

Antimicrobial Resistance – the GP's Role.

Dr Rosemary Ikram FRCPA
Consultant Clinical Microbiologist.

Background.

- 2010 WHO published it's strategy for the reduction AMR.
- World Health Day 2011 WHO asked member countries to commit to programmes with a view to reducing AMR worldwide.

Asked to commit to 6 strategies.

- Commit to a program.
- Strengthen surveillance and laboratory capacity.
- Ensure access to quality pharmaceuticals.
- Implement rational use in humans and animals.
- Enhance Infection Prevention and Control.
- Foster innovation and R & D related to AMR.

Where are we in New Zealand?

- Commit to a program $\pm$.
- Surveillance and laboratory capacity $\pm$.
- Ensure access to quality pharmaceuticals $\pm$.
- Implement rational use in humans and animals $\pm$.
- Enhance Infection Prevention & Control +.
- Foster innovation and R & D related to AMR – minor.

Is there a program ?

- Has been the Antibiotic Resistance Advisory Group (ARAG).
- Preliminary discussions.
- Requires major commitments from all stake holders.

Surveillance and Laboratory Capacity.

- Laboratory capacity currently sufficient, needs to be nurtured to maintain skilled NZ workforce.
- IANZ accreditation of labs.
- Surveillance - National at ESR . Local - is laboratory dependant.

Access to quality pharmaceuticals.

- PHARMAC and Medsafe.

Infection Prevention and Control.

- Programs currently being implemented in DHB hospitals.
- NZ hand hygiene project.
- Central line associated bacteraemia project (ICUs)
- ? Surgical site infection surveillance about to commence

Innovation and R&D.

- Very few NZ publications on these issues.
- Dr Mark Thomas NZMJ on antimicrobial usage Auckland Hospital.

