The introduction of risk-based assessment for management of ESBL-E patients in acute care

Julianne Munro
CNS Infection Prevention & Control
Canterbury District Health Board
New Zealand

Hosted by Jane Barnett
jane@webbertraining.com

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Te Poari Hauora ō Waitaha

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Objectives of presentation

- Describe the journey taken to develop and introduce an ESBL-E risk-based assessment, placement and management policy
- Review the impact of Contact Precautions on patients
- Explore supporting literature
- Discuss the use of a visual tool
- Evaluate the success of the risk-based assessment policy

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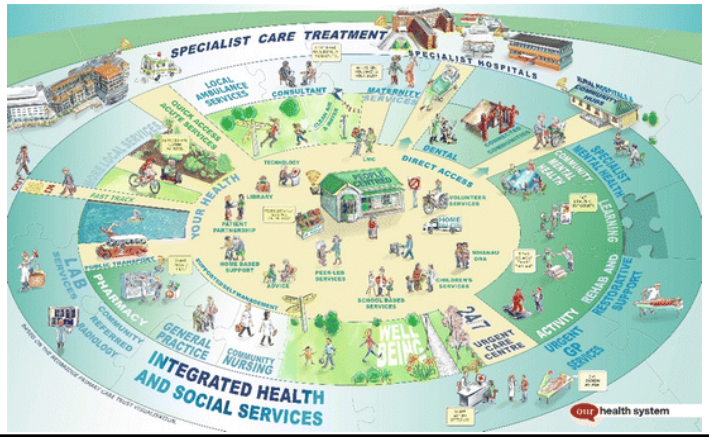
Objectives of change in policy

- improve the patient journey in our care
- improve bed flow in clinical areas
- assist staff in making risk-based decisions



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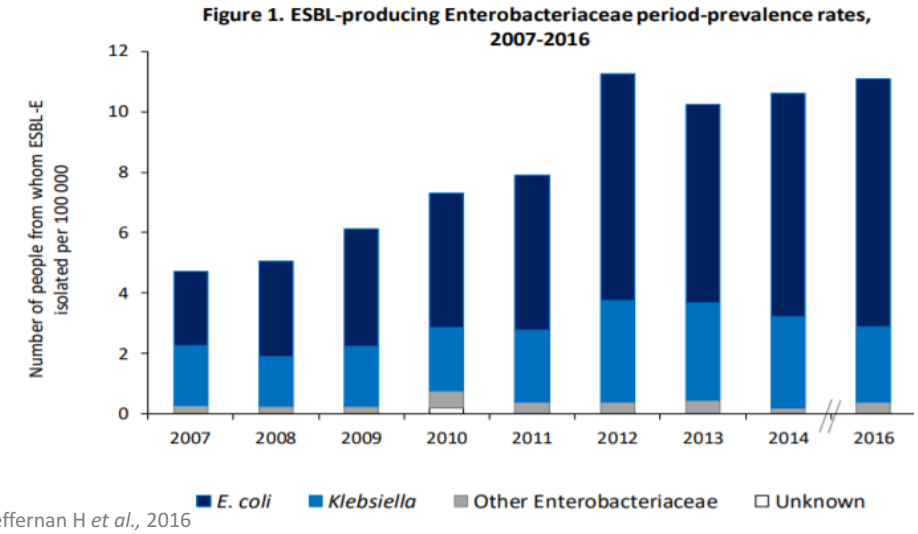

Heffernan H *et al.*, 2016

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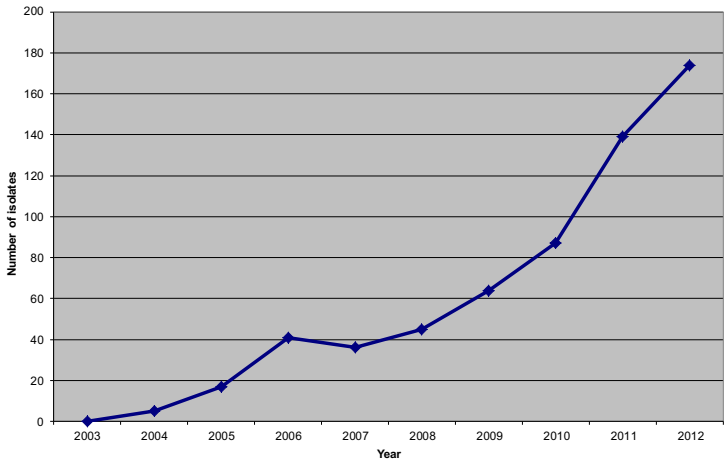
Canterbury Health Laboratory - ESBL-E isolates



