te waihakihaki rānei

- Kia kaha te horoi ringa ki te hopi me te wai
- Uhia ngā mamae me ngā motunga ki te tākai
- Tapahia, whakapūhukitia hoki ngā maikuku
- Whakamahungia wētehi waihakihaki kē, hei tauira te harehare - whakamahia ngā kirimi me ngā paninga
- Whakamahia ōu ake hīti, tāora hoki
- Me he āwhina tāu e hiahia ana, uia te nēhi, tētehi kaimahi hauora kē rānei



He tamaiti e moroiti nei te ero

- Haere ki te tākuta, ki te nēhi rānei i tēnei rangi tonu mena e rite ana te mamae ki TĒTEHI o wērei:
- e rite ana tōna rahi ki tō te kapa 10c, nui kē rānei
 - e ero ana
 - e tupu ana
 - e whai kōira whero ana
 - kāore e mahu i te 2 rā
 - e tata ana ki te karu



He tamaiti e kino haere nei te ero

- Haere ki te tākuta kia riro ai he tonu rongoā (paturopi)
- Kia tere te tiki i te rongoā i te toa rongoā
- Whāia ngā tohutohu e pau rā anō ai ngā rongoā katoa
- Kua e tuaritua ngā rongoā ki wētehi kē
- Āta mātakina ngā tamariki e kai rongoā ana
- Hoki atu ki te tākuta ki te kore te ora e piki



He tamaiti e pāngia ana ki te ero kikino

- Ka ngau kino te mamae i tāu tamaiti, ā, ka māuiui rawa ia
 - Me haere ki te hohipera
 - Ākene ka pokaina
- Ki te kore ngā waihakihaki e rongoātia, ka hua pea ko ngā mate kikino rānei, ko te hemo noa atu rānei

HEALTHLINE 0800 611 115

Acknowledgement: Regional Public Health Lower Hutt

For skin infection information and resources visit
www.ttophs.govt.nz/healthyskin

Toi Te Ora
Public Health Service
BAY OF PLENTY DISTRICT HEALTH BOARD
Serving Bay of Plenty and Lakes Districts

Skin sepsis health promotion; 2011

Wellington Regional Public Health

SKIN SORES → **GO TO THE DOCTOR**

IF A SORE OR REDNESS HAS ANY **ONE** OF THE FOLLOWING:

- IS THE SIZE OF A 10 CENT COIN OR **BIGGER**
- HAS **PUS**
- IS GETTING **BIGGER**
- HAS **RED STREAKS** COMING FROM IT
- IS NOT GETTING BETTER WITHIN 2 DAYS
- IS NEAR THE **EYE** - TO BE SEEN BY A DOCTOR **URGENTLY**



Regional Public Health
Better Health For The Greater Wellington Region



Based on original by ARPHS
Northern Region Health Consortium - Photo: Ministry of Health

Wena & Wai Harawera Te Kaokao o Takapau; Tuhoe Hauora

MATE HAREHARE → **HAERE KI TE TĀKUTA**

MĒNĀ TE HAREHARE, TĒTAHI WĀHI WHERE RĀNEI
E RITE ANA KI NGĀ ĀHUATANGA E WHAI AKE NEI:

- KUA RITE TE NUNUI KI TE 10 HENETI, HE NUI AKE RĀNEI
- KUA PIRAU
- KUA NUNUI HAERE KĒ ATU
- KUA PUTA HE ROPIROPI WHERE
- KĀORE ANŌ KIA PAI AKE I TE RĀ 2
- HE TATA KI TE KARU - ME TERE TONU TE HAERE KI TE TAKUTA



TE KAOKAO Ō TAKAPAU HEALTH & DISABILITY SERVICES, 57 TŪHOE ST TANEATUA | PH: (07) 31 29 670

Clear skin messages Ministry of Health and Workbase

<https://www.health.govt.nz/system/files/documents/publications/checking-skin-infections-things-to-ask-doctor-nurse-nov13.pdf>

Things you could ask your child's doctor or nurse or Dr Aiga!

What type of infection is it?

What sort of medicine is it (pills, liquid, creams) and how do I use it?

Who do I call if it gets worse?

How do I tell if the infection is getting better or worse?

Do I need to treat the rest of the family – or how do I stop them getting this infection?

When can my child play sport?

How do I stop my child from getting this infection again?

When can my child go back to school?

How often do I change the plaster or dressing?

Are there any side effects from the medicine?

How do I clean it?

Your question

Your question

Ministry of Health 2006

HOW TO TREAT SCABIES

EVERYONE LIVING IN THE HOUSE SHOULD BE TREATED AT THE SAME TIME EVEN IF THEY ARE NOT ITCHY.

- Children under 2 years and pregnant women should see their doctor first for advice about treatment as the treatment might be different.
- You will need a special cream or lotion which you can buy from the pharmacist.
- Ask the pharmacist how much you will need to treat all the people in your house, OR; Your Doctor will give you a prescription. Tell the Doctor how many people you will need cream/lotion for.

It is best to treat just before going to bed.

1. First have a warm bath or shower.
 2. Then cover the whole body with cream/lotion, from the jaw down to the soles of the feet, in between the fingers, under the nails and on the private parts.
 3. The cream/lotion must be left on overnight.
 4. If you wash your hands within this time it is important to put the cream/lotion back on your hands.
 5. Next morning have a bath or shower and wear clean clothes.
 6. To stop scabies from spreading:
 - All clothes worn against the skin in the last week must be washed in hot water
 - If clothes cannot be washed, dryclean them or put them in a sealed plastic bag for 4 days to kill any scabies.
 - Sheets, pillowcases, towels and face-cloths should be washed in hot water. It is not necessary to wash blankets, duvets or quilts. You can hang them out in the sun for a day.
 7. Your doctor or nurse may advise you to repeat the treatment.
- The itchiness will not go away as soon as the treatment is finished.
 - This does not mean that it has not worked. It might take up to 4 weeks for the itch to go away.
 - During this time you can use EURAX Cream (from the pharmacy) 2-3 times a day to help the itch.
 - One treatment should be enough to cure scabies. If you still have the rash and itch after 4 weeks, see your Doctor. There are other treatments for scabies that only a Doctor can prescribe, OR the rash could be something else.

PREVENTION

- Children should not attend school or preschool until 24 hours after the first treatment.
- Don't share a bed or clothes with someone who has untreated scabies.

MORE INFORMATION

- Some people may wish to use other remedies. Your local Public Health Nurse can advise you.
- Your Public Health Service can also give you more information.



New Zealand. Revised June 2006. Reprinted July 2006. Code 4191

SCABIES

WHAT IS SCABIES?

Scabies is caused by tiny insects which burrow along in the skin, laying eggs as they go. Above the eggs small blisters form, surrounded by red patches – these are very itchy.

WHY IS IT IMPORTANT TO TREAT SCABIES?

SCABIES WILL NOT GO AWAY WITHOUT TREATMENT

- Scratching a lot can lead to serious skin infections.
- Untreated skin infections can lead to kidney and blood infections.
- People who have scabies for a long time can get permanent scarring of the skin. Children scratching a lot find it hard to concentrate and learn.
- Preschool and school teachers can ask that children with untreated scabies be kept at home.

WHO GETS IT?

- Anyone! Even the cleanest people get scabies.
- Washing in soap and water or swimming in the sea will not prevent or cure it.

HOW DO YOU CATCH IT?

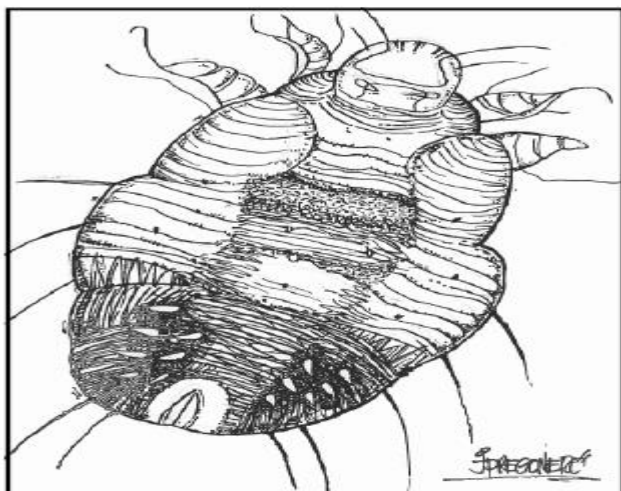
- Scabies spreads easily to other people in the family, to boyfriends and girlfriends and to children's friends.
- By close body contact e.g. holding hands, hugging, sleeping together.
- By sharing clothes and bedding.
- Scabies do not live in furniture or carpets.

HOW DO YOU KNOW YOU HAVE IT?

- Scabies causes a very itchy rash which is worse at bedtime or when you are warm.
- The rash is caused by the scabies laying eggs. Small blisters form surrounded by red patches.
- You may notice the rash first:
 - between fingers
 - on the wrist
 - inside elbows
 - around the waist
 - on the bottom
 - on private parts
- If someone in the family has scabies, others may have caught it without noticing a rash or itch.
- If you are not sure if you have scabies, talk to your Doctor, Practice Nurse, Public Health Nurse or Plunket Nurse.



Scabies



A very common problem for tamariki in the
Eastern Bay of Plenty

Tau Magiho – O Le Mumu Mageso – Te Une Mangio – Kiringaoko/Ngeungeo

GET RID OF SCABIES

The
Scabies
Mite

...gets
in your
skin...

and makes you scratch



Show the rash
to a health
professional



Buy cream from the pharmacy
for everyone in the house, or see
the doctor for a prescription



Wash everyone's
clothes and sheets
in hot water

On the
same
day...



If you can, have a bath
or shower at night time



Rub cream all over the
body, from the chin down.
Treat everyone in the
household on the same day



Go to bed



Have a bath or shower
and put on clean clothes

...the
next
morning...

Kiringaoko/Ngeungeo – Veli Fakatupu 'ehe Kutu 'o e kili – Famai Ote Paku

Skin and Scabies community messaging

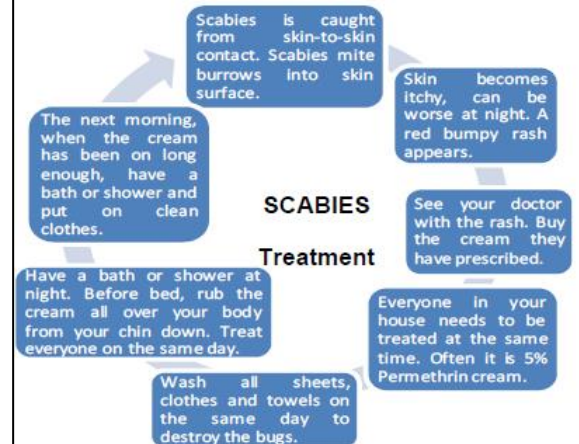
Ministry of health Skin 2011

- <https://www.health.govt.nz/system/files/documents/publications/checking-skin-infections-things-to-ask-doctor-nurse-nov13.pdf>



Hauora BOP Scabies

Louise Blamires 2011



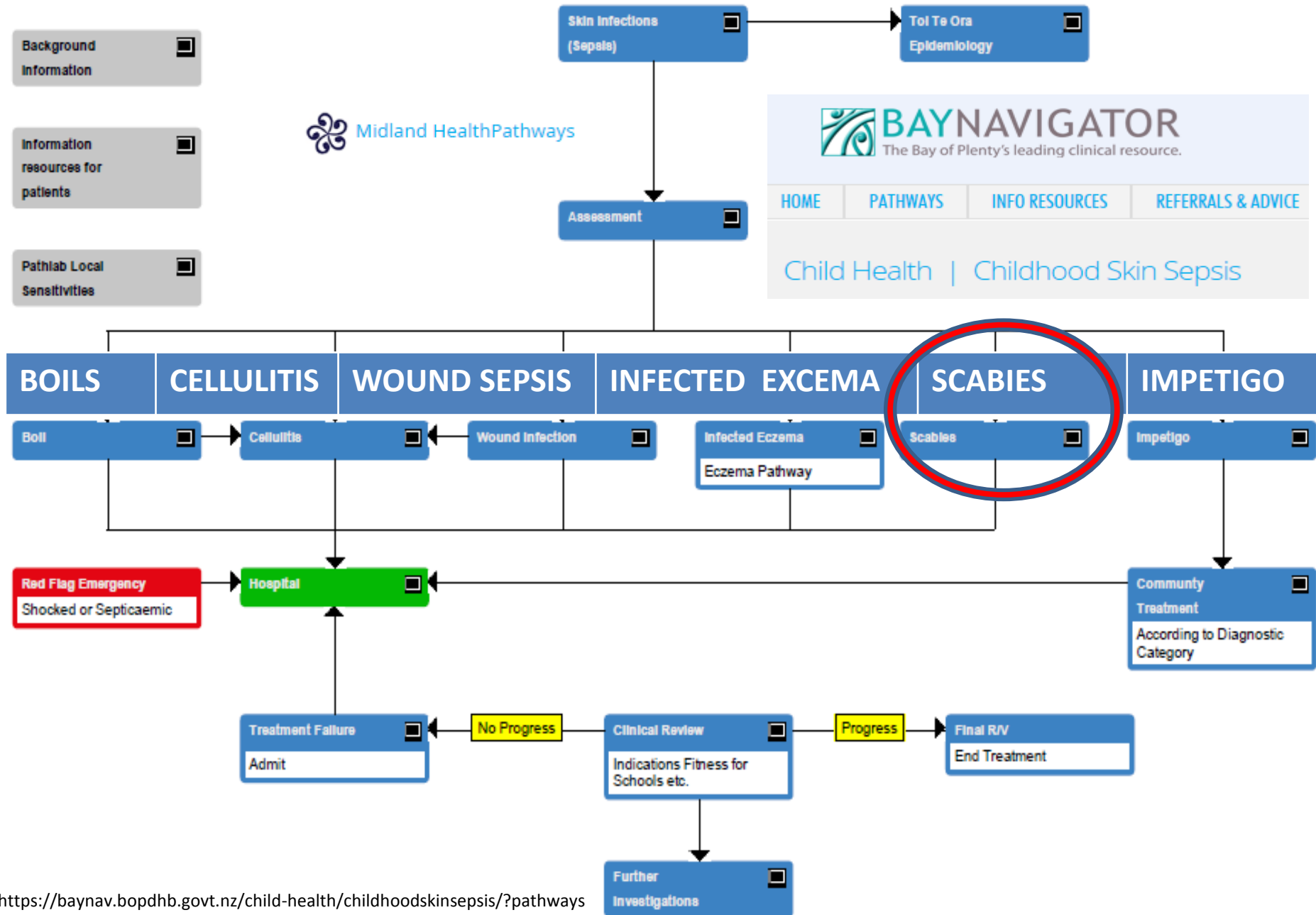
Sores from a scabies infection

https://baynav.bopdhb.govt.nz/child-health/skinsepsispathway_scabies-patient-resource/
https://www.toiteora.govt.nz/healthyskin_hp