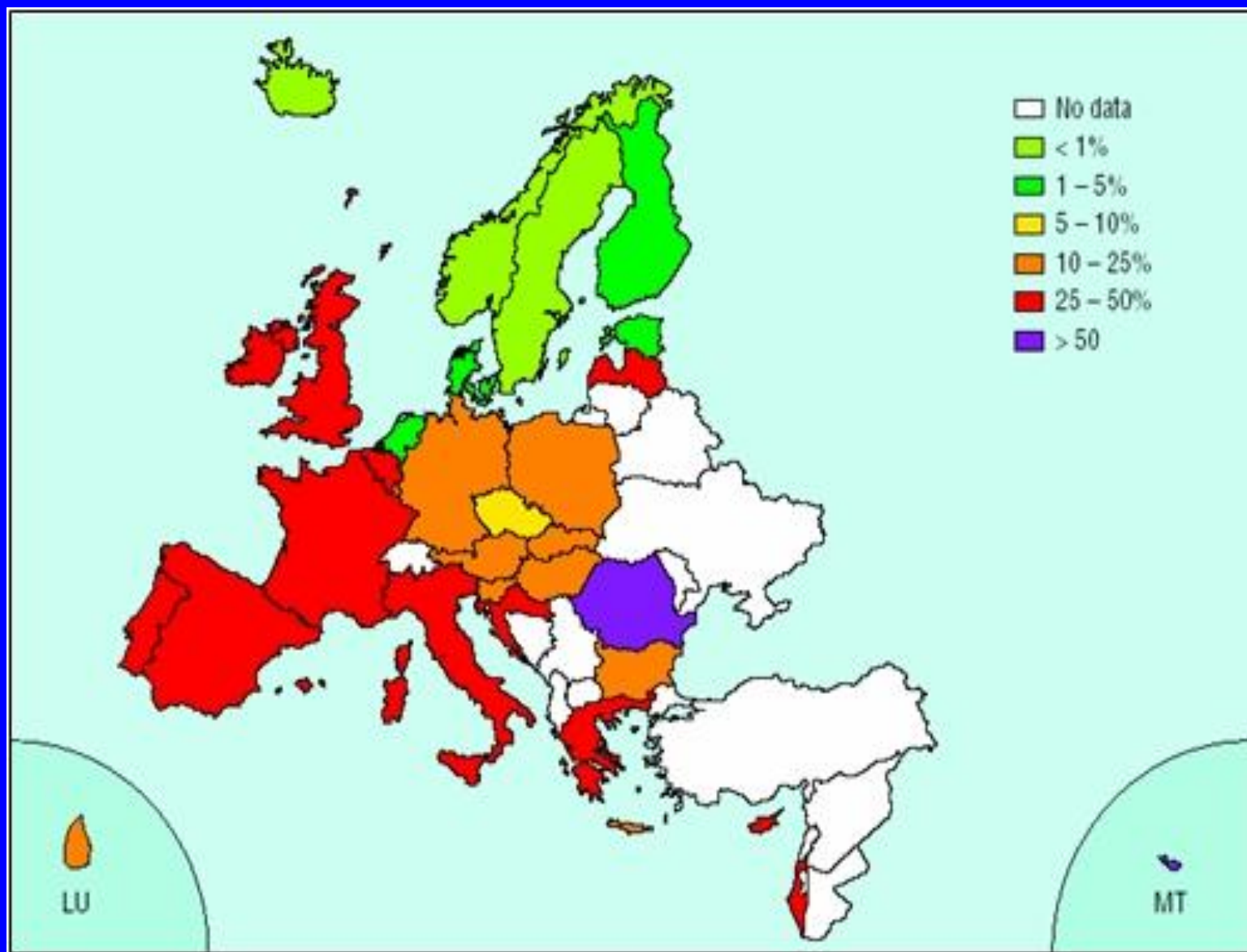
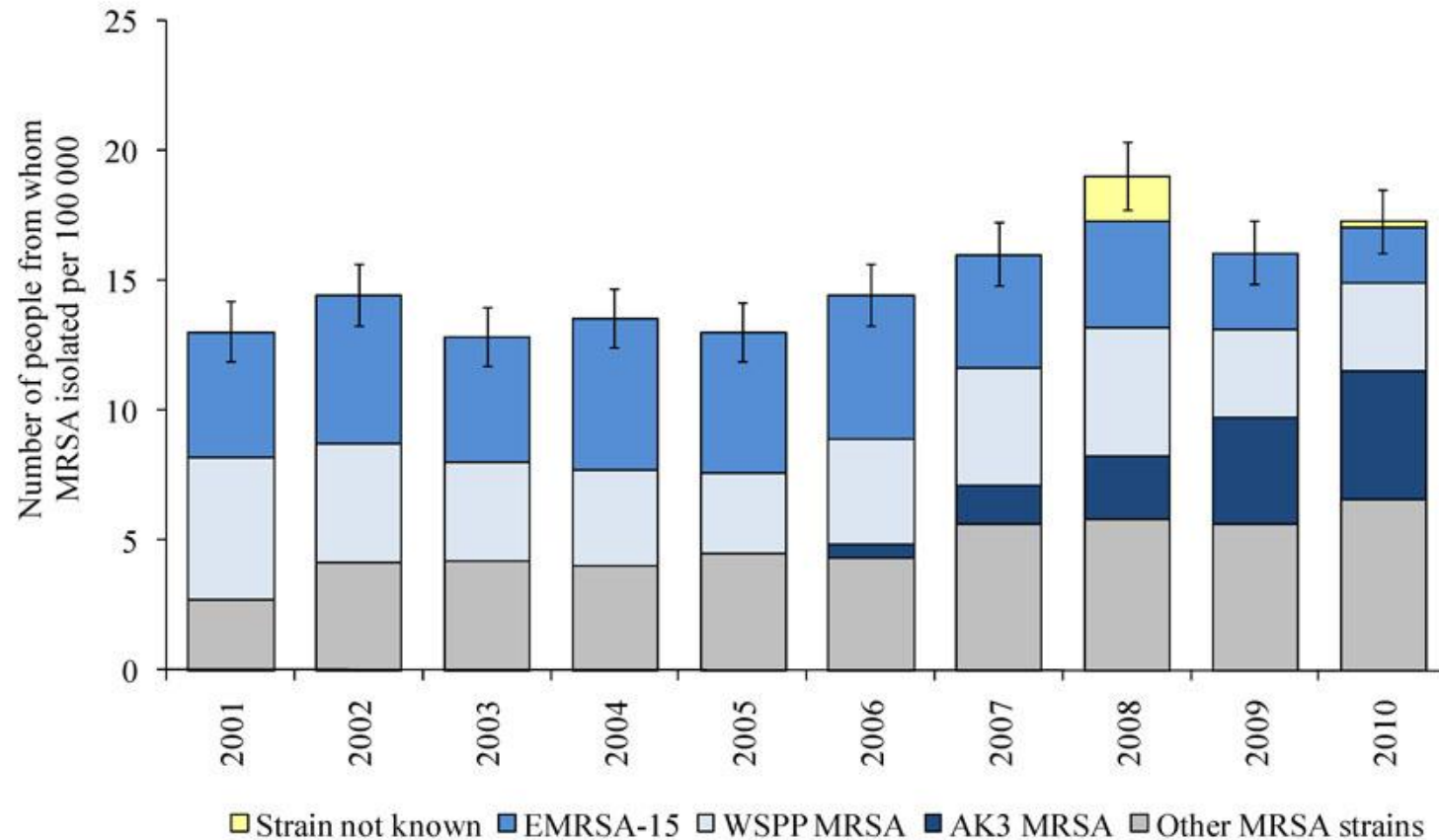
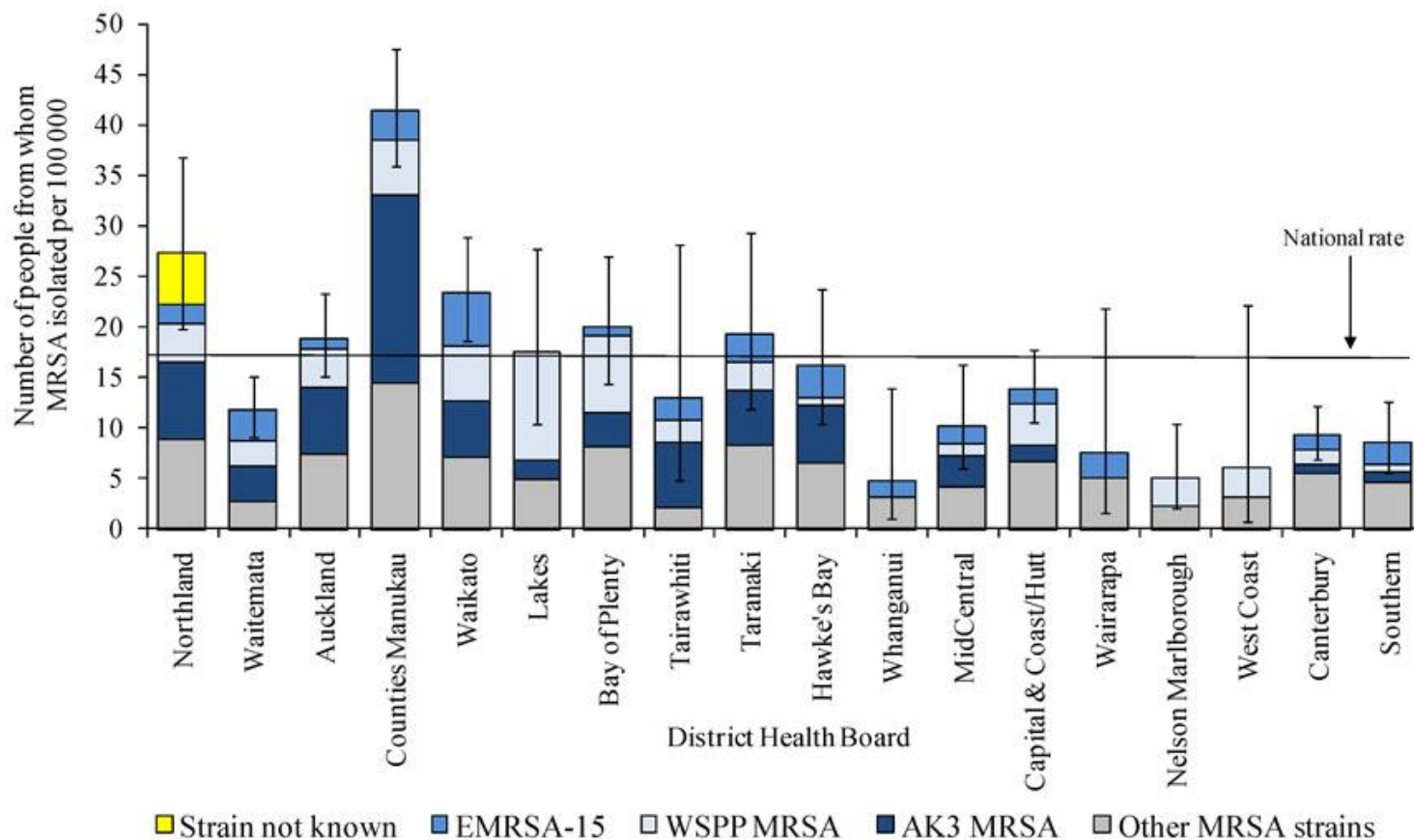