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Canterbury District Health Board (CDHB)

- 1500 inpatients
- 13 hospitals sites
- Buildings older in design
  - 4-6 multi-bed rooms
  - few single rooms
  - limited toilets and bathrooms
  - dirty utility rooms
    - location
    - design

"The kid you've been yelling at to get out of the bathroom for the last ten minutes is at the end of the queue!"

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Pre 2010

MDRO policy requires Contact Precautions: single room, dedicated bathroom facilities and patient mobility restrictions

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My journey in risk-based practice

- began 2006
- Noted the impact on
  - elderly patients
  - family/visitors
  - staff

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Contact Precautions

- Negative psychological effects
  - Anxiety, stress & depression
- Delays in Rx, in transfer
- Less pt/HCW contact
- More adverse events
- Decrease pt care satisfaction
- Rehabilitation disruption

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Supported in literature

Literature Matters

- Pike *et al.*, 2002, Saint *et al.*, 2003
- Morgan *et al.*, 2009, Abad *et al*, 2010, Barratt *et al*, 2011, Birgand *et al.*, 2014.

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MDRO guidelines, Ministry of Health, New Zealand, 2007

- 4.1 Response appropriate to risk
  - management can be assessed
  - adjusted using a risk- based approach

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Appendix 2 -Risk-based matrix

- Patient
- MDRO
- Epidemiology
- Institution/environment
- Staff

Factor	Estimated size of risk	Suggested controls
Patient (with MDRO)		
1. Longer stay: more sick and more opportunity for transmission events	↑	Isolate patient and discharge as soon as possible
2. Understands and is compliant with IC recommendations	↓↓	Patient is provided with information, and then becomes advocate for good infection control practice
3. Unable or unwilling to comply with IC recommendations	↑↑↑↑	It may be necessary to limit patient movement around the hospital or health care facility
4. Incontinent of faeces	↑↑↑	Correct medical or surgical conditions as possible
5. Uncovered wounds	↑↑	Implement staff training
6. Urinary catheter	↑	Implement training of staff on emptying catheter bags; provide well designed sluices and sanitisers
7. Mobile: consider along with other factors listed above	↑↑	It may be necessary to limit patient movement around hospital or health care facility

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Modified Precautions - 2008

- Under the radar
- Individual plans
  - Multi disciplinary team
  - written in pt notes
- Nerve wracking

- Pre:
  - 5 Moments of Hand Hygiene
  - Infection Prevention consideration in design features
  - supporting literature such as Sztajzel *et al.*, 2013

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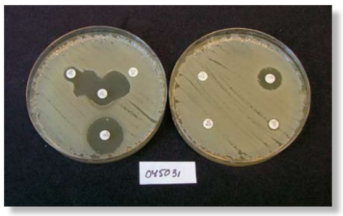
Strama risk stratification

ESBL resistance in enteric bacteria

PROPOSED ACTION PLAN – NOVEMBER 2007



Not all ESBL positive patients require isolation

1. No risks
2. Medium risk - Other risk factors
3. High risk - Diarrhoea or urinary/faecal incontinence

Strama
Swedish strategic programme against antibiotic resistance

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On the radar - 2010

2010

Modified Contact Precautions for ESBL-E introduced in 7 AT&R wards enabling increased mobility and access to rehabilitation

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Christchurch Earthquake - 2011

- 3 acute admitting medical wards relocated
- Hospital opened 1959
  - wards closed to inpatients
  - poor design features for effective IPC
- Mental Health Service
- Older Persons Health Service

