Antimicrobial Use in Primary Care

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Why are we concerned about this?

- Increasing resistance of bacteria to antimicrobials has been an issue for years.
- Up until recently the community in New Zealand has had predictably susceptible bacteria.
- Antimicrobial resistance used to be an issue mainly in hospitals.
- Change more recently to resistant organisms in the community setting.

What are the issues in NZ?

- Increasing resistance in the community.
- Geographical variation.
- Community acquired MRSA.
- Increasing resistance of coliforms causing UTI.
- Resistance of *Neisseria gonorrhoeae* .
- Resistance of *Streptococcus pneumoniae*.

Development of New Antimicrobials

- No new antimicrobials in development in the next few years.
- Much more profitable to develop drugs which are used for chronic conditions and remain active.
- Antimicrobials used mainly short term and when organism becomes resistant no longer used.

Interventions

- Prevent the emergence of resistant clones – prudent use. Most are imported.
- Prevent spread.
    - Surveillance national and local.
    - Prudent use.
    - Promote good hygiene.
    - Education.

Now

- Define strategies to minimise the impact of antimicrobial resistance and lack of new agents.
- This requires a more conservative approach to antimicrobial use.
- Surveillance to define issues and measure impact of strategies.

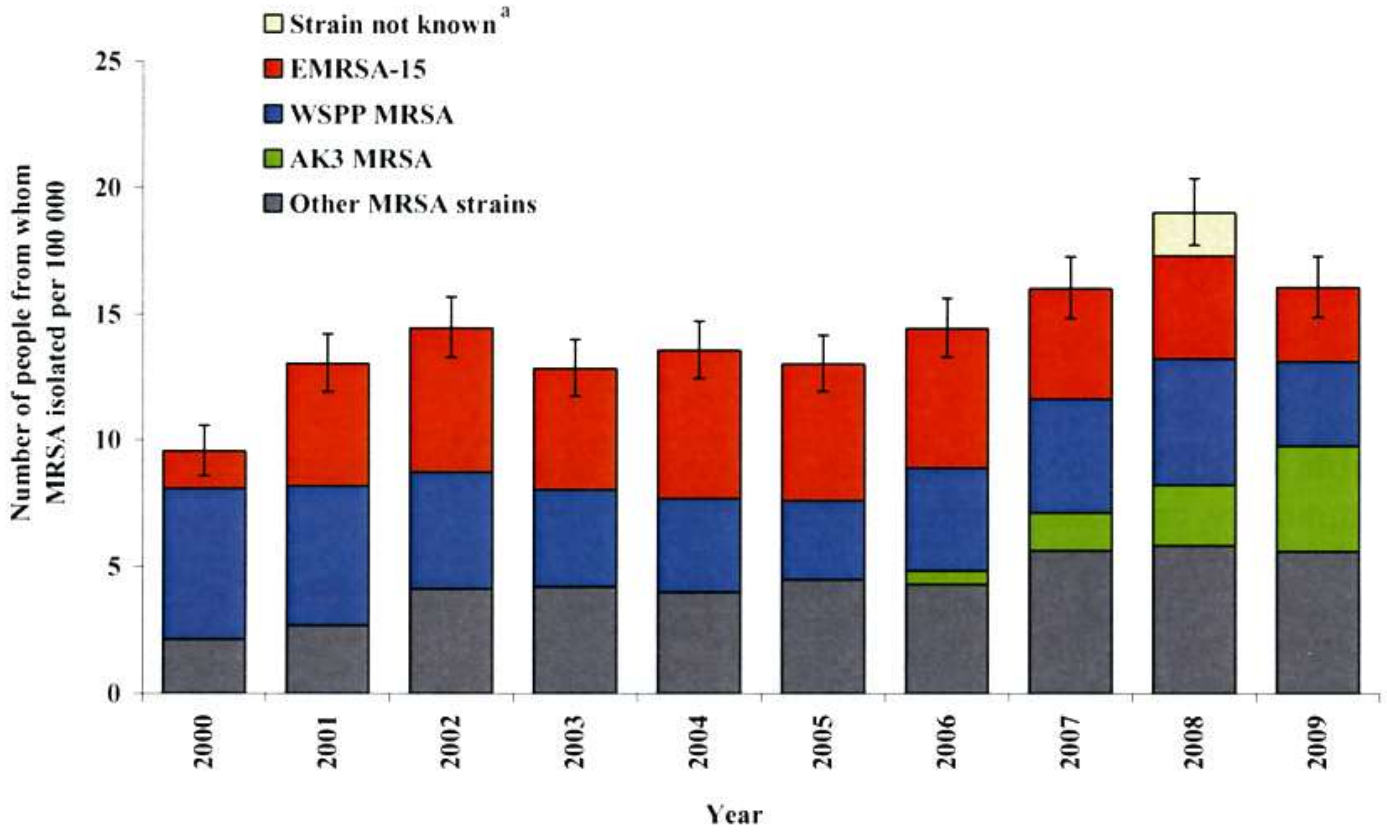


Figure 1. MRSA point-prevalence rates, 2000-2009, showing 95% confidence intervals.
[a] The category 'Strain not known' for 2008 represents the number of people identified with MRSA by Middlemore Hospital laboratory which did not refer the isolates to ESR for strain identification.