Figure 1. MRSA point-prevalence rates, 2001-2010



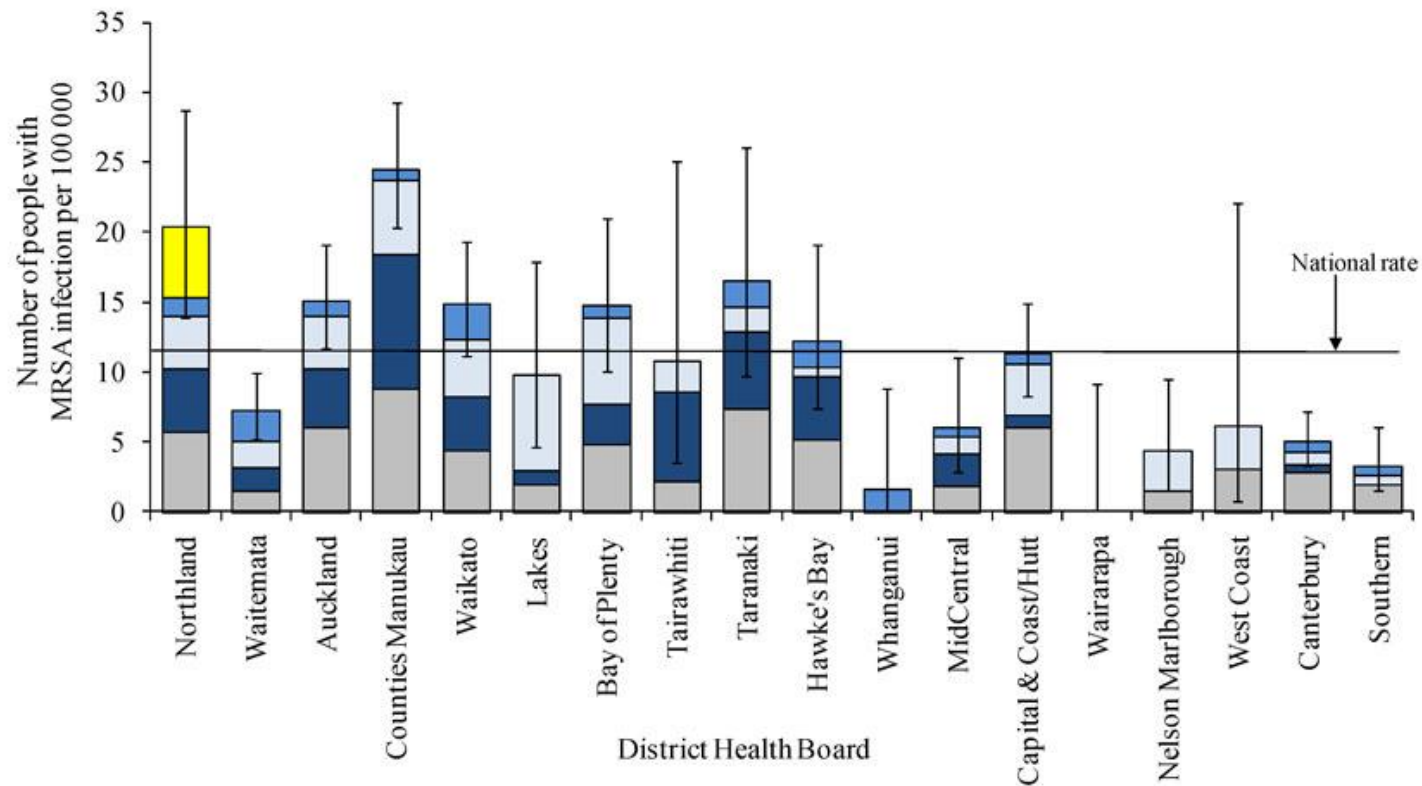
95% confidence intervals indicated by error bars. The category 'Strain not known' for 2008 and 2010 represents people identified with MRSA during the survey period but from whom no isolate was referred for strain identification.

Figure 2. MRSA point-prevalence rates by district health board, 2010



95% confidence intervals indicated by error bars. Data for the Capital & Coast and Hutt DHBs is combined as 'Capital & Coast/Hutt', and data for the Canterbury and South Canterbury DHBs is combined as 'Canterbury'.