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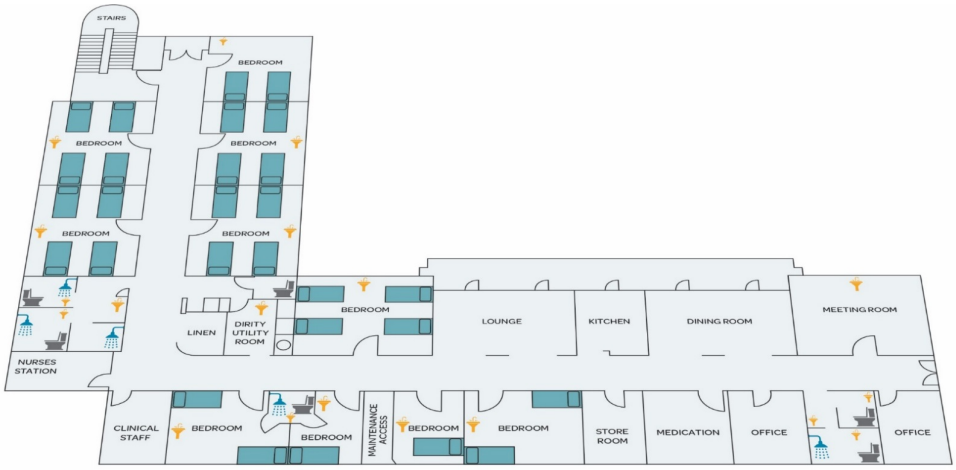
Floor plan 2000



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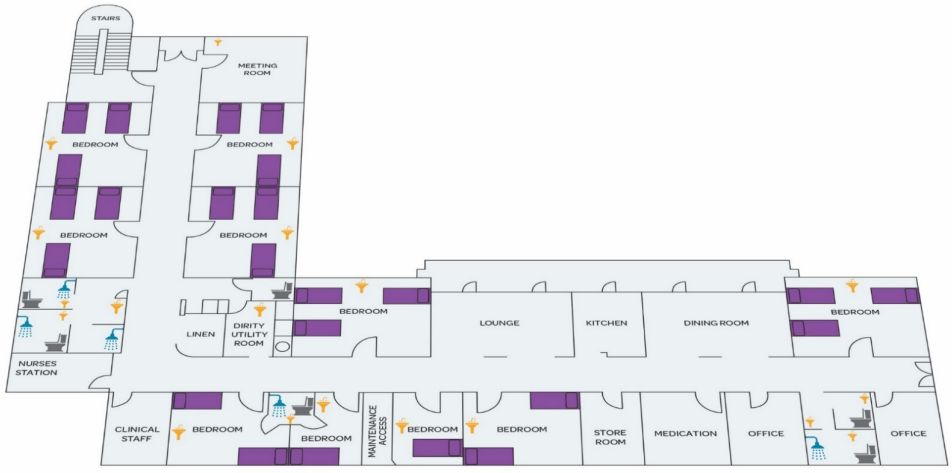
Bed reconfiguration to prevent cross infection



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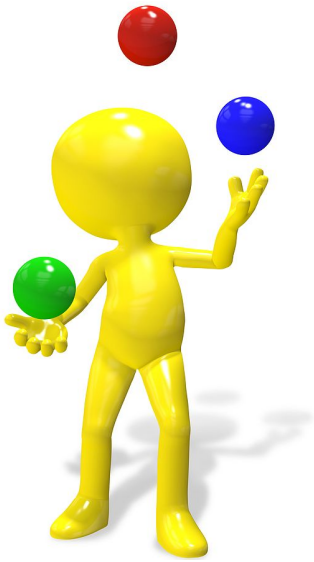
Infection Prevention juggling act



- older style wards
- increase ESBL-E positive
  - numbers community
  - admissions
    - 10 to 15 in-patients/day
    - 25/day – 29th October 2018
- competition for isolation facilities
- delays in transfer

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Issues became our opportunity

- Development of risk categories
  - MDRO guidelines, MOH, 2007
  - Strama, 2007
  - Modified precautions used in AT&R wards