Health Professionals

Skin infections - resources for health professionals



<https://baynav.bopdhb.govt.nz/child-health/childhoodskinsepsis/?pathways>

baynav.bopdhb.govt.nz/WebShare/Pathway/Pathway?pathwayid=14

Last updated May 2017

**Scabies on Bay Nav
Whanau handout
(Bay of Plenty GP site)**

Child Health

Scabies



- Intense itch clue if family too
- Burrows sometimes
- Treat person & contacts
- Linen wash don't share
- Permethrin effective safe <6/12 (8-10hrs); 30ml Malthion (24 hrs) not available
- Success apply right, to all, overnight
- Avoid eyes, do scalp <2yr
- Linen Clothes **direct contact** hot wash
- OR store in bags 5-7/7; mite dies 4/7
- Back to school, day after treatment
- Repeat 10-14/7 for newly hatched & linen
- Itch lasts weeks, emollients & steroids
- Most treatment failures inadequate reinfection or persistent itch
- Ivermectin single dose, safety <15kg?
- Expect clear within a month

Bay Nav Dr K Grimwade ID

Recurrent Skin Sepsis

Background
Information

Information
resources for
patients

Investigation
Summary

Antiseptic Bathing
Options

Establish Carriage
Decolonisation
Definitions

1st Pass
Management Topical
Decolonisation

Clinical Treatment Failure

2nd Pass
Management
Cyclical Topical
Treatment

Clinical Treatment Failure

3rd Pass
Management
Cyclical Systemic
Treatment

Clinical Treatment Failure

Simultaneous
Cyclical Topical &
Systemic Treatment

Persistent Treatment
Failure
Discuss or Refer



Ngā Mataapuna Oranga

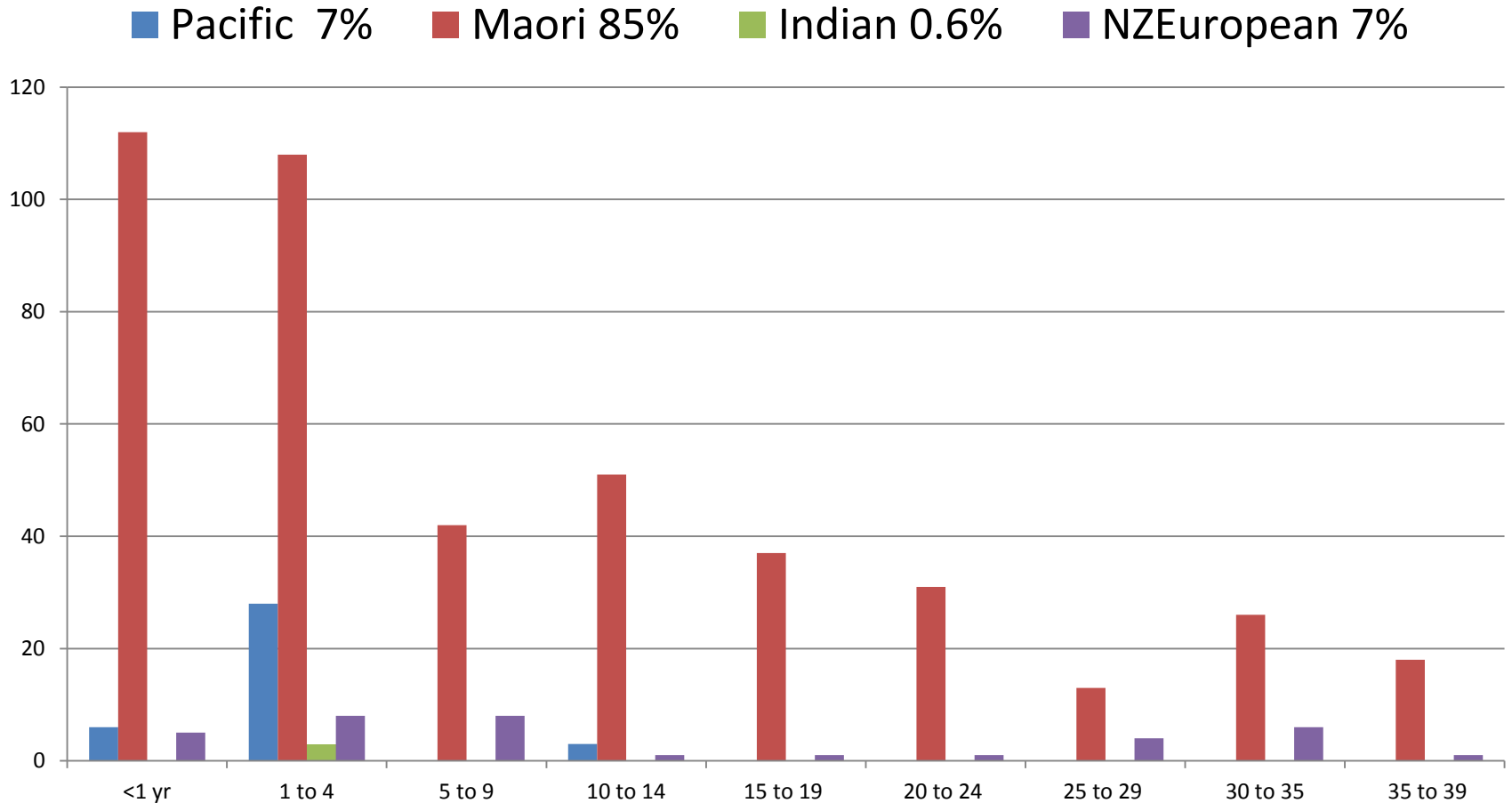


National
Hauora Coalition

Bay of Plenty findings
Scabies, skin sepsis, ARF,

Maori & Pacific scabies; 1st year > 1-4yrs

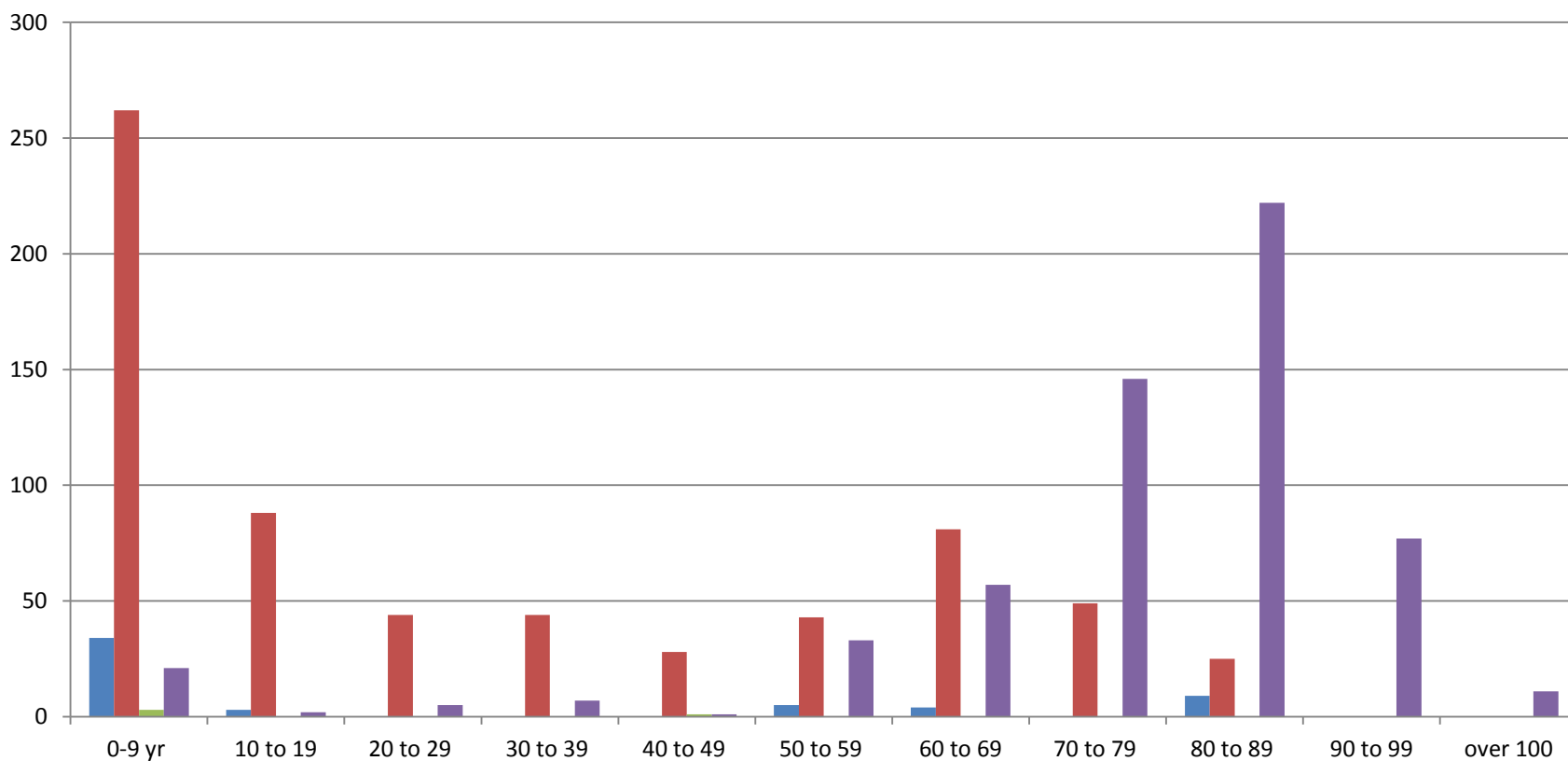
from BOP admissions 0-40yr age 2009-18; M White, M Toms, J Malcolm, 2019



Scabies distribution by age and ethnicity; is bimodal firstly children & then pensioners/in care;