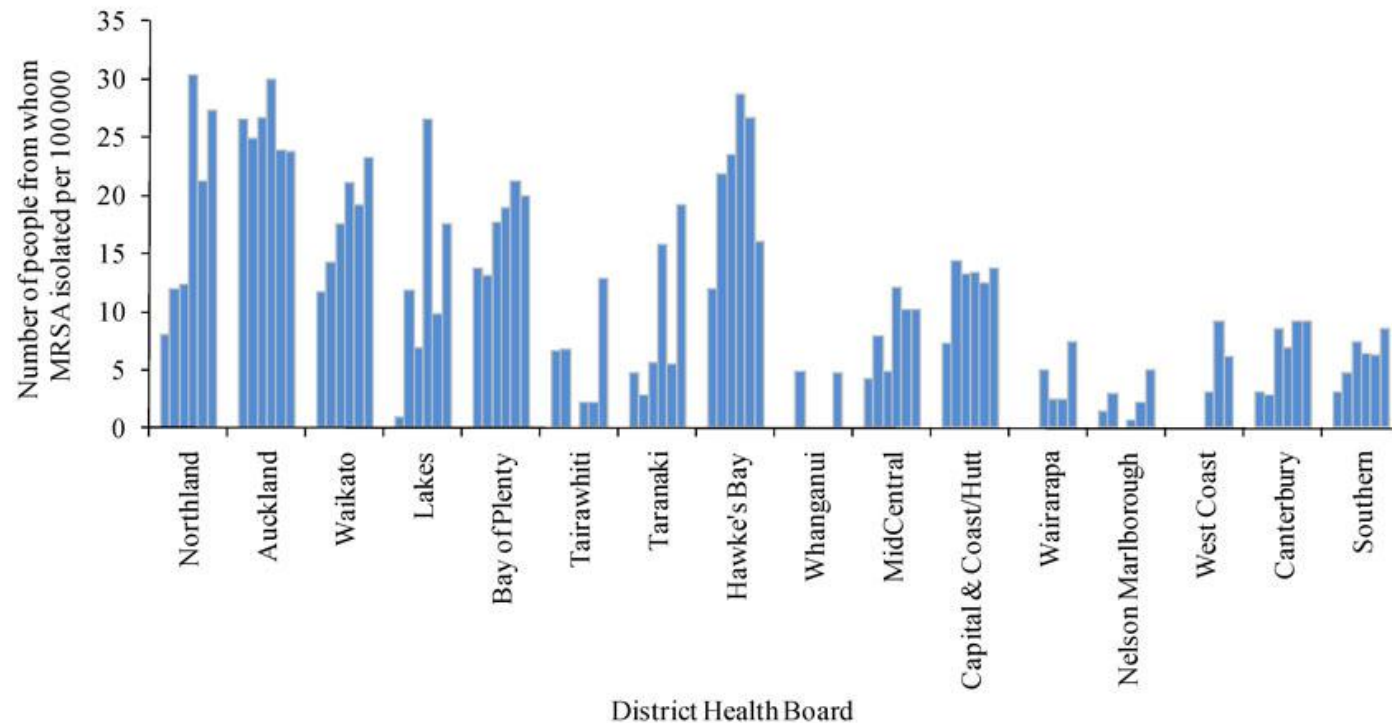
Figure 3. MRSA infection point-prevalence rates by district health board, 2010



■ Strain not known infection
 ■ EMRSA-15
 ■ WSPPMRSA
 ■ AK3 MRSA
 ■ Other MRSA strains

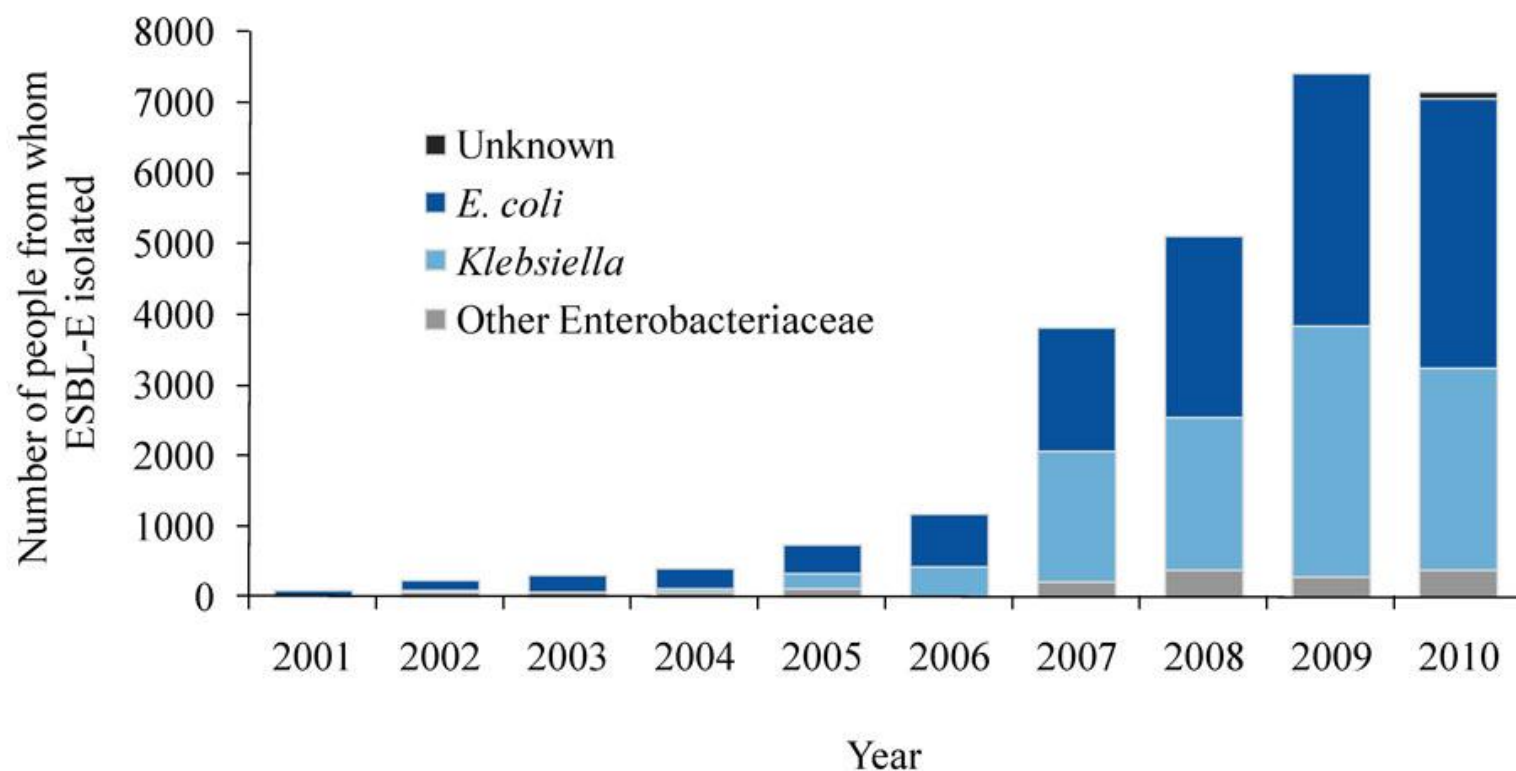
95% confidence intervals indicated by error bars. Data for the Capital & Coast and Hutt DHBs is combined as 'Capital & Coast/Hutt', and data for the Canterbury and South Canterbury DHBs is combined as 'Canterbury'.