Risk Category	Risk factors
High Risk	• Diarrhoea, urinary or faecal incontinence
Medium Risk	• Abdominal drainage/stoma • Indwelling urinary catheters/intermittent clean catheterisation • Large wounds that need dressing • Non-compliance with basic hygiene • High dependency for cares
Low Risk	• None of the above risk factors - bowel colonisation

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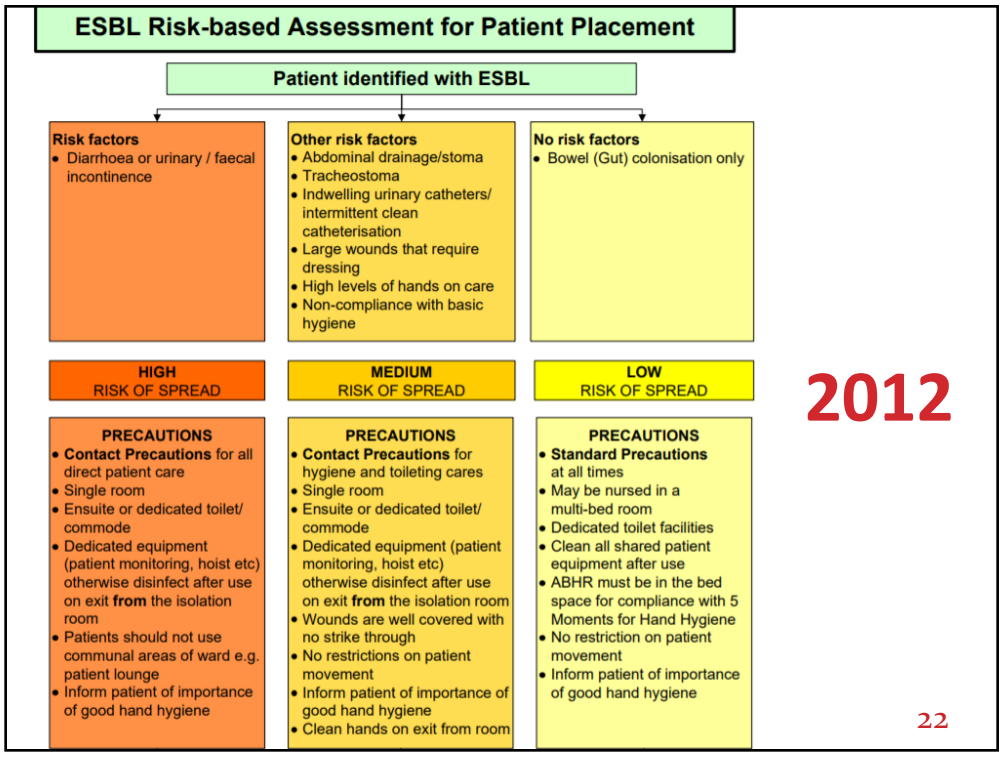

Disposal of body fluids

Poor design

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High Risk Activity

DISPOSAL OF BODY FLUIDS IN A DIRTY UTILITY ROOM IS A HIGH RISK ACTIVITY

- Ensure apron and gloves are worn when disposing of infectious waste in dirty utility room
- Dispose of body fluid into sluice, taking care not to cause splashing
- If possible, place the waste receptacle into the sanitiser immediately
- Clean and disinfect sluice bench and sanitiser handle with chlorine-based disinfectant after disposing of body fluid regardless of whether any spillage occurs
- Remove and dispose of apron and gloves in dirty utility room, then perform hand hygiene using either ABHR or the antimicrobial (green) liquid soap

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Trial & Rollout

- Trial in three clinical areas
  - an acute medical admitting unit
  - a general medical ward
  - 7 AT&R wards

2012

MDRO policy revised to include ESBL-E risk-based patient placement and associated IPC measures. Visual tool developed