from all age **BOP admission** events 2009-18 M White, M Toms, J Malcolm, 2019

■ Pacific 4% ■ Maori 51% ■ Indian 0.3% ■ NZE 44%

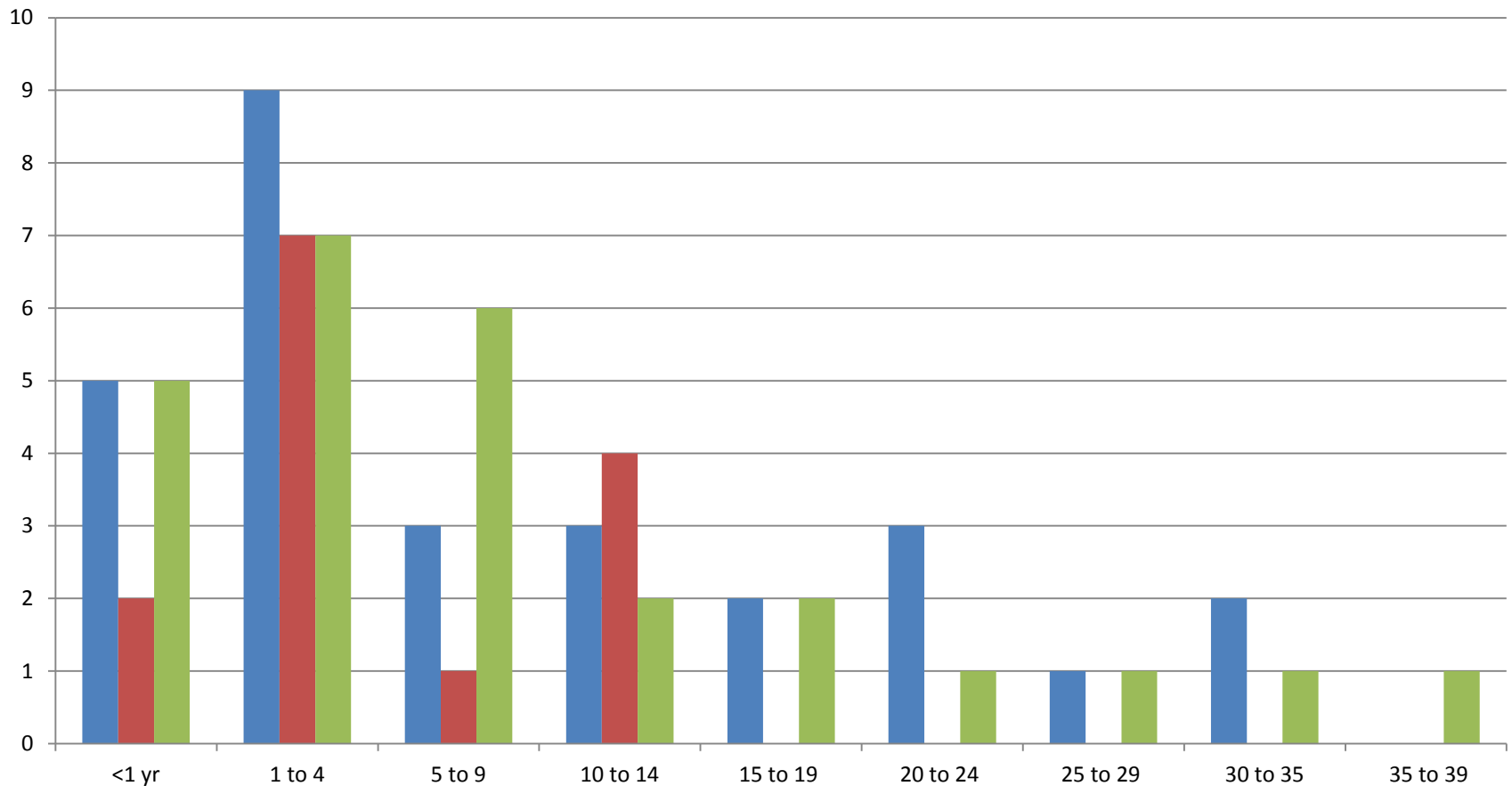


Category A; Scabies in the Bay

Secondary Skin infections at typical sites

from all age **BOP admission** events 2009-18 M White, M Toms, J Malcolm, 2019

■ Cellulitis ■ Impetigo ■ Abcess CA

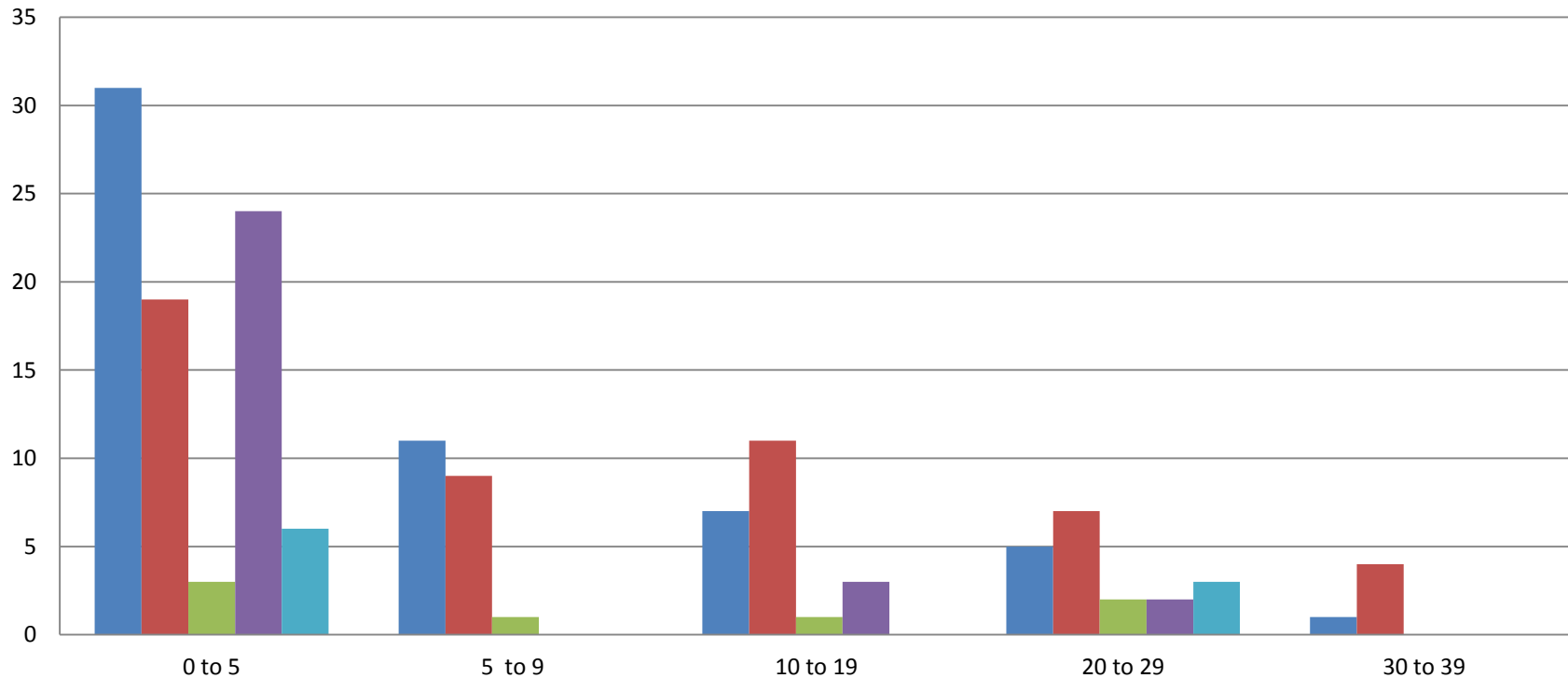


BOP Scabies 0-40yrs super-infections

from all age **BOP admission** events 2009-18 M White, M Toms, J Malcolm, 2019

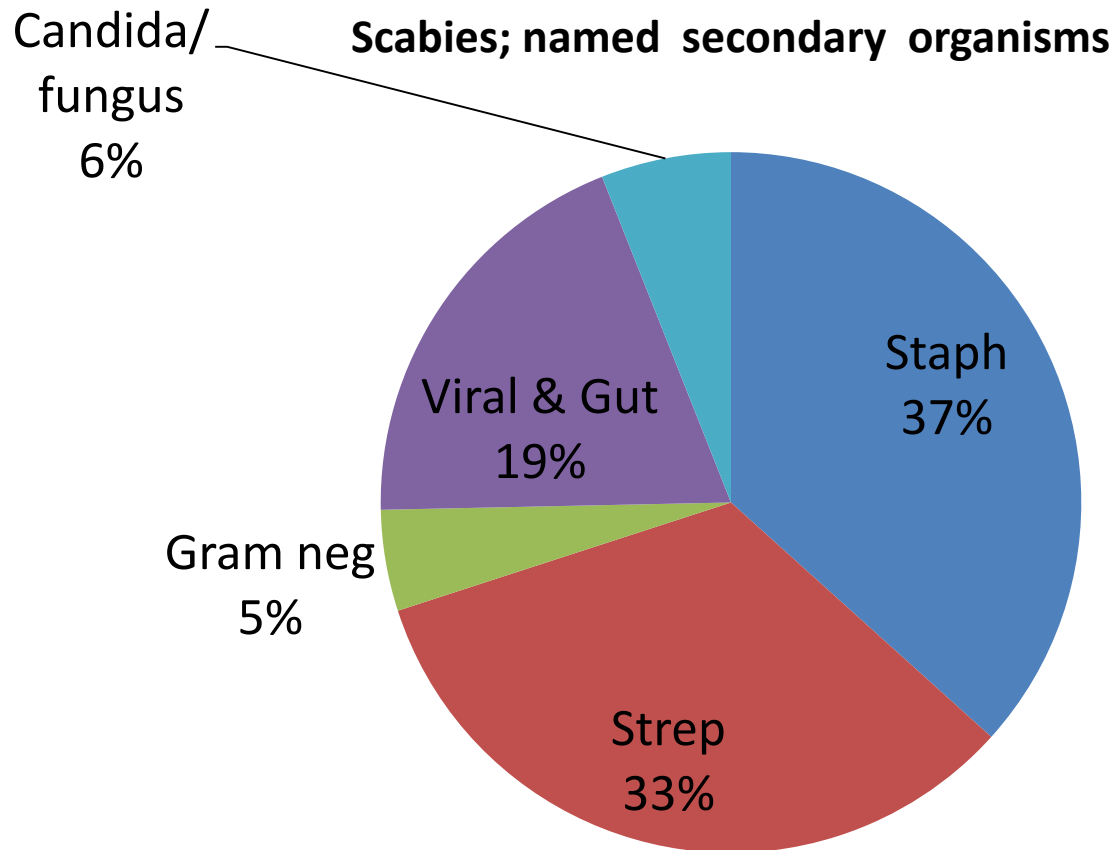
Scabies 0-40yrs; secondary organisms

■ Staph ■ Strep ■ Gram neg ■ Viral ■ Candida/Fungus



BOP Scabies 0-40yrs super-infections

from **BOP admissions** 0-40yr age 2009-18; M White, M Toms, J Malcolm, 2019



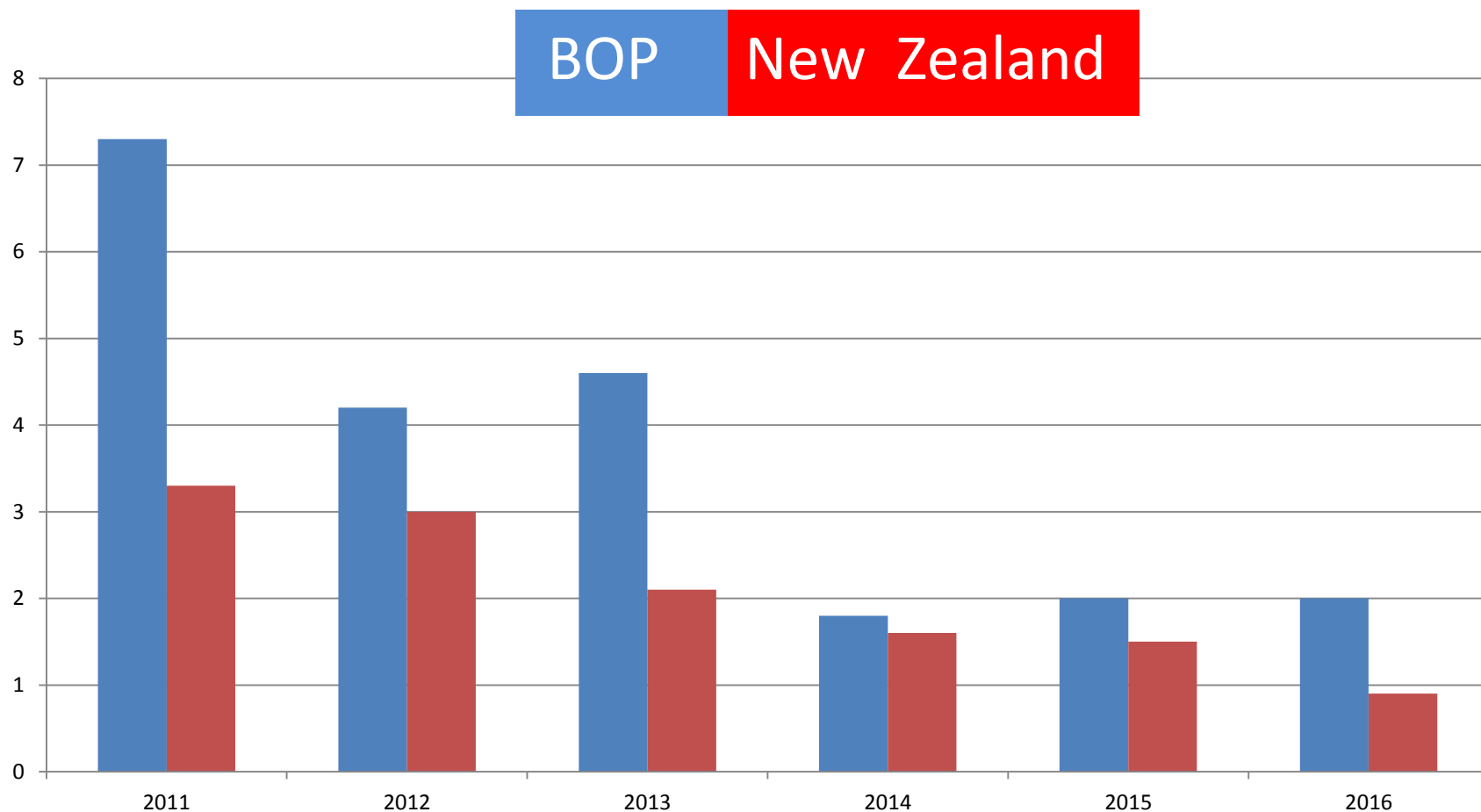
from James Scarfe, Toi Te Ora, Public Health Service 2019

	2011	2012	2013	2014	2015	2016	Grand Total
BOP DHB counts	33	19	21	8	9	9	99
BOP Rate per 10,000 children aged 0-14 years	7.3	4.2	4.6	1.8	2.0	2.0	3.6
New Zealand counts	302	269	195	145	139	81	1131
New Zealand Rate /10,000 children aged 0-14 years	3.3	3.0	2.1	1.6	1.5	0.9	2.1

Dataset: National Minimum Dataset (hospital events). <https://www.health.govt.nz/nz-health-statistics/national-collections-and-surveys/collections/national-minimum-dataset-hospital-events>

Children's Scabies Admissions NZ & BOP decline (ICD 10: B86); rates/children 0-14yr/10,000

James Scarfe, Toi Te Ora, Public Health Service Analyst, 2019-14



Parasiticidal medications; Wikipedia accessed 6/9/19

Pyrethroids; Permethrin

- Approved over 2/12 age
- pyrethroid family are created to emulate the chemicals found in the *chrysanthemum flower*
- Permethrin found 1973
- Kills indiscriminately; as well as intended pests, harm beneficial insects, including honey bees, and aquatic life

Ivermectin

- [avermectin](#) family of compounds from bacterium *Streptomyces avermitilis*
- made by [Satoshi Ōmura](#) of Kitasato University, Tokyo & William Campbell, Merck
- Half 2015 Nobel Prize in Medicine for river blindness and filariasis reduction in incidence

Declining Parasiticial Rx = less community scabies

Number of people receiving prescriptions (all ages)

Prepared by: James Scarfe, Public Health Analyst, Toi Te Ora Public Health

	2012	2013	2014	2015	2016	2017	2018
BOP DHB	4523	3773	3029	2654	2820	2661	2414
New Zealand	78377	66757	57666	51458	52851	51597	49062

Ministry of Health. 2019. DataPharm version 13 May 2019 (data extracted from Pharmaceutical Collection on 26 March 2019). URL: <https://minhealthnz.shinyapps.io/datapharm/> (Accessed 23/03/2018 & 24/06/2019). Accessed J Scarfe TTO Public Health Service.