Figure 4. MRSA point-prevalence rates by district health board, 2005-2010



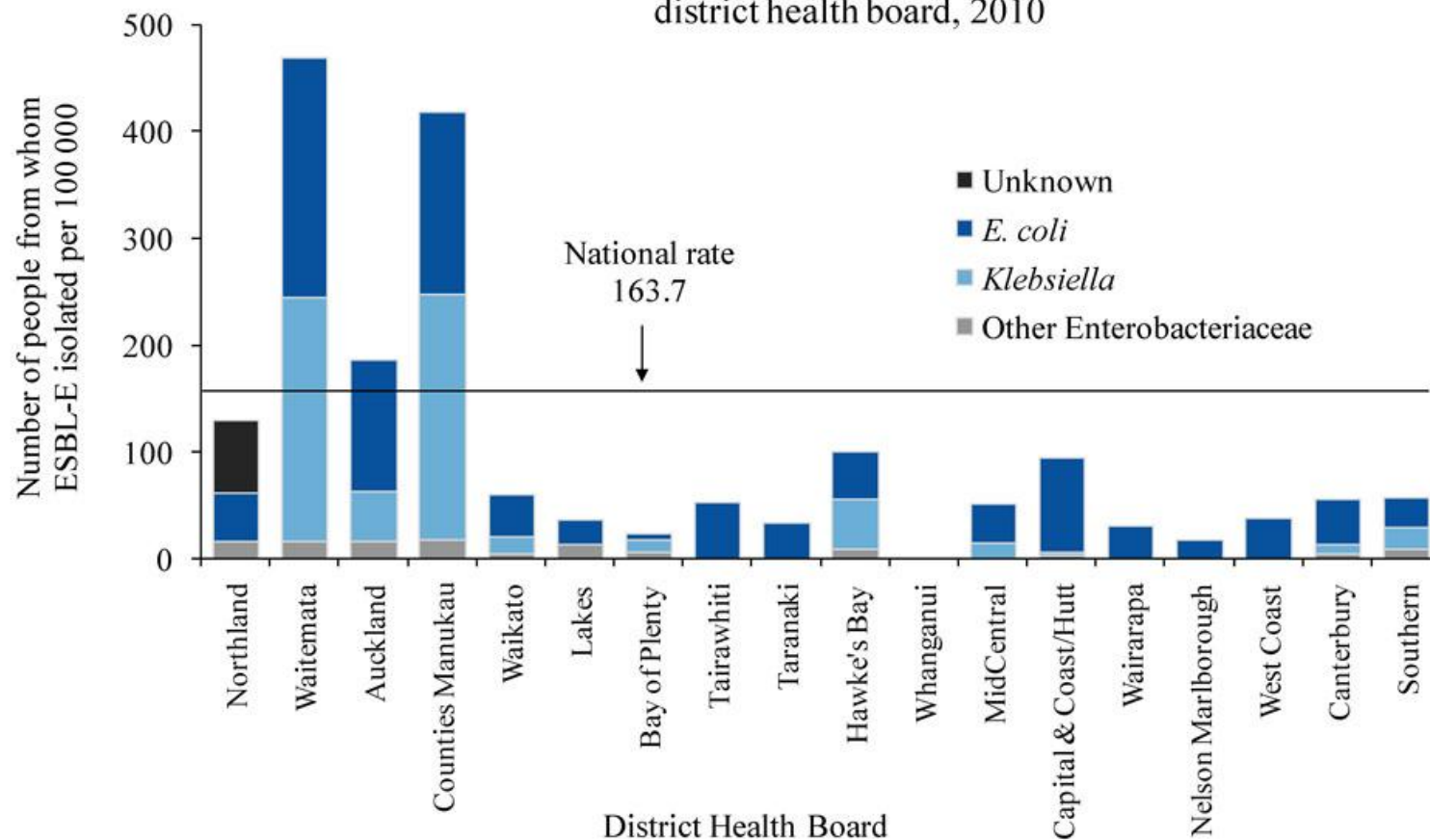
The series of bars for each DHB represent the individual years 2005 to 2010 from left to right. Data for the Waitemata, Auckland and Counties Manukau DHBs is combined as 'Auckland', data for the Capital & Coast and Hutt DHBs is combined as 'Capital & Coast/Hutt', and data for the Canterbury and South Canterbury DHBs is combined as 'Canterbury'.