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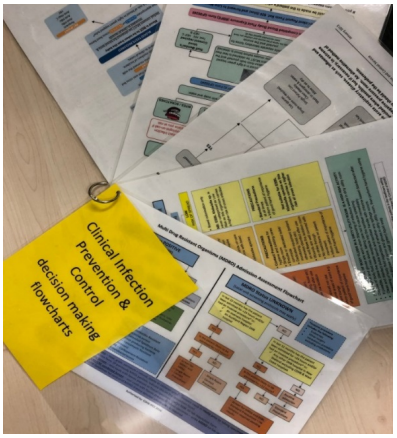
Embedding into practice



- poster
  - clinical areas
  - intranet
- education sessions
- actively promoted
  - IPC Link reps
  - newsletter
- advice
  - telephone
  - ward rounds
  - clinical notes

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Visual communication resources

- quick visual reference
  - clarity of pt management
- information
  - simplified
  - make sense
- illustrate & reinforce written policy
- improve compliance

Ref: Drews *et al.,* 2014, Visual Communication Resources
https://www.cdc.gov/healthliteracy/developmaterials/visual-communication.html

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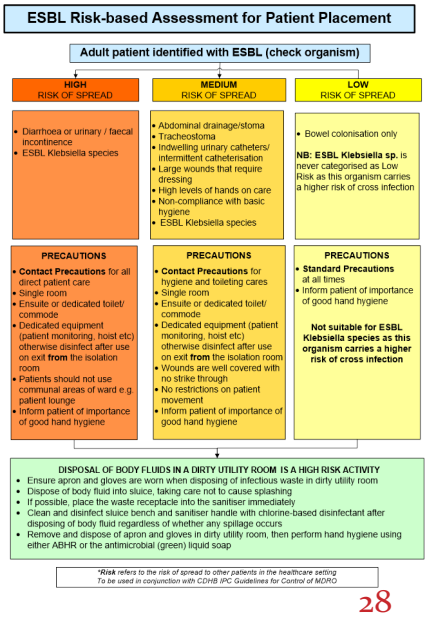
2016

Further MDRO policy revision to differentiate between ESBL E.coli and Klebsiella pneumoniae for patient placement and precautions

Ref: Cholley *et al*, 2013; Skally *et al*, 2014; Calbo *et al*, 2015, Freeman *et al*, 2014



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Literature – transmission risks

- faecal or urinary contaminated equipment or environment
- healthcare worker hands
  - Tacconelli *et al.*, 2014
- incontinence
- invasive devices
- high hands-on-care
  - Hilty *et al.*, 2012, Cholley *et al.*, 2013, Meier *et al.*, 2011

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Results

- no evidence of
  - increase in HAI ESBL-E cases
  - cross infection, or outbreaks with ESBL-E
- not enough data to publish

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Literature - acute care hospitals

ESBL – E.coli rates

- 2 hospitals over 5 years
  - standard versus contact precautions
  - no significant difference
    - Zahar *et al.*, 2015
- Removed contact precautions
  - no change transmission rates
  - high levels compliance with standard precautions
    - Tschudin-Sutter *et al.*, 2012

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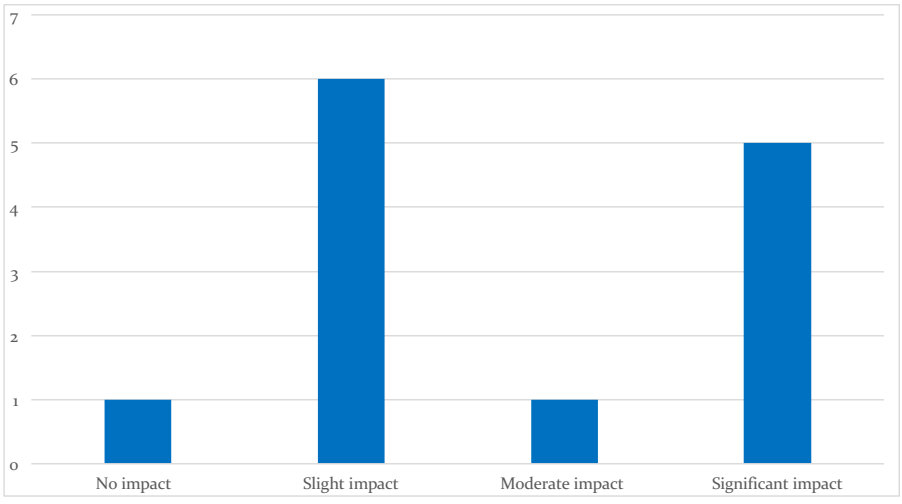
Bed management-patient flow