Stable estimated Bay of Plenty 0-14 years Population from 2011 to 2018

Population 0-14yrs	2011	2012	2013	2014	2015	2016	2017	2018
BOP	45196	45363	45530	45572	45614	45656	45698	45740
NZ	902943	905871	908800	911300	913800	916300	918800	921300

Dataset: Stat NZ. Subnational population estimates. <https://www.stats.govt.nz/information-releases/subnational-population-estimates-at-30-june-2018-provisional>; Prepared by: James Scarfe, Public Health Analyst, Toi Te Ora Public Health

Current parasitocidal meds; some used for both Scabies & Head Lice; Nits/Kuti

➤ **Scabies** Permethrin 5% A-Scabies lotion/ Lyderm cream

- Scabies Ivermectin oral. (Malathion & Benzyl alcohol)

➤ **Head lice**

- Permethrin 1% lotion & shampoo
- Permethrin and Malathion Para plus spray

Table 1: Examples of head lice treatments available in New Zealand (this is not an exhaustive list)

Active Ingredient(s)	Type of product	Brand/Product	Sponsor
Permethrin	Insecticide	Lice Clear Scalp lotion	AFT Pharmaceuticals Ltd
		Quedella Head Lice Treatment Scalp lotion	Orion Laboratories (NZ) Ltd
Phenothrin/ pyrethrin/ pyrethrum	Insecticide	Parasidose Shampoo, Extra strength	Multichem NZ Limited
Malathion/ permethrin/ piperonyl butoxide	Insecticide	Para Plus aerosol spray	Orion laboratories
Eucalyptus oil/ Lemon tree oil	Suffocant	Moov head lice solutions	Douglas Pharmaceuticals Ltd
Benzyl alcohol	Suffocant	Neutralice	Wilson Consumer Products

What are head lice?

Head lice Kutis Headlouse
Nits Kutu bugs Cooties

Head lice are small flat insects, about 2–3 mm long. They live on the scalp (the skin on a person's head where the hair grows from). Head lice lay their eggs (nits) on strands of hair.

Anyone can get head lice – it doesn't matter how clean or dirty a person's hair is. Head lice spread by crawling from one person's hair to another's – usually between people who are in close contact, such as family or school classmates.

Head lice:

- cannot jump, fly or swim
- do not carry disease
- stay on the scalp after swimming or bathing/showering.

What do head lice look like?

Insects

Head lice can be white, brown or dark grey. They are usually in the hair at the back of the neck or behind the ears.

Eggs (nits)

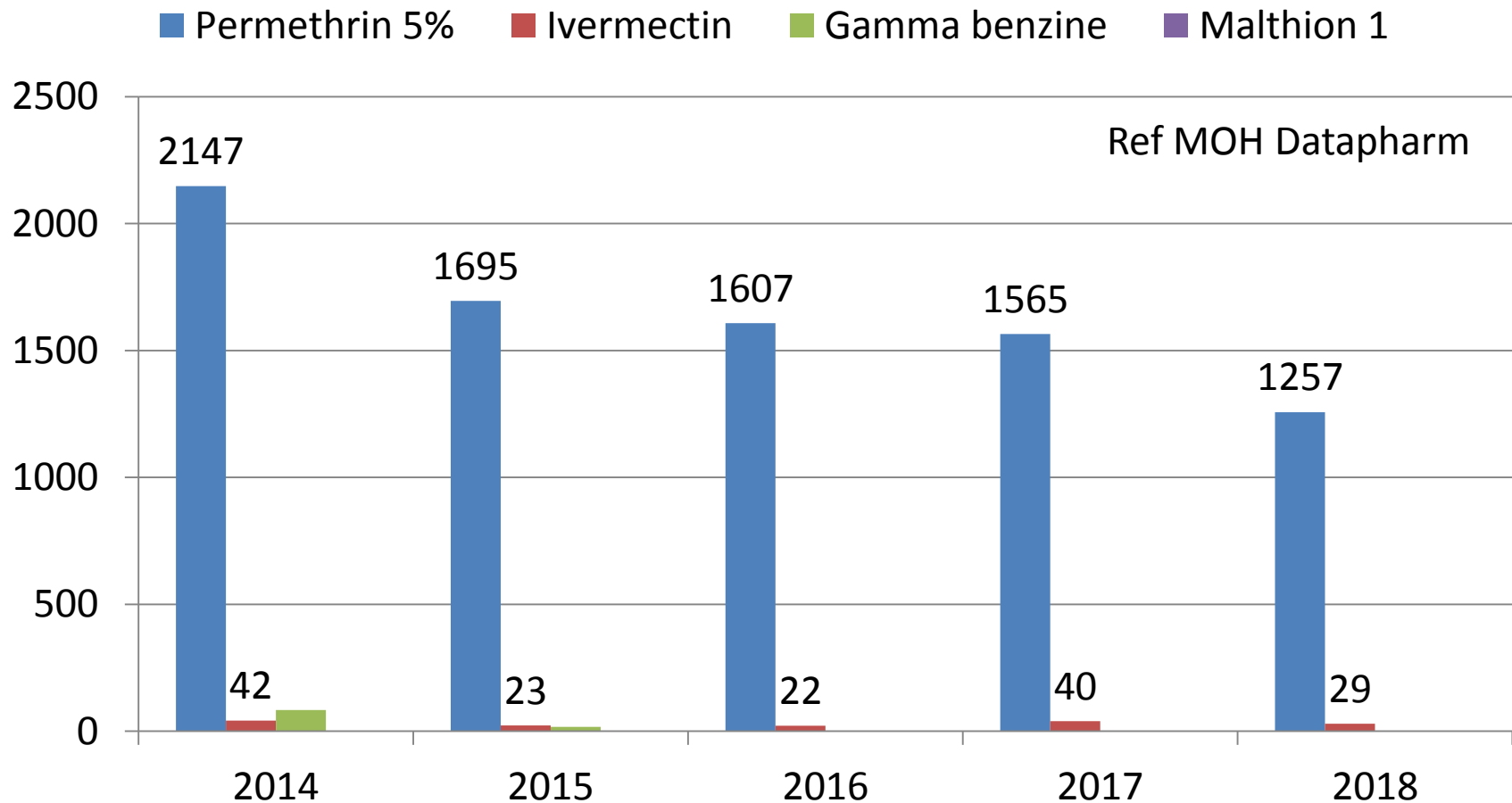
Female head lice lay about 7–10 eggs each night. The eggs are small and hard (like a grain of salt) and are normally pale grey in colour. Eggs are laid close to the scalp and are firmly glued to strands of hair. After hatching, the empty egg cases are white.

Eggs hatch in 9 days, and head lice live for 40 days.



Decline in Bay community parasite prescriptions for P 5% + I parallels admitted scabies decline, and means less community scabies too

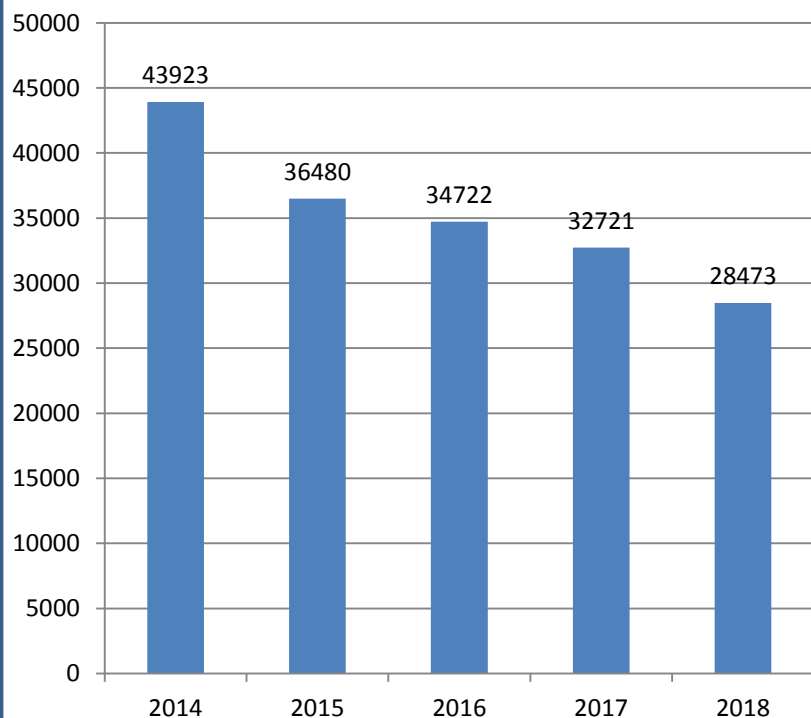
James Scarfe, Public Health Analyst, Toi Te Ora Public Health, Specific Drugs Kip Mouldey , John Malcolm 2019



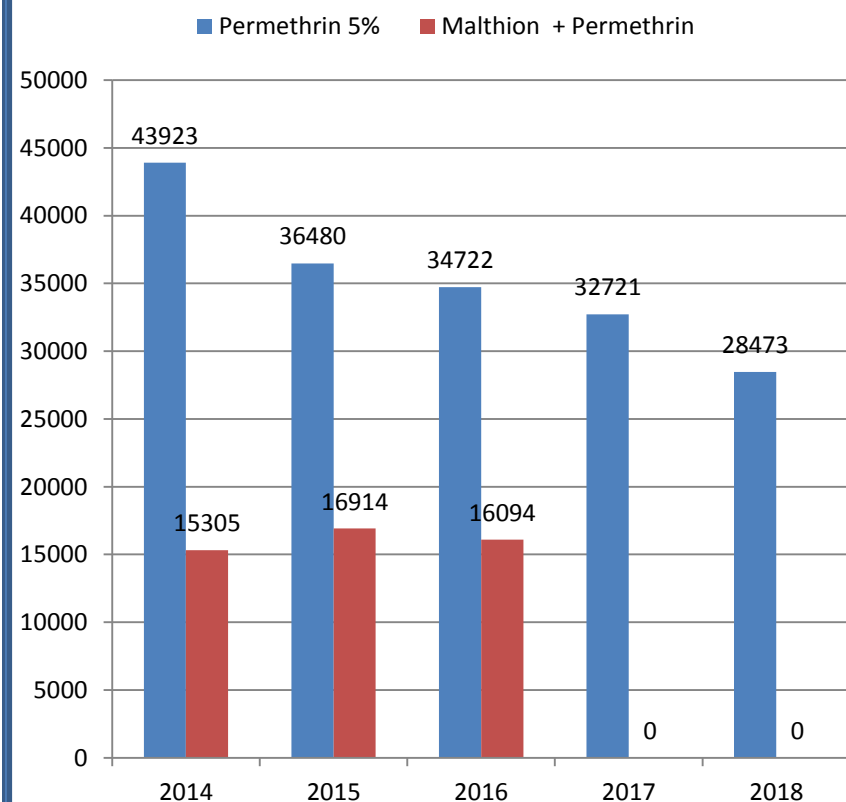
Declining community NZ Permethrin 5% use as community scabies declines; KM,JM 2019

Permethrin use declines 65%

People Rx Permethrin 5% in NZ



**Permethrin 5% use, means scabies use
as no more P5 when M & P nit Rx stops**



Ref MOH Datapharm

Ivermectin special authority for funded Rx Dermatologists, ID*, Microbugs* specialists

* Paediatricians' Colleagues, who answer phone-calls

INITIAL APPLICATION - Scabies

Applications from any relevant practitioner. Approvals valid for 1 month.

Prerequisites (tick boxes where appropriate)

☒ Applying clinician has discussed the diagnosis of scabies with a dermatologist, infectious disease physician or clinical microbiologist
and

☒ The patient is in the community

and

☐ Patient has a severe scabies hyperinfestation (Crusted/ Norwegian scabies)

or

☐ The community patient is physically or mentally unable to comply with the application instructions of topical therapy

or

☒ The patient has previously tried and failed to clear infestation using topical therapy

or

☐ The Patient is a resident in an institution

and

☐ All residents of the institution with scabies or at risk of carriage are to be treated for scabies concurrently

and

☐ Patient has a severe scabies hyperinfestation (Crusted/ Norwegian scabies)

or

☐ The patient is physically or mentally unable to comply with the application instructions of topical therapy

or

☐ Previous topical therapy has been tried and failed to clear the infestation

Note:

Ivermectin is no more effective than topical therapy for treatment of standard scabies infestation.