Figure 1. ESBL-producing Enterobacteriaceae, 2001-2010



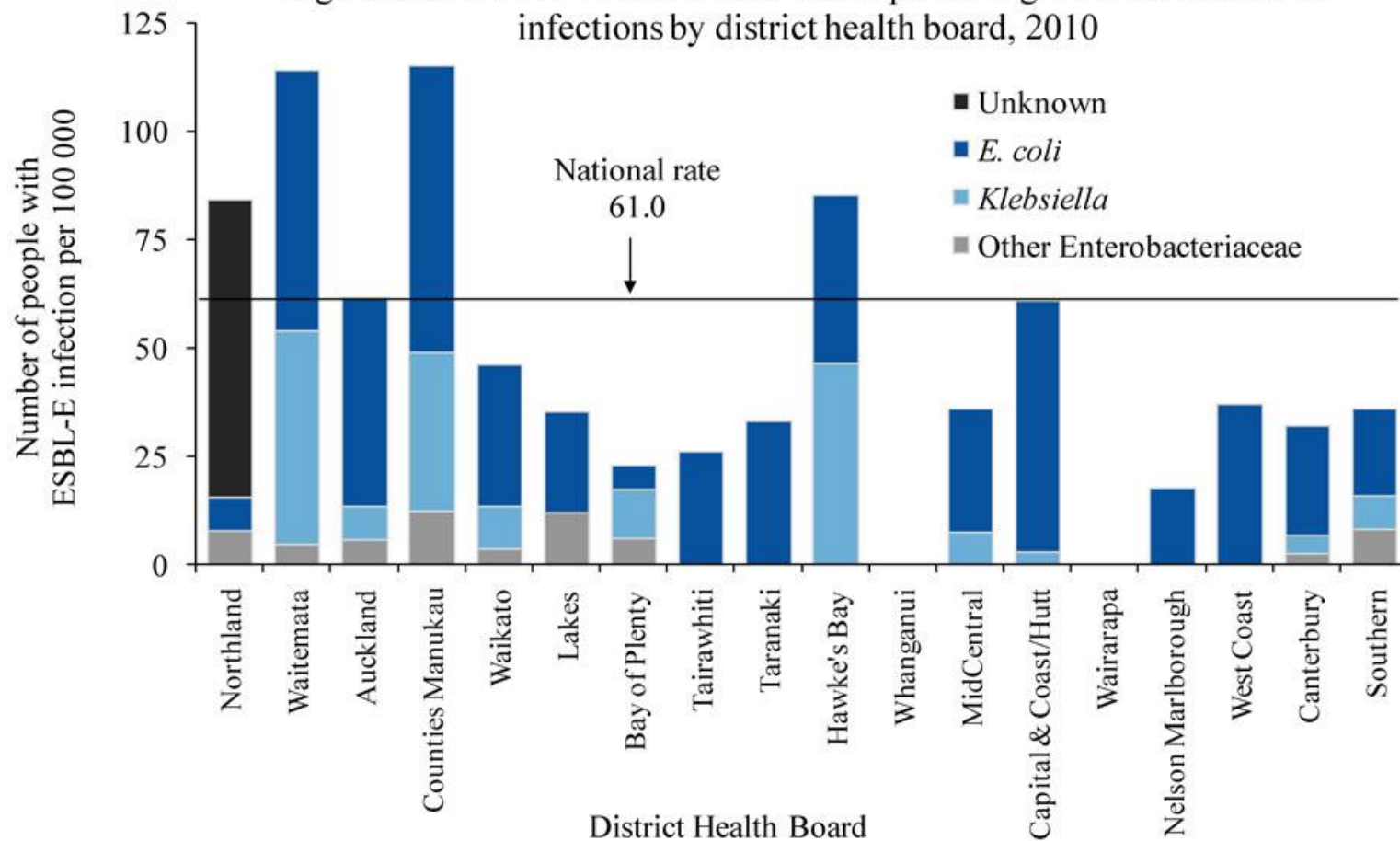
Data for 2001 to 2005 are based on continuous surveillance of all ESBL-E isolations. Data for 2006 to 2010 are annualised and based on 4-week or 1-month surveys conducted in these years. The 2006 survey only included urinary *E. coli* and *Klebsiella*, therefore the data for 2006 is not directly comparable with that for other years.

Figure 2. Annualised incidence of ESBL-producing Enterobacteriaceae by district health board, 2010



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 3. Annualised incidence of ESBL-producing Enterobacteriaceae infections by district health board, 2010



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'.

General Practice Strategies.

- Use antimicrobials effectively.
- Formulary/ Audit / Feedback.
- Education of all HCW and general public.
- Knowledge of local susceptibility profiles as well as National.
- Infection Prevention and Control in surgeries but also information to patients.

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.

Studies on Strategies that Work.

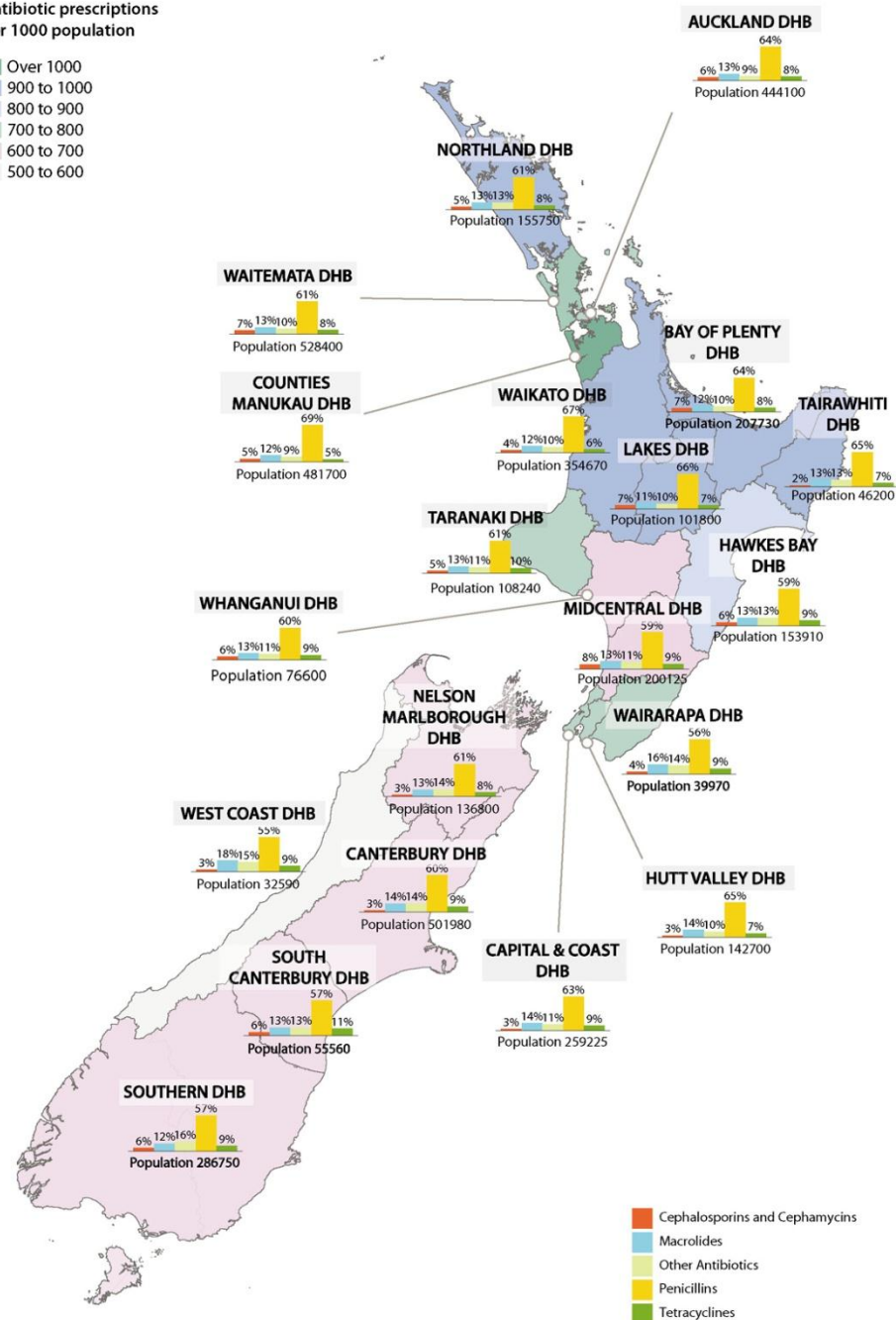
- Recent study of meta-analysis of interventions to influence consulting and antibiotic use for acute RTI in children.
- Most effective were interventions that influenced parental consulting and a/b use should: engage children, occur prior to an illness episode, employ delayed prescribing and provide guidance on specific symptoms.