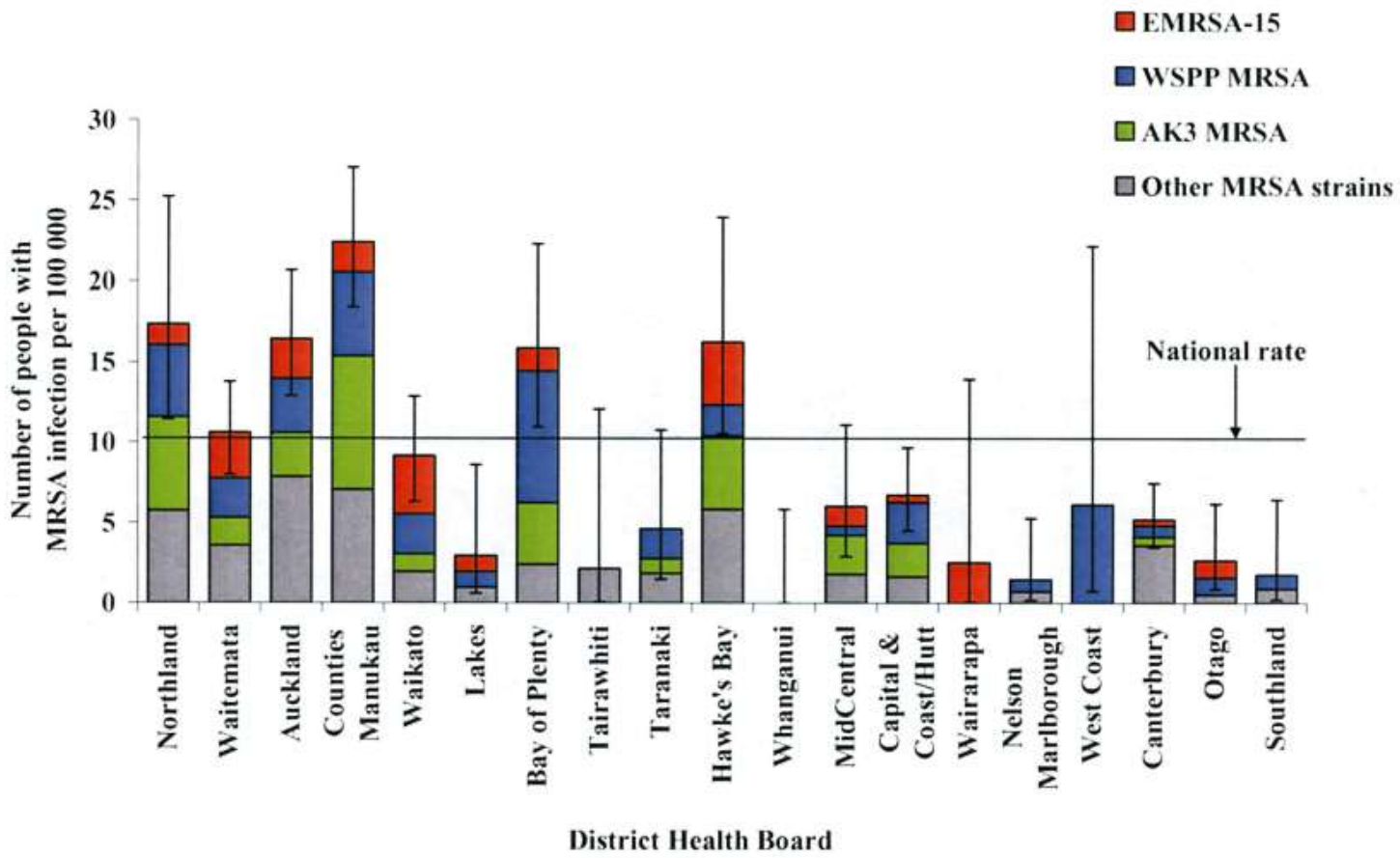


Figure 4. Point-prevalence rates of MRSA infections by district health board, 2009, showing 95% confidence intervals. Data for the Capital & Coast and Hutt District Health Boards (DHBs) is combined as 'Capital & Coast/Hutt', and data for the Canterbury and South Canterbury DHBs is combined as 'Canterbury'.

Figure 1. Annual/annualised incidence of ESBL-producing Enterobacteriaceae, 2000-2009