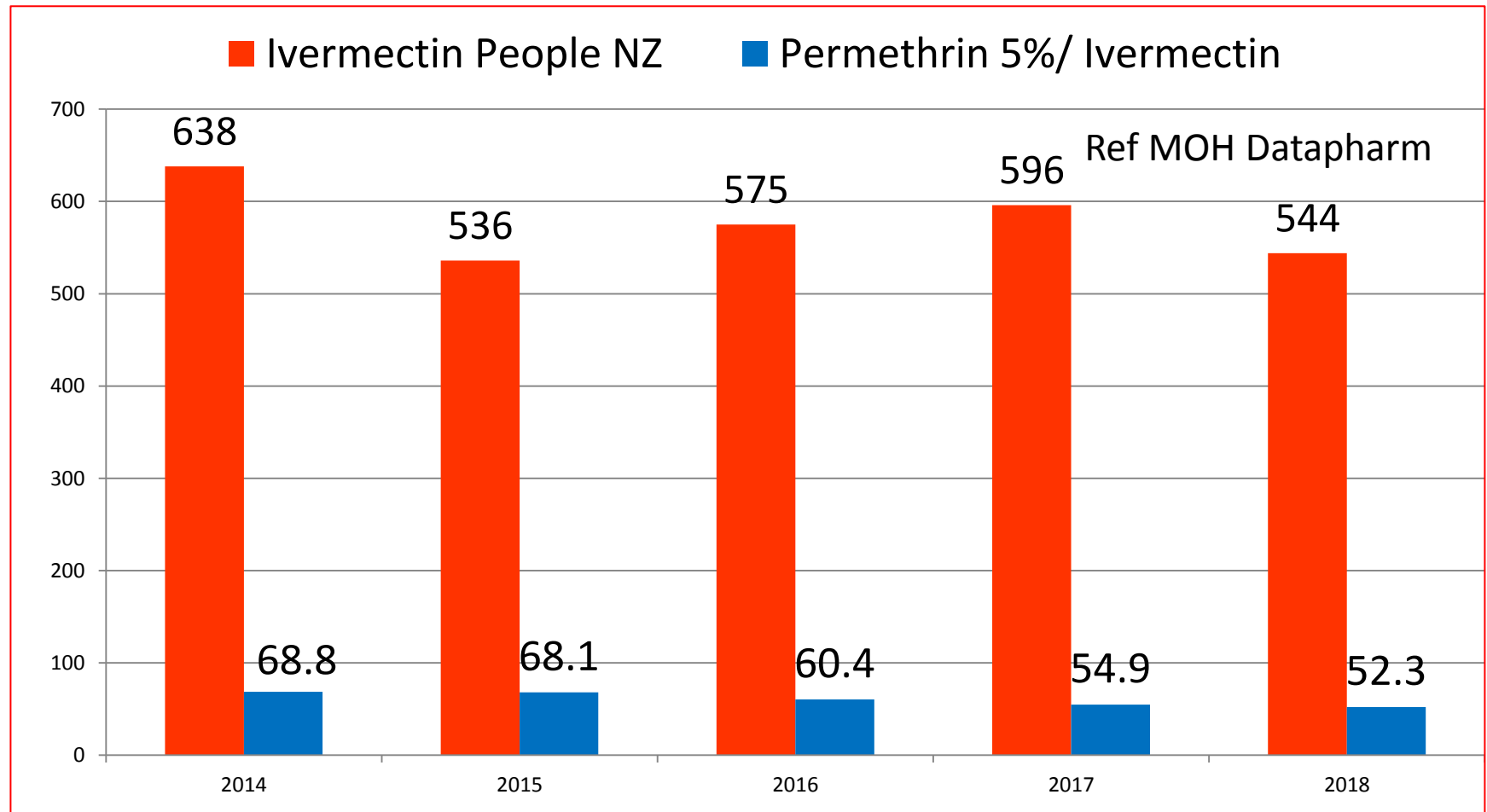
Criteria; Discuss

Community

Failed topicals

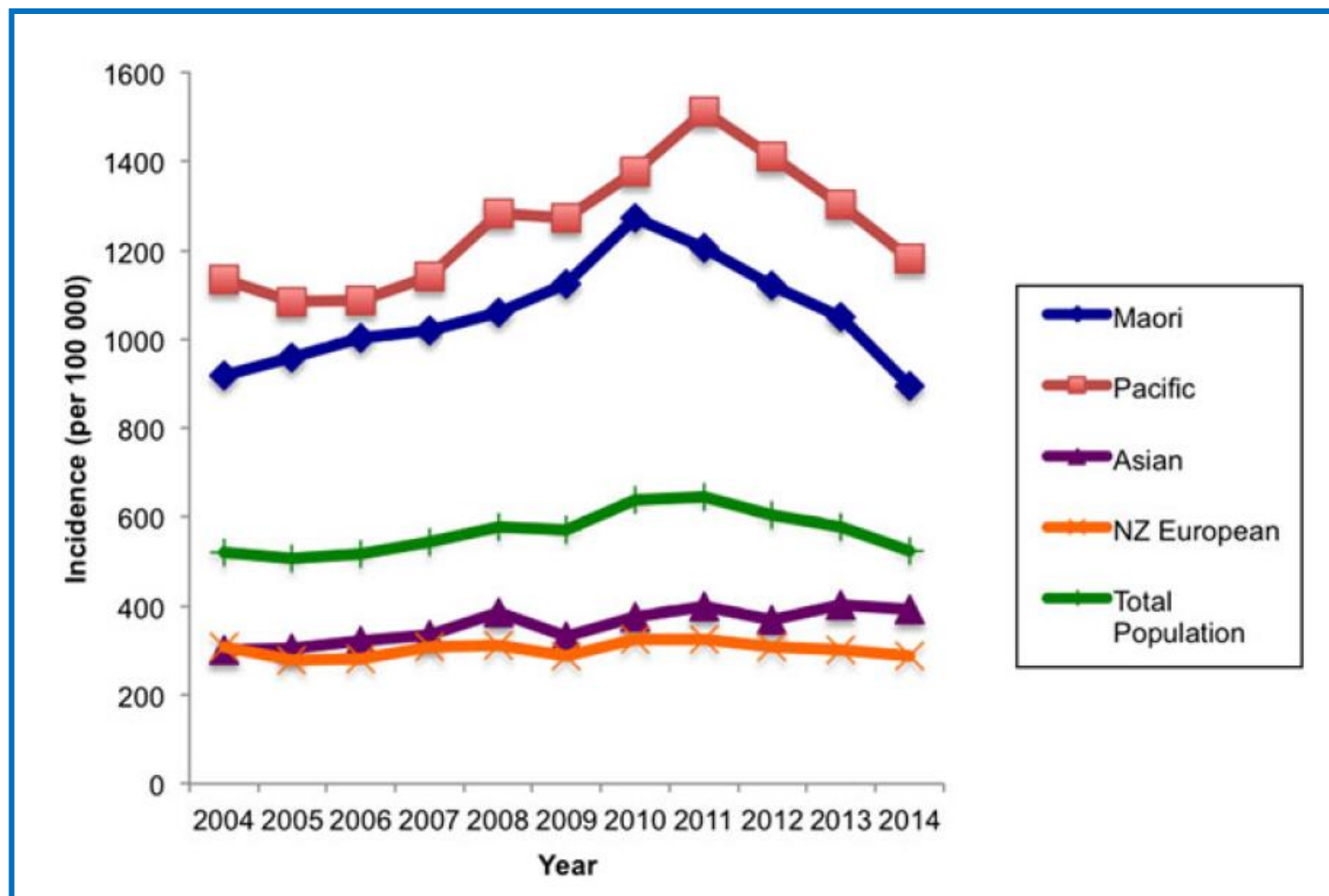
NZ medications; give clues to community scabies ! KM,JM 2019

As Permethrin 5% Rx declines, Ivermectin is stable & **P5%:Ivermectin ratio 70>50:1**
1) Most respond to Permethrin 5%. 2) Slightly lower threshold to use Ivermectin



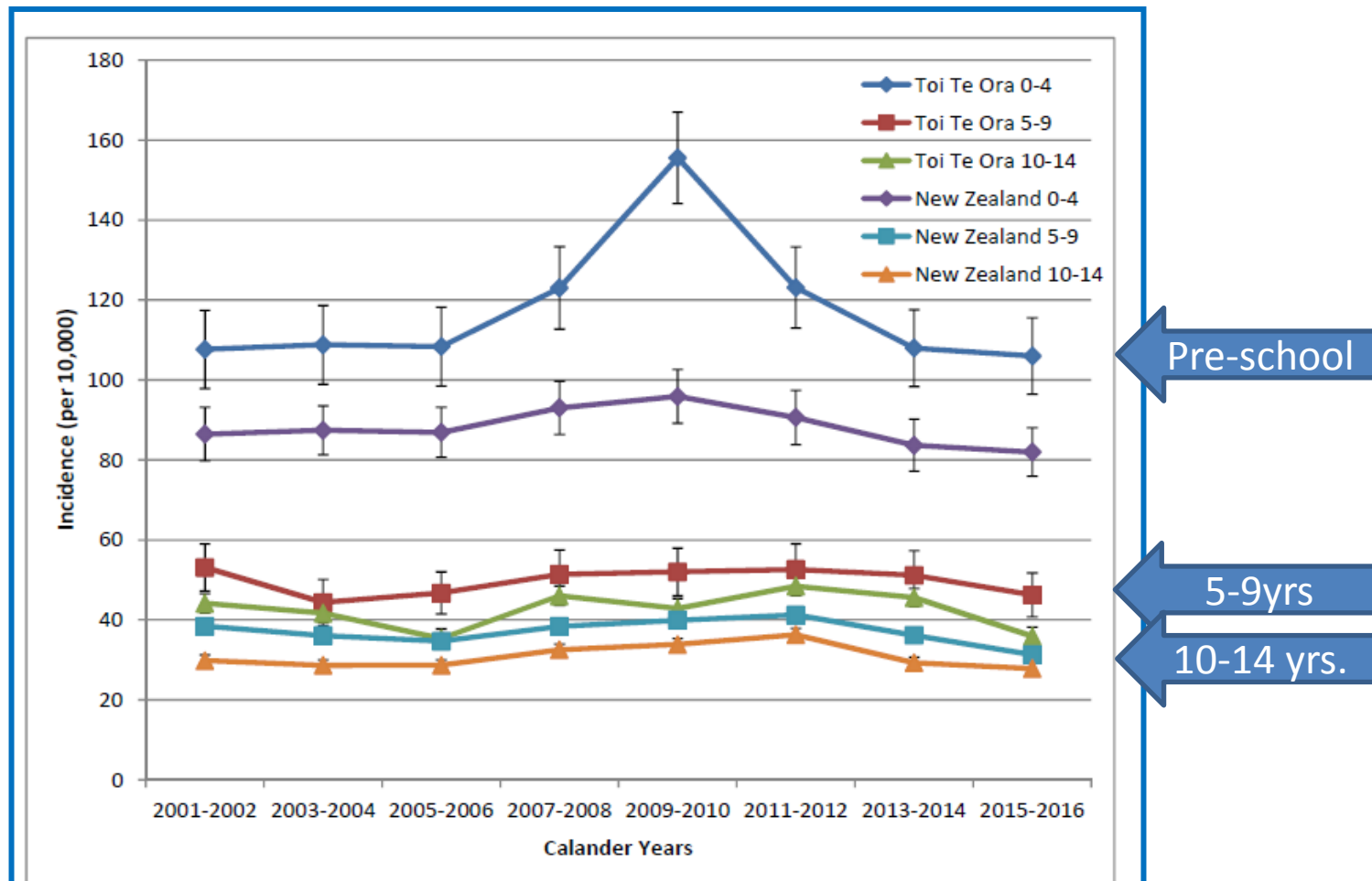
Pacific and Maori less 0-14yr skin sepsis admissions

A Lim, R Rumball-Smith, R Jones, I Kawachi ;Epidemiol. Infect 2016



Declining Bay pre-school skin sepsis//5-14yr ARF

Toi Te Ora Public Health. (2018). **Childhood admissions to hospital for serious skin infections**



Greatest decline in skin sepsis admissions, Eastern Bay of Plenty, some in Western BOP; Lakes stable

Toi Te Ora Public Health. (2018). **Childhood admissions to hospital for serious skin infections**

Figure 10: Incidence of serious skin infection in the sub-regions of Toi Te Ora



New Zealand

Rotorua Lakes

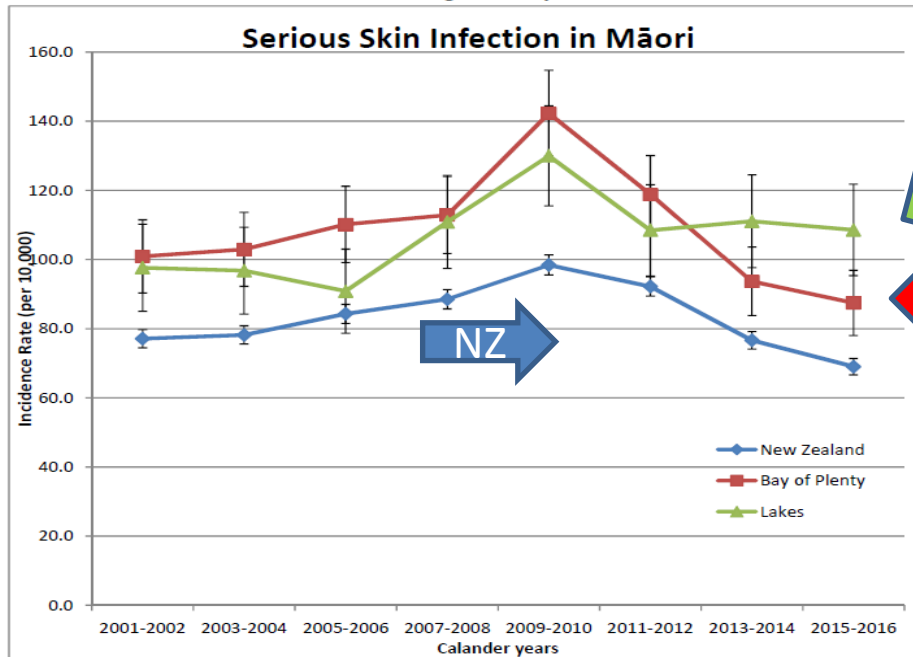
Eastern BOP

Western BOP

Taupo Lakes

Fewer BOP Maori & EBOP 0-14yr skin sepsis admissions; due whanau, Kiri Ora, Paed outreach Nurse, Wards, Bay Nav, GP, Hauora, PHN, Toi te Ora, Public Health Nursing.....

Appendix 3: Comparison of the two DHBs and New Zealand of the incidence of serious skin infection in Māori children aged 0-14 years old.



The table below displays the two tailed z test p-value for a comparison of the rate in Lakes and Bay of Plenty Maori children. The results show that the rate of serious skin infection in Maori children has reduced in the Bay of Plenty DHB while the rate has remained constant in Lakes DHB and that there is now a statistically significant difference between Lakes DHB and Bay of Plenty DHB.