Scottish Strategy.

- Reduce C. difficile infections (new MDR strain)
- Linked to quinolone use .
- Monitoring of adherence to local guidelines and set up system to monitor quinolone use.
- Use has become the same throughout seasons. Hospitals also involved and CDI has decreased significantly.



Antibiotic prescriptions per 1000 population



Can I make a difference?

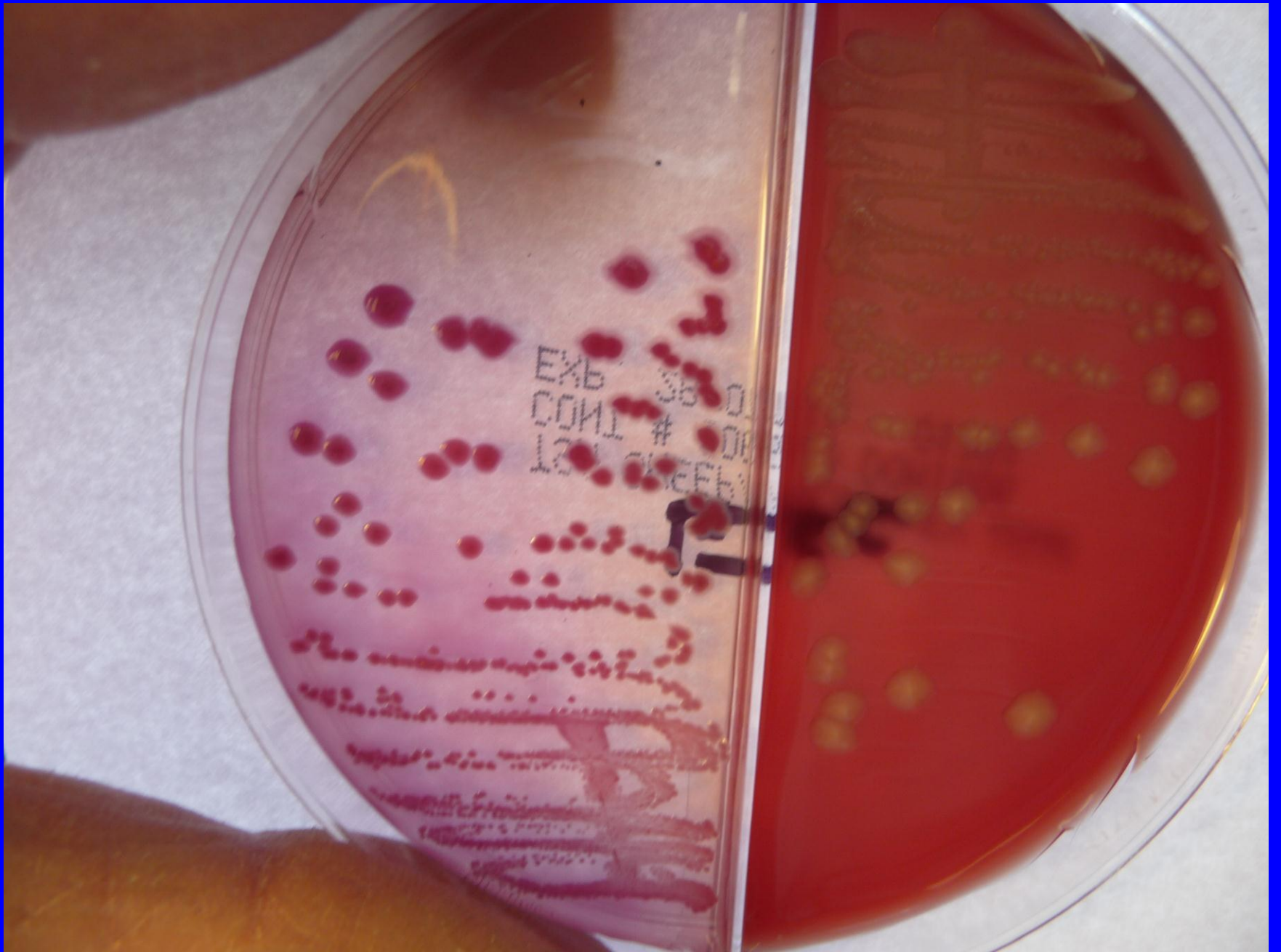
A Timaru example.

The Problem

New strain of E. coli identified in South Canterbury in 2009. At that stage mainly in hospital patients.

MDRO ie resistant to at least 3 groups of antibiotic.

- This strain resistant to:
 - trimethoprim.
 - aminoglycosides.
 - quinolones.
- Usually susceptible to nitrofurantoin.