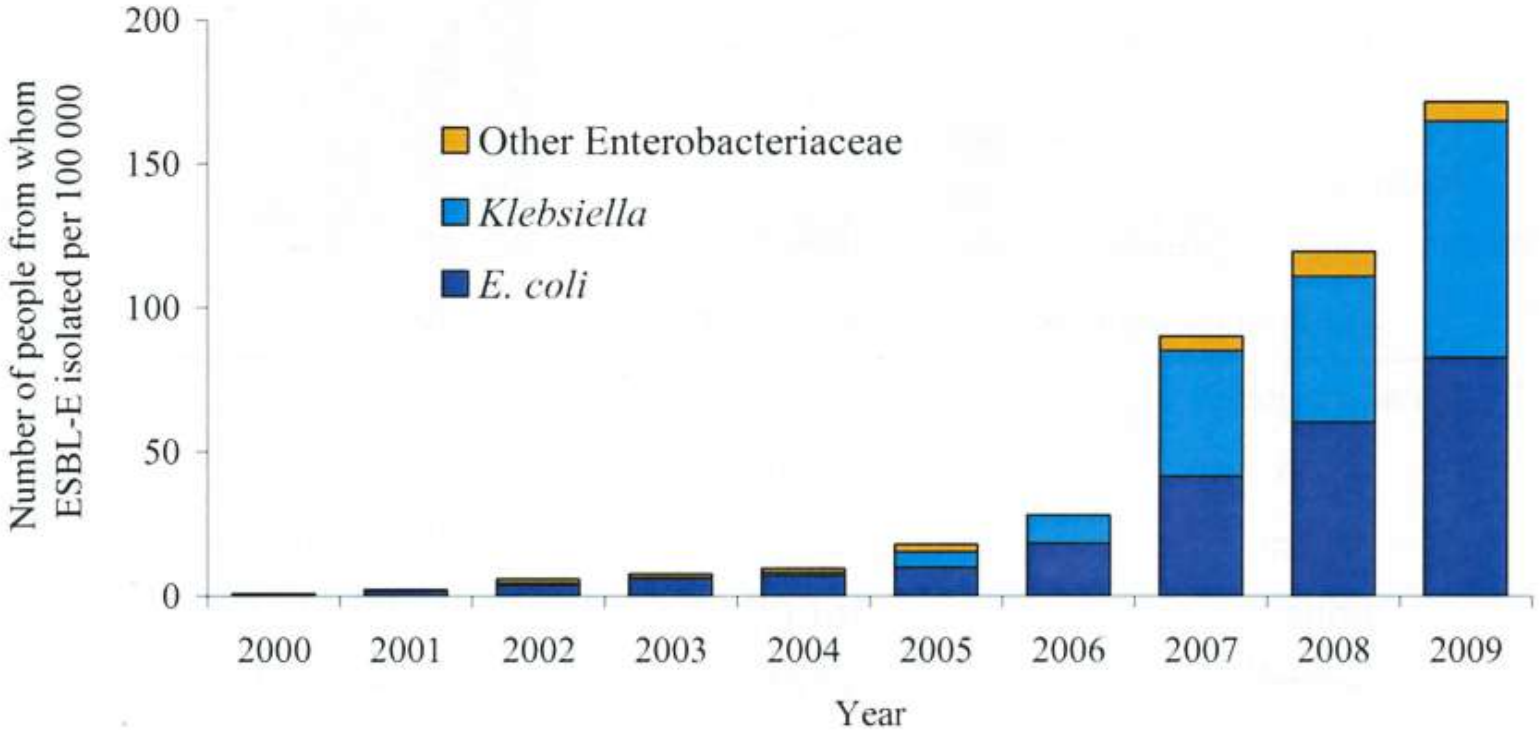
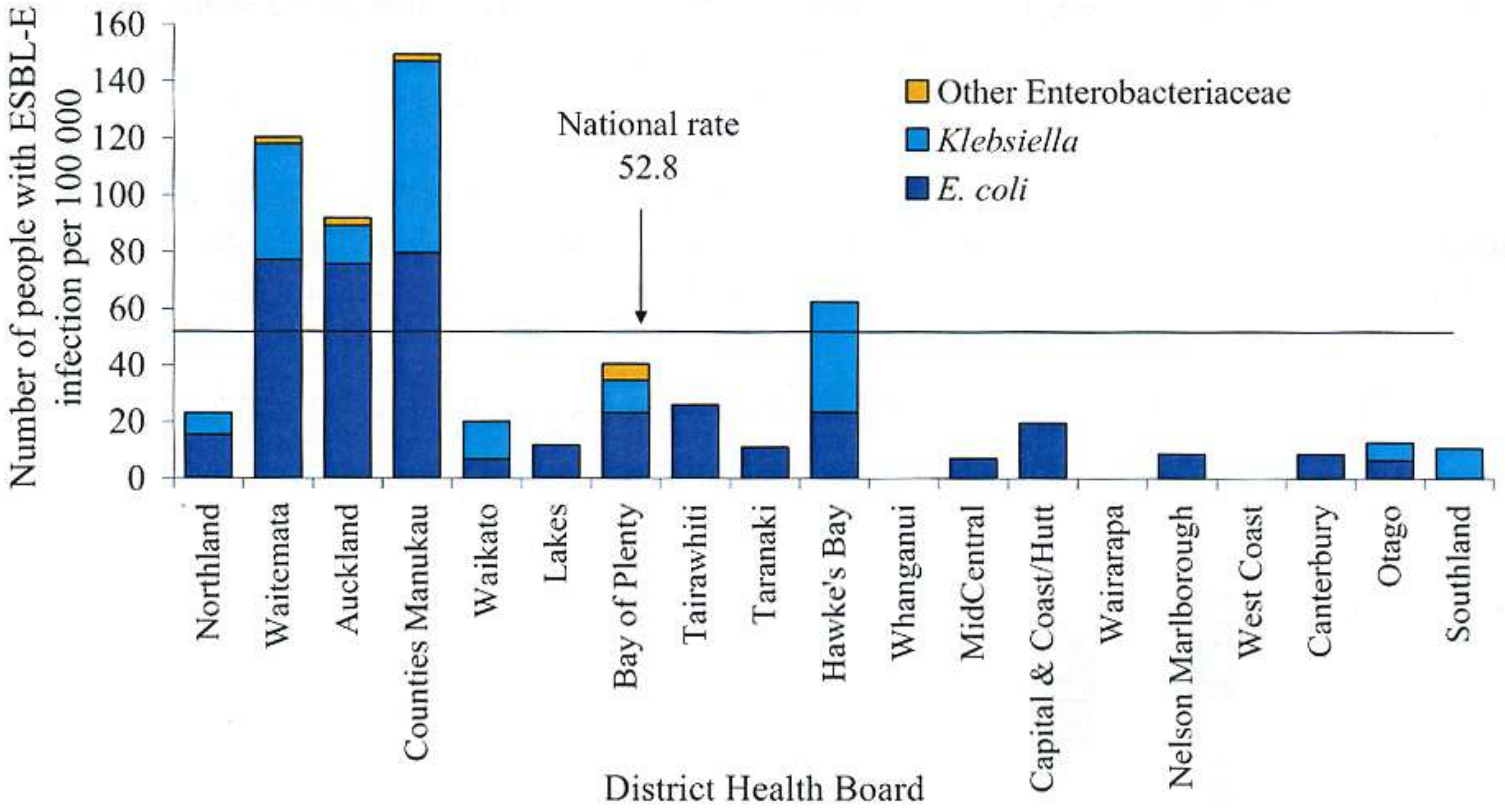


Figure 3. Annualised incidence of ESBL-producing Enterobacteriaceae infections by district health board, 2009



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Local Surveillance

- National surveillance most often reflects situation in areas with high population density.
- Local surveillance necessary to define issues which can spread. Eg ESBL *K.pneumoniae* in Hawkes Bay.
- Canterbury MRSA USA300.
- South Canterbury MDR E.coli.