Calendar years	2-tail z-test p-values
2013-14	0.02
2015-16	0.01

CAU changes

- Kawerau
- Opotiki
- Whakatane
- Lakes
- Turangi

NZ Trends toward Skin admission equity

A Lim, R Rumball-Smith, R Jones, I Kawachi ;Epidemiol. Infect 2016

A. Lim and others

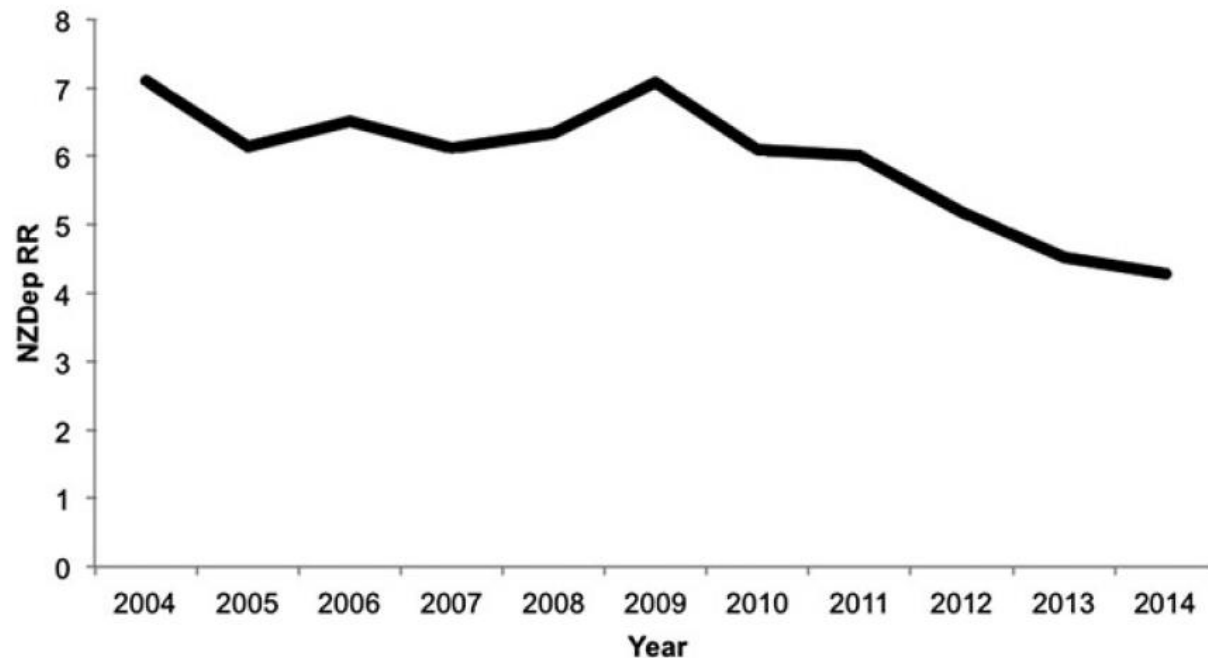


Fig. 4. Rate ratio (RR) of skin infection-related hospitalization, comparing NZDep decile 10 to NZDep decile 1.

Scabies then ARF admissions? BOP

Marianne Toms Analyst , JM; BOP 2019

- 20 years July 2000-19 all age
- 608 **Scabies admissions** some multiple (30.4/yr.)
- 248 **Acute Rheumatic Fever** ICD I00-I02.9 (primary or anywhere in **discharge coding**)(12/yr.)
- *{Walsh 19yr;scrutinized 174 all-age ARF cases (9.2/yr.)129 age 5-14yr (6.8/yr.)}*
- **A**; Maori female 12yr age Scabies & ARF Feb 2013
- **B***; Pacific female; Scabies 2004 age 5,8,10 months
ARF Dec 2015 age 11yr;11year later; Immune priming?
- That is one contemporaneous admission & one later
- Expected association from Auckland data?

ED Scabies; then ARF admissions? BOP

Marianne Toms Analyst , John Malcolm, BOP 2019

- **ED Scabies** 19 years July 2000 to 2018
904 presentations Read Code AD30 OR any mention “scabies”, free text Webpas complaints details or treatment diagnosis (45/yr.)
- **ARF Admissions** 20 years July 2000 to 2019
248 Acute Rheumatic Fever ICD I00-I02.9 (primary or anywhere in discharge coding) (12/yr.)
- **Patient B***; Pacific female; Scabies 2004 age 5,8,10 months , ARF Dec 2015 age 11yr; ARF 11 yr. later; immune priming?
- **Patient C**; Maori male; EBOP Scabies Dec 2011 age 6 years, ARF Feb 2016 10 years 8 months; FH ARF; five years later
- If causally connected not immediate; If associated consider Carapetis model of immune sensitization/priming

Acute Rheumatic Fever; Pathogenesis

J Carapetis M McDonald N Wilson Lancet 2005

Hypothesis; If ARF is mediated by scabies, preschool Strep A might prime the immune response

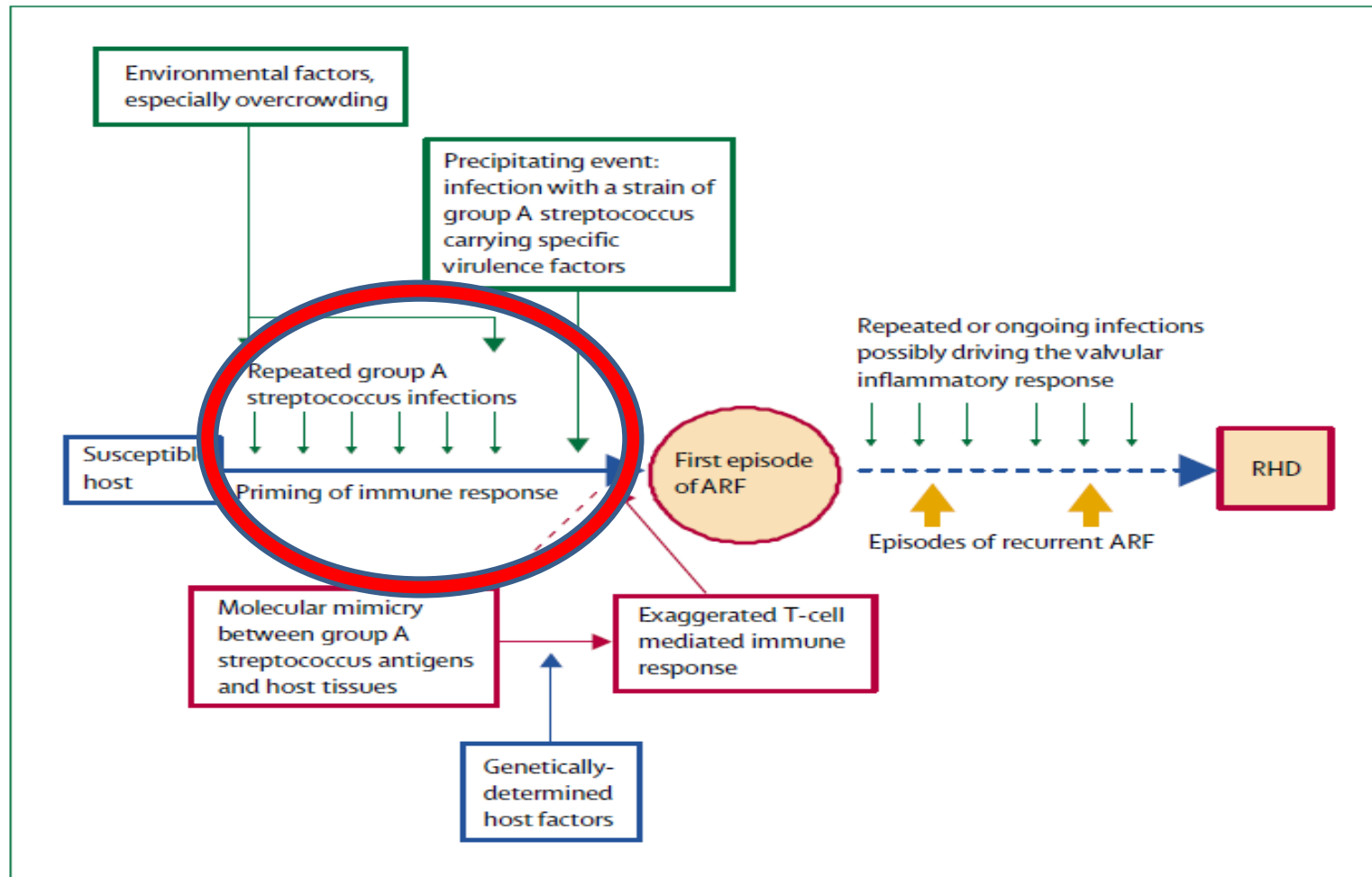


Figure 2: Pathogenetic pathway for ARF and RHD

Scabies links to ARF

Bedfellows or to blame?

Scabies then ARF in Auckland

Thornley S, Marshall R, Jarrett P, Sundborn G, Reynolds E, & Schofield G.
Journal of Paediatrics and Child health (2018)

Auckland children 3-12yr with scabies admission preceeding or with ARF admission		
All ethnicities	2007-2014 (5 yrs.)	
Scabies prevalence $20 \times 10^5/\text{annum}$	Scabies admission after enrolled	No scabies
	214	213 119
ARF or CRHD during follow-up	10	425
(Pacific 63% Maori 31% NZE 6%)	(9/10 at ARF admission)	
Estimated ARF rate/ $10^5/\text{annum}$	936	40
2.3% of Auckland's ARF primary schoolers (10/435) had a related scabies admission		

Scabies then ARF in the Bay of Plenty

Mary White, Marianne Toms data search, John Malcolm observations 2019

BOP Maori 0-14yr with scabies admission preceeding or with ARF admission age5-14 yr.		
Bay of Plenty Maori 0-14 yrs.	BOP mid 2009- mid 2018	
Scabies prevalence $73 \times 10^5/\text{annum}$	Scabies admissions(9yr) B86	No scabies
	162	
Students 2011-8 (from cohort study)		11811
ARF 5-14 yr. during follow-up	1-2 (age 12yr and 10.7yr, one same time, one 5 yr later)	41
Estimated ARF rate/ $10^5/\text{annum}$	137	43
2.4% of BOP Maori ARF children 5-14 yrs. age (1/42) closely related scabies admission		
4.8% of BOP Maori ARF children 5-14 yrs age (2/42) ever having a scabies admisson		
7.15% of BOP Maori ARF children 5-14yr age (3/42) ever with ED or admission scabies		
RR with/without recent scabies	RR 2.05 (CI 0.28-14.79) p=0.47	possible type 2 error
# PACIFIC BOP scabies admissions	37	
ARF 3 scabies 1 st yr. then ARF@11yr	1	

Scabies then ARF in Auckland

Thornley S, Marshall R, Jarrett P, Sundborn G, Reynolds E, & Schofield G.
Journal of Paediatrics and Child health (2018)

Auckland children 3-12yr with scabies admission preceeding or with ARF admission		
All ethnicities	2007-2014 (5 yrs.)	
Scabies prevalence $20 \times 10^5/\text{annum}$	Scabies admission after enrolled	No scabies
	214	213 119
ARF or CRHD during follow-up	10	425
(Pacific 63% Maori 31% NZE 6%)	(9/10 at ARF admission)	
Estimated ARF rate/ $10^5/\text{annum}$	936	40
2.3% of Auckland's ARF primary schoolers (10/435) had a related scabies admission		

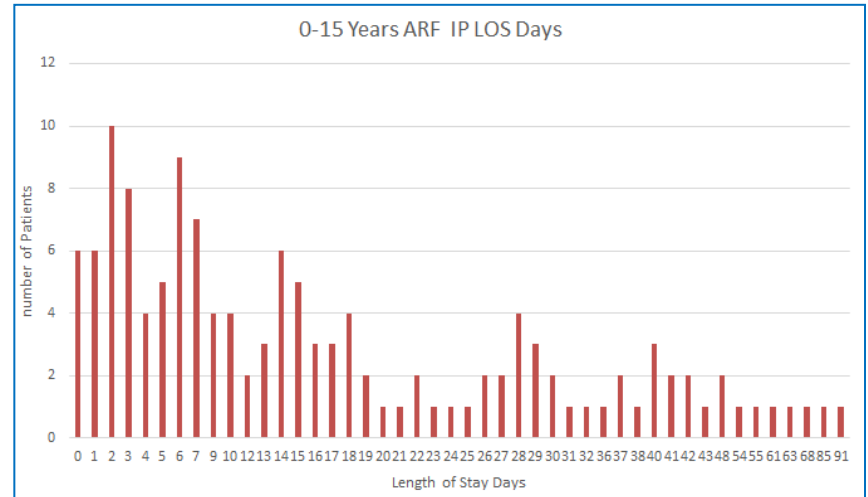
Suggest record ARF & CRHD separately to establish scabies to ARF link
And secondly if aiming to find latency note scabies onset to ARF onset
keeping separate from CHRHD where onset of RHD unknown,
then combine keeping both, to include RHD without clinical preceeding ARF

ARF admissions; length of stay favours scabies diagnosis; Children's scabies is unlikely underdiagnosed if admitted

ARF admission LOS = 5-20 x most

Length of stay in days			
	All Ages	0-15 years	>15 years
General Paediatrics Bay Plenty Whakatane		2.62	
Acute Rheumatic Fever Starship Medical		23	
ARF Starship Surgical		54	
Rheumatic Fever BOP	15.12	17.43	4.13
Median LOS Days	9	13	3
Standard Deviation LOS Days	16.75	17.54	4.83
Sample size	165	134	31