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Literature - outcomes

- MDRO status delay transfer from ED - 2 1/2 hours
  - Gilligan *et al.*, 2010
  - McLemore *et al.*, 2011

- Modified precautions in ED
  - improve transfer time
  - no changes nosocomial rates
    - Kotkowski *et al* 2017
- Risk based precautions for trauma patients
  - isolation days halved
  - no increase in HAI MDRO infections
    - Watkins , *et al.*, 2014

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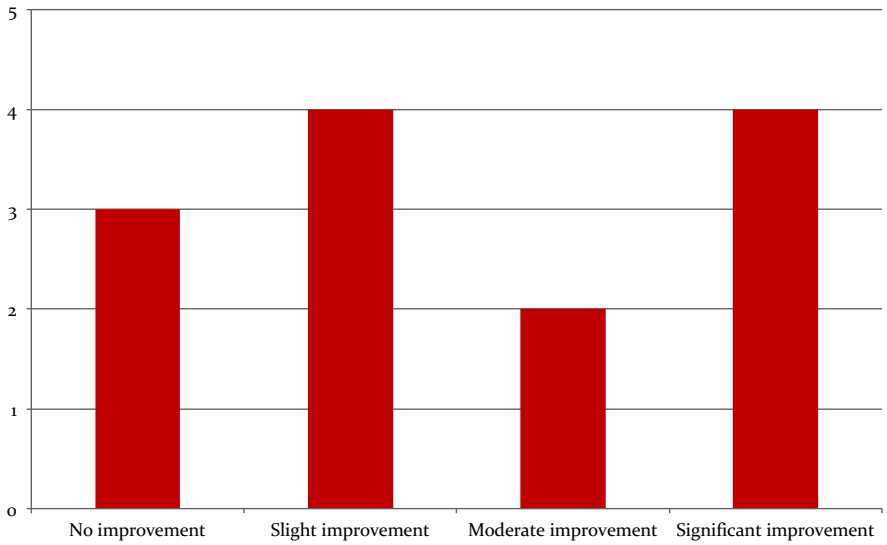
Impact on quality of care



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From the patient's perspective

- No patient satisfaction feedback
  - pts unaware streamed into low risk
- low and medium risk categories not isolated
  - No adverse isolation risks

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The IPC team perspective

- Reduction in:
  - single room requirements
    - 5 rooms/day - low risk
  - full contact precautions
    - Up & about - medium risk
- High-risk
  - continence issues remain

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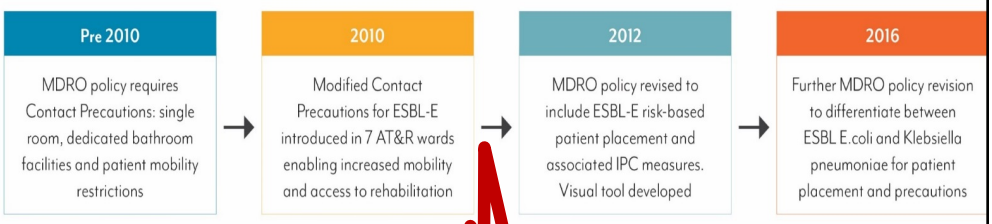
The journey so far…

TIMELINE FOR REVIEW OF ESBL-E POLICY AND PROCEDURES



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Conclusions

- The increase in antimicrobial resistant organisms is a challenge for infection prevention and control teams worldwide
  - Cole, 2016
  - *WHO | Global action plan on antimicrobial resistance*, 2017
- Implementing a risk assessment for the placement and care of ESBL-E patients
  - positive outcome for patients, families, staff and bed managers
  - while mitigating the risk of transmission of antimicrobial resistance

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- CNS Infection Prevention & Control team, CDHB

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