EXB 36
CONL #
130 01/01/01





AMP
10
—

AMC
30
—

100
—

300
—

W
5
—

300
—

100
—

EXP. 53/08/11 0023
LOT 11/90/25
3085M00 1231 00W3802

E.COLI ANTIMICROBIAL SUSCEPTIBILITY

(% Susceptible)

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

Medlab South Christchurch
E.COLI ANTIMICROBIAL SUSCEPTIBILITY
(% Susceptible)

	2007	2008	2009
Norfloxacin	94	94	94
Trimethoprim	79	78	78
Nitrofurantoin	98	98	98

ANTIMICROBIAL USE AORAKI PHO

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

Timaru E.coli

- As of 8/7/11 75 Timaru patients with this organism.
- 23 deceased therefore 52 known patients.
- First noted in 2009.
- Most commonly isolated from urines.

Antimicrobial Use

- Majority antimicrobial use is in primary care.
- Antimicrobial stewardship in acute hospitals.
- Large differences in use between countries.

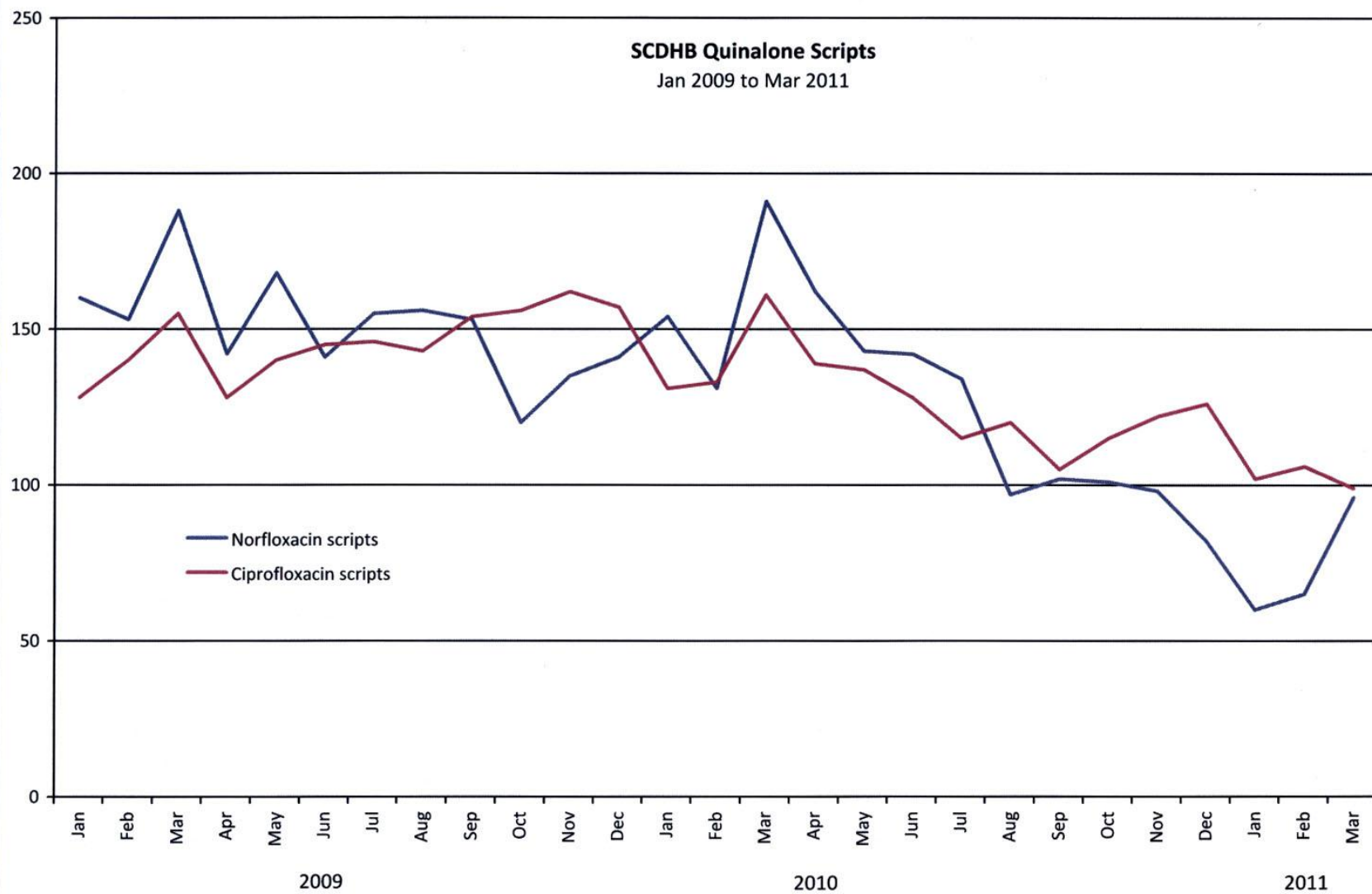
Does reducing FQ Use Work?

- Study showed that reduction of FQ use in community had a significant and direct effect on FQ resistance (12% to 9%)
- Effect reversed when it resumed.

CID 2009;49:869-877.

SCDHB Quinalone Scripts

Jan 2009 to Mar 2011



- Improvement in % E. coli susceptible to quinolones.
- Susceptibility was 89% the following year.

Antimicrobials in General Practice.

- It is estimated 90% antimicrobial agents prescribed in general practice.
- 60% of these are for respiratory infections.
- Patient expectations.

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.

What Strategies Work in Primary Care?

- Need local data.
- Resources to support non prescription.
Education.
Guidelines eg NICE.
Patient information.
General education of the public.
- All educational material needs to change and be sustainable. (Pharmac, PHOs, BPAC)

Resources

- National Institute for Health and Clinical Excellence (NICE) Clinical Guideline . Respiratory tract infections – antibiotic prescribing.

Prescribing of antibiotics for self-limiting respiratory tract infections in adults and children in primary care.

- NZ has the problem of rheumatic fever – which has to be considered. In SCDHB risk for rheumatic fever low.

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.

The End.