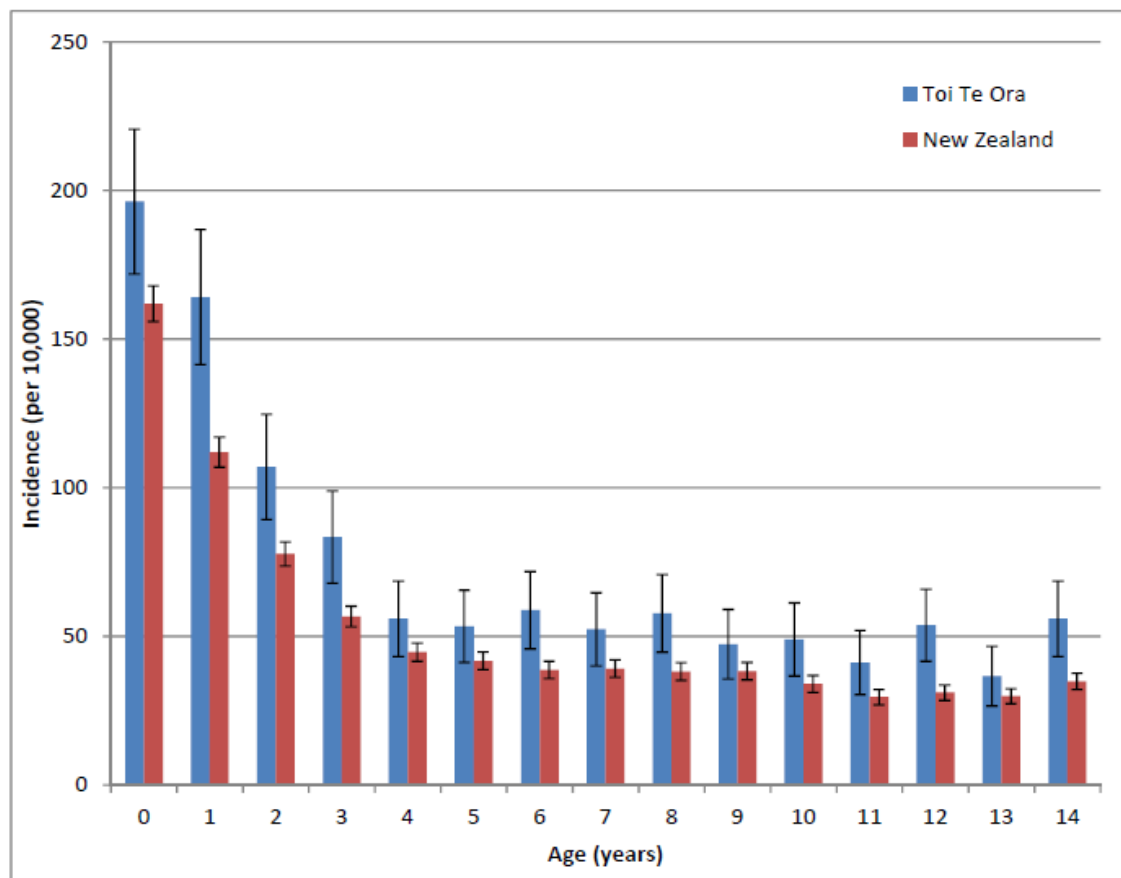
Bay of Plenty ARF “13 day” stay



Serious skin admissions are most often <4yr age

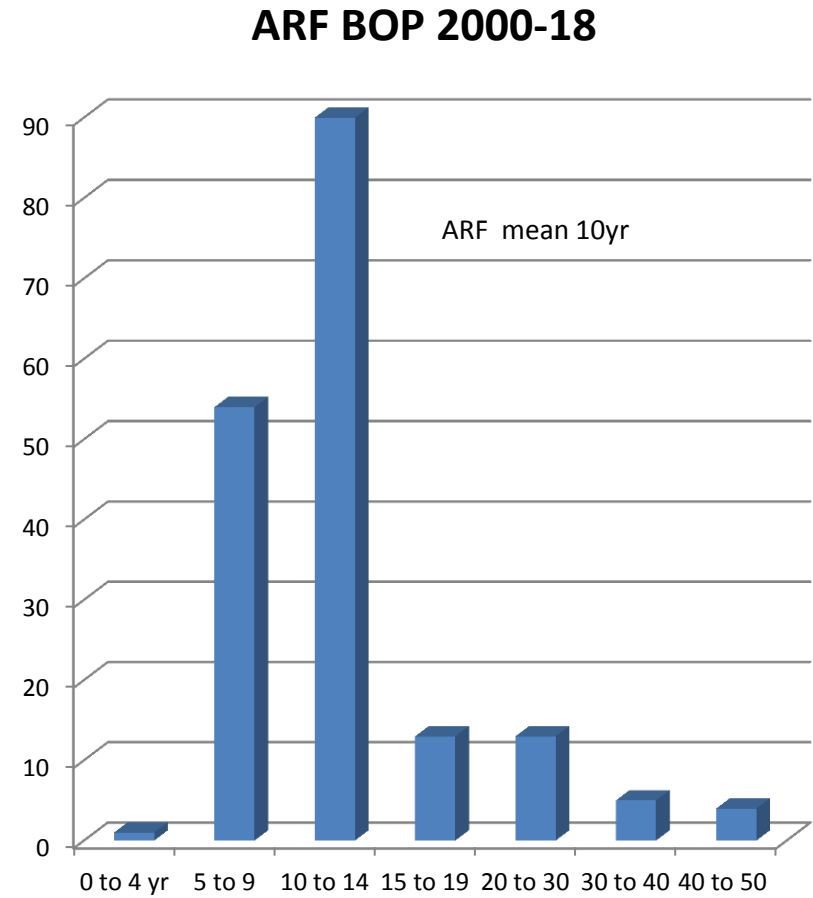
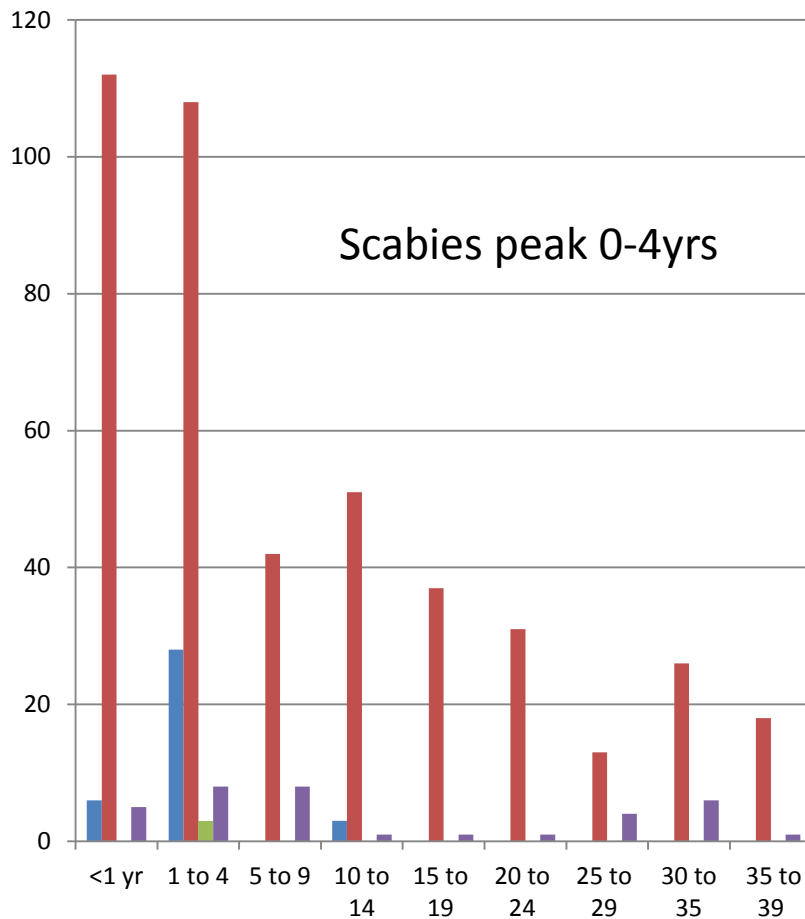
NZ & Toi te Ora Public Health Service area Bay of Plenty and Lakes DHB, 2018

Figure 5: Average incidence of serious skin infection by age for 2012-2014



Most not all BOP ARF

5-10yr after scabies peak incidence



Scabies admissions and ARF; Association or Causation

Association or Causation Robyn Lucas , Anthony McMichael Bulletin of WHO 2005; 83 (10) 792-4

- **Strength of association** =partly **both share crowding** risks, ascertainment increased by ARF length of stay
- **ARF;scabies ratio; lower** if community scabies counted **higher** if more known ARF linked to community scabies
- **Temporality** delayed **most scabies infancy** 0-3yrs invokes immune priming; however school Rx works (?non-causal)
- **Consistency; Scabies** only needs to **explain some ARF** as **60% BOP explained by GAS sore throats** (some from skin colonization & less sepsis); maybe more in tropics
- **Biological gradient; Multiple GAS sources/Role dose**
- **Coherent and plausible** (but not necessary)

Association or Causation?; applying &, adding to

Lucas and McMichael's review of Bradford-Hill Criteria Bulletin WHO 2005

Connection to ARF	Strep throat	Strep skin	Scabies
Temporality Serology essential for invasive GAS	50-60% Close to ARF		BOP; most precedes ARF by 5-10 years
Strength of association	Strong	Oz	Strong
Attributable risk / explanatory power	60% BOP	some BOP 10-40	Weak in BOP & Auckland 2-3 % ARF unless 1 care
Specificity; current BOP	Main factor	Less but	Few
Dose response when less	less ARF	yes BOP	yes BOP
Consistency diverse settings	Yes in NZ US No in Oz	Yes Oz less NZ	Tropically yes Temperate smaller role
Coherence other disciplines			Immune priming plausible
Experiment / Intervention	60% less ARF with RFPP	Case control	
Necessary in BOP	less ARF	10-40%	Not likely in BOP
Threshold carrier vs sepsis, subclinical Hysmith	GAS status Changes		



Te Kura Kaupapa Maori
o Waioweka, winning
ARF waiata 2019

Rheumatic fever school prevention works, 60% less,
treating students Strep A positive sore throats,

ARF Maori 5-14yrs 148 to 59x10⁵/annum 2000-10 vs 2011-18, RR 0.40(CI 0.22 - 0.73) P0.002

- Where high ARF; Maori Pacific, Hauora managed, school schemes
- Where free primary care sore throats access via standing orders
- GPs effective when Rx 10/7 M & PI Strep A via school or direct
- Risk? Who sleeps same bed same room/ who, whanau had ARF?



ASID IN AOTEAROA | 18 – 21 MARCH 2015 | AUCKLAND, NZ

Pharyngeal Group A Streptococcal prevalence declines with school based sore throat swabbing, “Kiri Ora”, healthy skin programme and appears to parallel declining Acute Rheumatic Fever (ARF).

S Ball^{1,2}, J Malcolm^{2,3}, L Hartley¹, L Wana¹, M Bennett¹, R Ingram-Seal¹, J Stewart³, D Lennon³

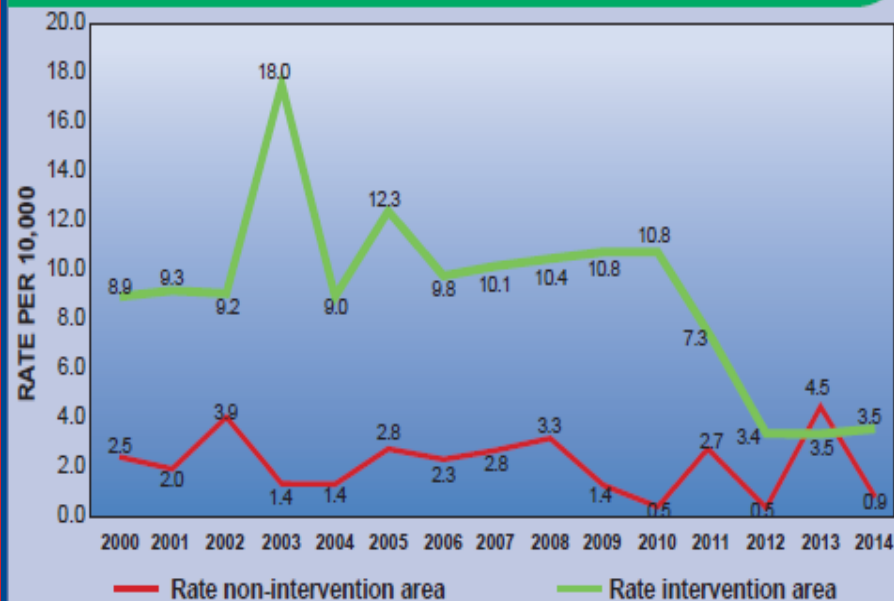
1 Eastern Bay Primary Health Alliance, 2 Bay of Plenty DHB, 3 University of Auckland.