Chances of Antibiotic Resistance after Treatment UTI

- 0 to 1 month (OR. 4.40)
- 0 to 2 months (OR. 2.5)
- 0 to 3 months (OR. 2.48)
- 0 to 6 months (OR. 2.18)
- 0 to 12 months (OR. 1.33)

Chances of Increased Antibiotic Resistance After Treatment RTI

- 0 to 1 month (OR. 2.1)
- 0 to 2 months (OR. 2.37)
- 0 to 3 months (OR. 1.48)
- 0 to 6 months (OR. 1.90)
- 0 to12 months (OR. 2.37)
- Higher resistance rates were found with longer courses.

Acquisition of MRSA

- MRSA has also been studied and there is not such a close link.

- Other factors in transmission may well be important eg household contact with MRSA, environmental contact.

Antimicrobial Use

- Majority antimicrobial use is in primary care.
- Large differences in use between countries.

Barriers to Change

- Patient and practitioner expectations.
- Lack of awareness of antimicrobial resistance.
- It is perceived that this is theoretical or minimal.
- Reducing the amount of antimicrobial prescribed is a major strategy to prevent or at least slow the spread of resistance.

Case 1

- Man aged 30 years presents boil on his neck.
- Usually fit and well.
- This is the 3rd episode of boils in the past 6 months.

How would you manage this?

- What other history could be important?
- Acute situation.

- Would you take a sample?

- Would you prescribe antibiotics? If so what?

Would you prescribe an antimicrobial?

- If you would what would you prescribe?

Would you take a sample?

- If you would what information is of interest in the result?
- What samples would you take?

Samples

- Pus.
- If want to decolonise nares, and perineum. May need to sample other household contacts especially if symptoms have occurred in others.
- Need to know susceptibility not just flucloxacillin but also mupirocin.

Clearance

- Compliance important.
- Mupirocin ointment nares tds for 7 days.
- Chlorhexidine body wash daily. Use a cloth to apply and ensure cover axillae, groins perineum. Best left on for 2 mins. 7 days.
- Heat treatment of fomites –sheets, towels, underwear, etc. Hot dry or ironing best. Do this in week of clearance.
- Do not try to clear before lesion healed.

Recurrent Staphylococcal Infection

- This is becoming more common.
- In NZ can be MSSA or MRSA.

Case 2

- Female aged 25 years presents with frequency, urgency and dysuria.
- She has recently returned from honeymoon in India.
- She has a history of urinary tract symptoms 2 months ago which were treated with a 3 day course of trimethoprim.

Are there any more details you require from the history?

- What would your management be?

MSU Result

- Microscopy >100 X 106/L WBC
  >100 X 106/L RBC.
  No epithelial cells
- Culture >100 X 106/L E. coli.
- Resistant to amoxycillin/amoxy/clav/norfloxacin/ trimethoprim.
- Susceptible to nitrofurantoin.
- This organism produces an ESBL

Case 3

- 2 year old girl.
- 3 day history of coryza and cough. The cough is keeping the family awake at night.
- On examination nil of note.
- Father accompanying child requests an antimicrobial.

Options

- Child does not need a script for antimicrobial at the moment.
- Delayed prescription.
- Prescribe antibiotic.

Parent Pressure Makes A Difference

- Paediatric care studies show antibiotics 62% if it is perceived parents want them and 7% if parents do not expect them.
- Antibiotics prescribed in 68% of acute respiratory tract visits. 80% were unnecessary according to CDC guidelines.

Where to from here?

- Take South Canterbury as an example.
- Formulary for UTI and quinolone use. Some data suggests that direct relationship between quinolone use and resistance and effect is immediate.
- Lab. report quinolone susceptibility when no other option. Still test so available.

MDRO

- Multidrug resistant organism is resistant to 3 or more classes of antimicrobial.

- In this case quinolones/aminoglycoside/trimethoprim.

E.COLI ANTIMICROBIAL SUSCEPTIBILITY

(% Susceptible)

	2007	2008	2009
Norfloxacin	95	92	87
Ciprofloxacin	89	84	82
Trimethoprim	83	78	77
Nitrofurantoin	97	96	96

ANTIMICROBIAL USE AORAKI PHO

Antibacterials	Your PHO (per GP)	National (per GP)
Norfloxacin	42	30
Ciprofloxacin	25	15
Trimethoprim	49	27
Nitrofurantoin	18	11

Patient Information