Contacts: Sandra Ball - sandra.ball@ebpha.org.nz, John Malcolm - john.malcolm@bopdhb.govt.nz

Kawerau throat Group A Strep carriage drops with ARF programme & Kiri Ora (p=0.009)

	Year	Pharyngeal GAS	(95% confidence intervals)	Significance of change
Pre ARF school programme	2010	22%	(14%-33%)	
Post 3yr ARF school programme	2013	12%	(6%-19%)	2010 cf 2013 (p=0.06)
Post 4yr school plus Kiri Ora healthy skin programme	2014	6%	(4%-10%)	2013 cf 2014 (p=0.05)

Rates: All ARF Cases 5-14yr per 10,000



Walsh, Scarfe, Malcolm 2015

- Often Community wishes
- For comprehensive care of co-morbidities

Why causes, complications and co-morbidities all matter; ARF/ RHD

Complications; some hospital

- Heart failure
- Limited exercise tolerance
- Endocarditis (teeth care)
- Anticoagulation strokes
- **Prevent with**
- Timely Benzathine Penicillin
- Timely Echocardiographs
- Timely Surgery
- Oral care school dentists
- Heart Medications GP Heart

Comorbidities; community

- Overweight
- Diabetes mellitus
- Cigarette related illness
- Ischaemic heart Disease
- Time off school, education
- **Assist with**
- Whanau ora
- Sports
- PHA Dietician Family practice
- Quitline Hapainga

Tui tui tuia sewing ARF programmes together

Family, skin, throat, heart health ;Whanau,kiri, korokoro, manawa ora

- “ARF an indicator of child health,(Lennon 2017) a visible, significant marker of inequality;skin a likely reservoir for GAS; control of prevalence a marker.”
- **Maori 2/3 Pacific 1/3 cases; co-design service delivery**
- **Treat Strep A pharyngitis & skin sepsis (not or), scabies**
- **Comorbidities** Dental, Sugar, BMI SportBOP
- **Research & advocacy;** Housing, Rx 10/7, RHD, FH Echo
- **Schools clinics** for dental, oral, skin health
- **Primary** prevention schools AND primary care
- **Local and national** initiatives promotion

World cup winners in Health Promotion

2012-2017, Strep A sore throats

2018-19 HFA feet off the pedals

2019- 2024 Strep A wherever
whatever the weather (perhaps)



Preventing Rheumatic Fever



➤ Future Research Skin Sepsis >Scabies >ARF

Possibly useful research Query

- (Expect Community scabies >> higher than hospital admits,ED)
1. **Research scabies presenting, to community GP; NHI linkage ever to hospitalized confirmed ARF?**
 2. Resources Counties protocols
Antiseptic; Antibiotic duration?
 3. Community Hospital scabies prevalence by age in Auckland?
 - (Mana Kids prescription ratios
 - Rx 10:1 throat to skin
 - Rx 50:1 throat to scabies)

Challenge to the Paediatric view

- “under diagnosis of scabies in ARF admissions unlikely”
 - All Paediatric ARF Admitted
 - Paediatric length of stay LOS average 2.6 days (BOP)
 - Paed ARF stay 13 -23 -54 days
 - ARF hospital stay 5-20 x most
4. **Prospective case control ARF patient dermoscopy vs clinical vs PCR**
 5. **How long is scabies PCR +ve?**

Scabies focussed future Research Studies and Questions on path; Skin Sepsis >Scabies >ARF

1. Research **scabies ever** presenting, to community GP; **NHI linkage to hospitalized confirmed ARF**
2. Prospective case-control **ARF children** admitted with **dermoscopy vs clinical vs PCR**
3. Community Hospital scabies prevalence by age in Auckland (Can we assume same as BOP?)
4. Resources Counties protocols Antiseptic; Antibiotic; **What duration prevents ARF?**
5. How long is scabies PCR positive post- infection?

Skin focussed NZ Researchable links to ARF-1

- Observation of **distal end GAS priming pathway**;
- Treating throat/skin GAS; **less strep A prevalence**
- Hypothesis; Is ARF lower when less GAS
- Question; **Are other NZ communities with declining ARF seeing declining infant & child**
 - **Skin sepsis**
 - **GAS pharyngitis**
 - **GAS prevalence ?**

Acute Rheumatic Fever; Pathogenesis

J Carapetis M McDonald N Wilson Lancet 2005

Hypothesis; If ARF is mediated by scabies, preschool Strep A might prime the immune response

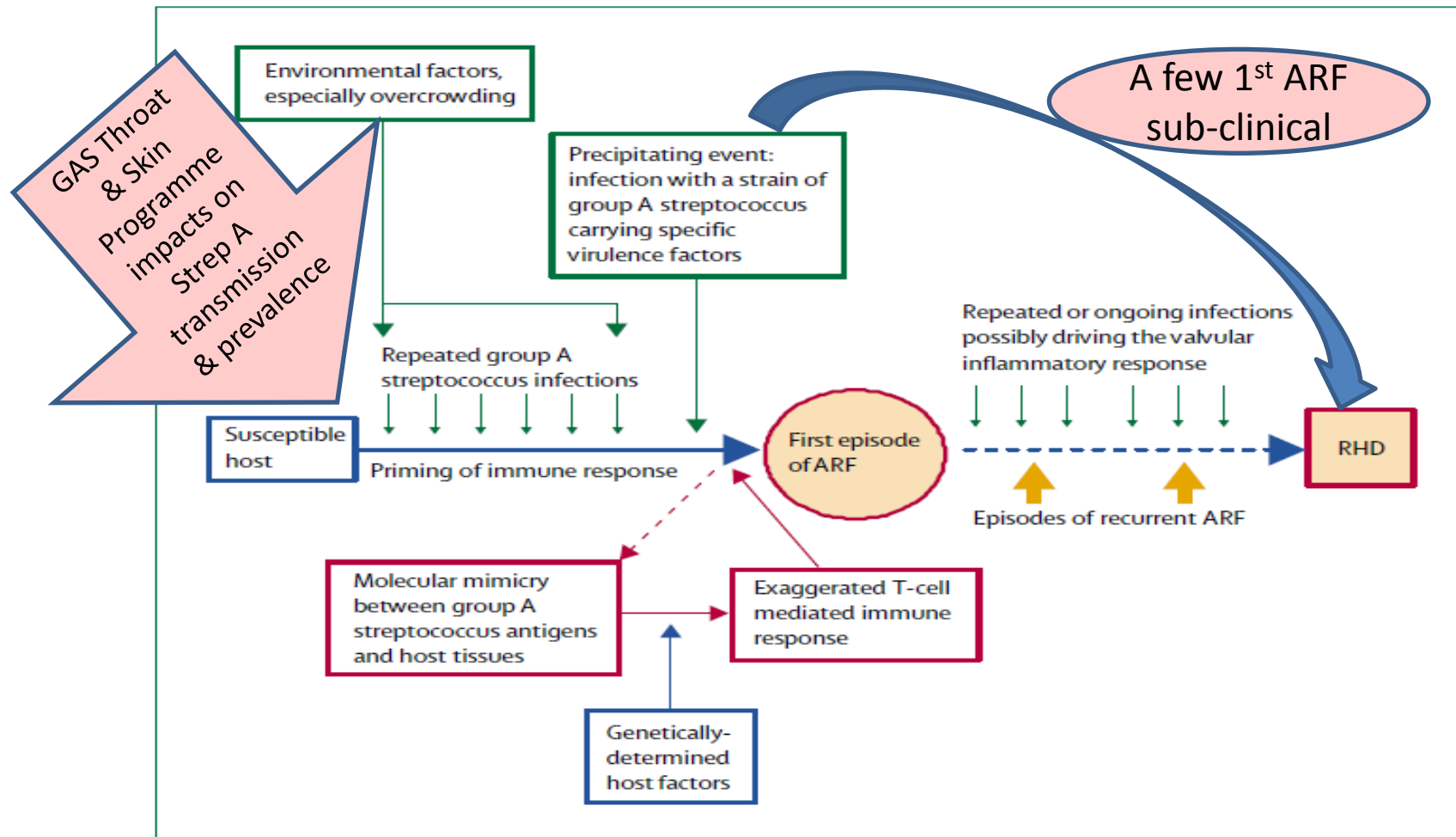


Figure 2: Pathogenetic pathway for ARF and RHD

Skin focussed NZ researchable links to ARF-2

- Observation nearer the **proximal GAS pathway**
- Q; Are all ARF risks; GAS when, duration, dose?
- Question; **Where ARF is static or climbing, is skin sepsis static high too?**
- **Intervention/ evaluation; What effect of skin programme introduction on admissions, GAS sore throat numbers & ARF?**

Scabies infected with Staph, Strep, distressing, developing cellulitis, at risk of septicaemia, osteomyelitis, nephritis & ..?

slide from Dr R Forster Whakatane



Skin sepsis, Scabies & Rheumatic Fever

BOP view; Address Scabies on the path to health equity;

Scabies is Important for own sake & co-morbidities

A /secondary sepsis; sharing Strep A, Staph, & Scabies

B/ Strep load is shared; less skin sepsis, less throat GAS

C/ Less GAS throat prevalence parallels less ARF

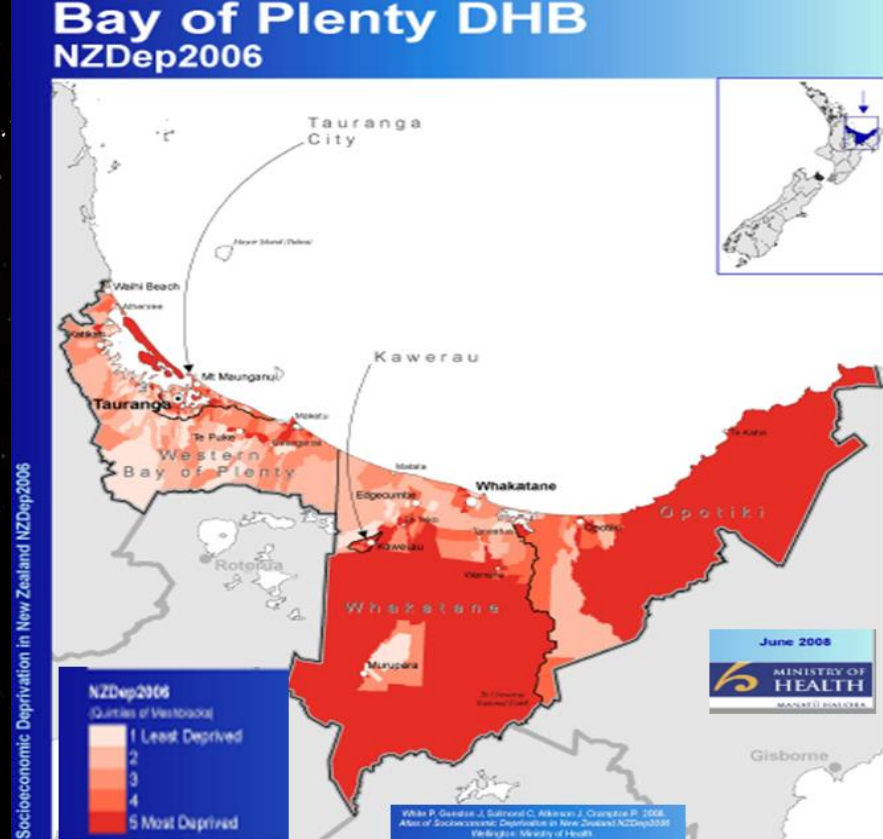
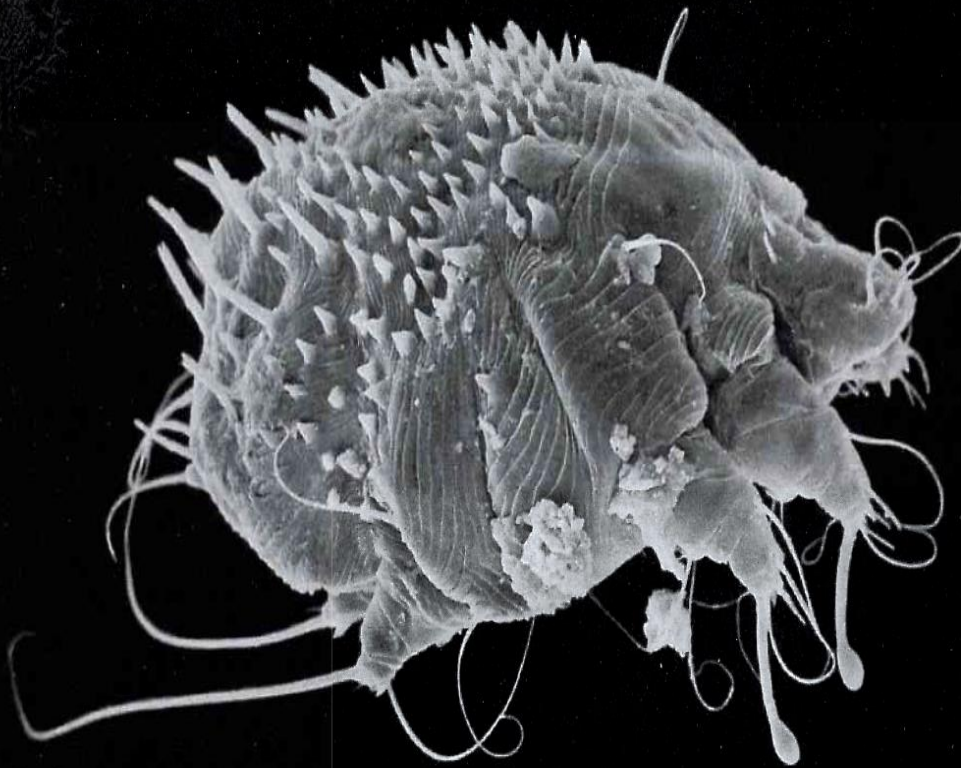
D/ BOP ARF decline is with GAS decline Throat & Skin

Scabies appears associated with 2-7% of BOPARF; Research Studies

1. Are community GP scabies diagnoses linked to ARF admissions?
2. Is scabies active in Delphi-negative ARF diagnosed children?

Driving towards health equity for all, Pacific, Maori;

Address ARF co-morbidities whether causal or not.



Skin Sepsis & Scabies in the Bay; If & how associated with Bay of Plenty, Acute Rheumatic Fever!

Acknowledge data from; James Scarfe, Toi Te Ora, Public Health Service Analyst,
Mary White Analyst, Marianne Toms, Business Intelligence Kip Mouldey HO,
Presentation by John Malcolm, Paediatrician BOPDHB



SYMPOSIUM

Friday 13th September 2019
School of Population Health, Auckland

IMPROVING SCABIES TREATMENT: A PATH TO HEALTH EQUITY IN NEW ZEALAND?

**Skin Sepsis & Scabies in the Bay; If & how associated
with Bay of Plenty, Acute Rheumatic Fever!**

Acknowledge data from; James Scarfe, Toi Te Ora, Public Health Service Analyst,
Mary White Analyst, Marianne Toms, Business Intelligence Kip Mouldey HO,
Presentation by John Malcolm, Paediatrician BOPDHB