# Mr Ben Harris

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Honorary Lecturer, University of Otago

FULLY BOOKED

Saturday, August 13, 2016

(Room 2)

16:30 - 17:30 WS #134: The Challenge of Rest Home Environments

# The Challenge of Rest Home LTCF Environments


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# 45 Country Death Comparisons

**of 16 million deaths in 45 countries**

**older people dying in LTCF:**

**average 18%**

**NZ 31%**

**median LTCF age now > 85yrs**

Prof Merryn Gott, U of AKL, Nursing Review June 2014

# Dying in LTCF  NZ Stats

## 40,000 elderly resident in LTCF (NZACA 2013)

## In NZ  20% die ≤ 6 months

## But 36% if admitted ex acute hospital

**i.e. ‘de facto hospice’**

**so palliative care very important**

**Need multidisciplinary holistic care**

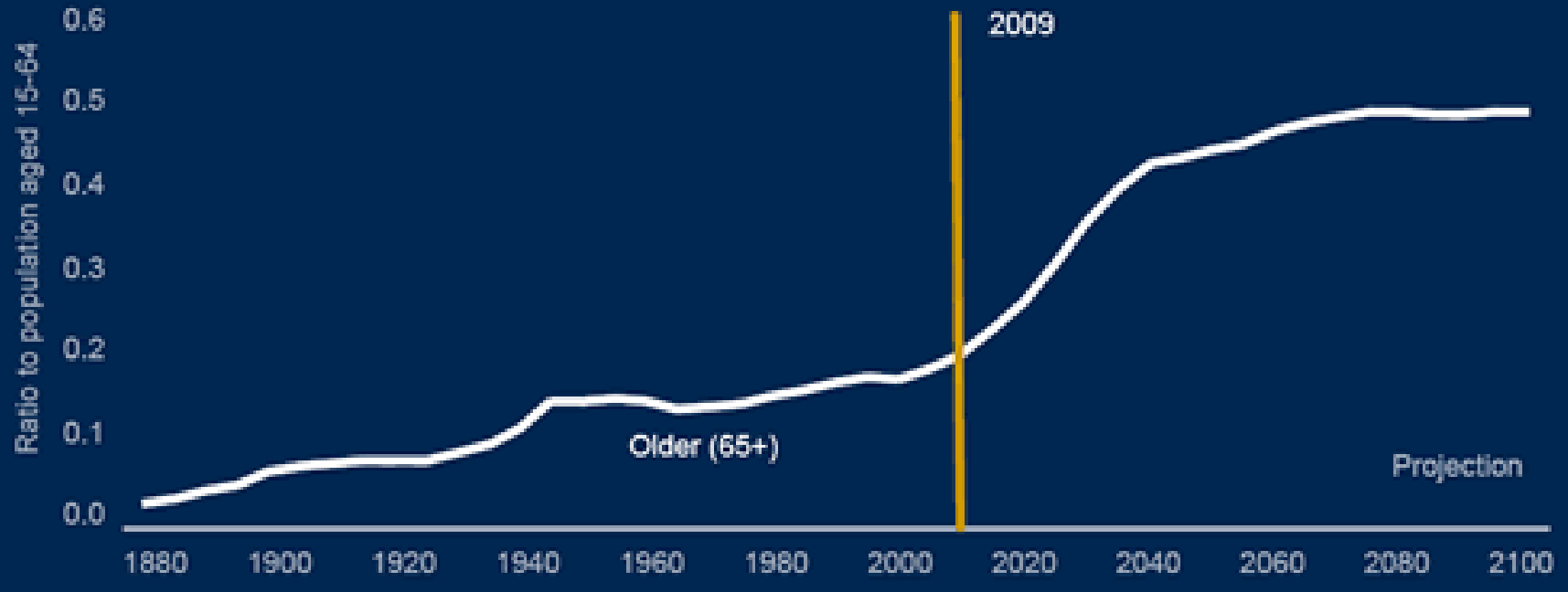
**for mind, body, spirit**

**given by Cleaners (mainly),**

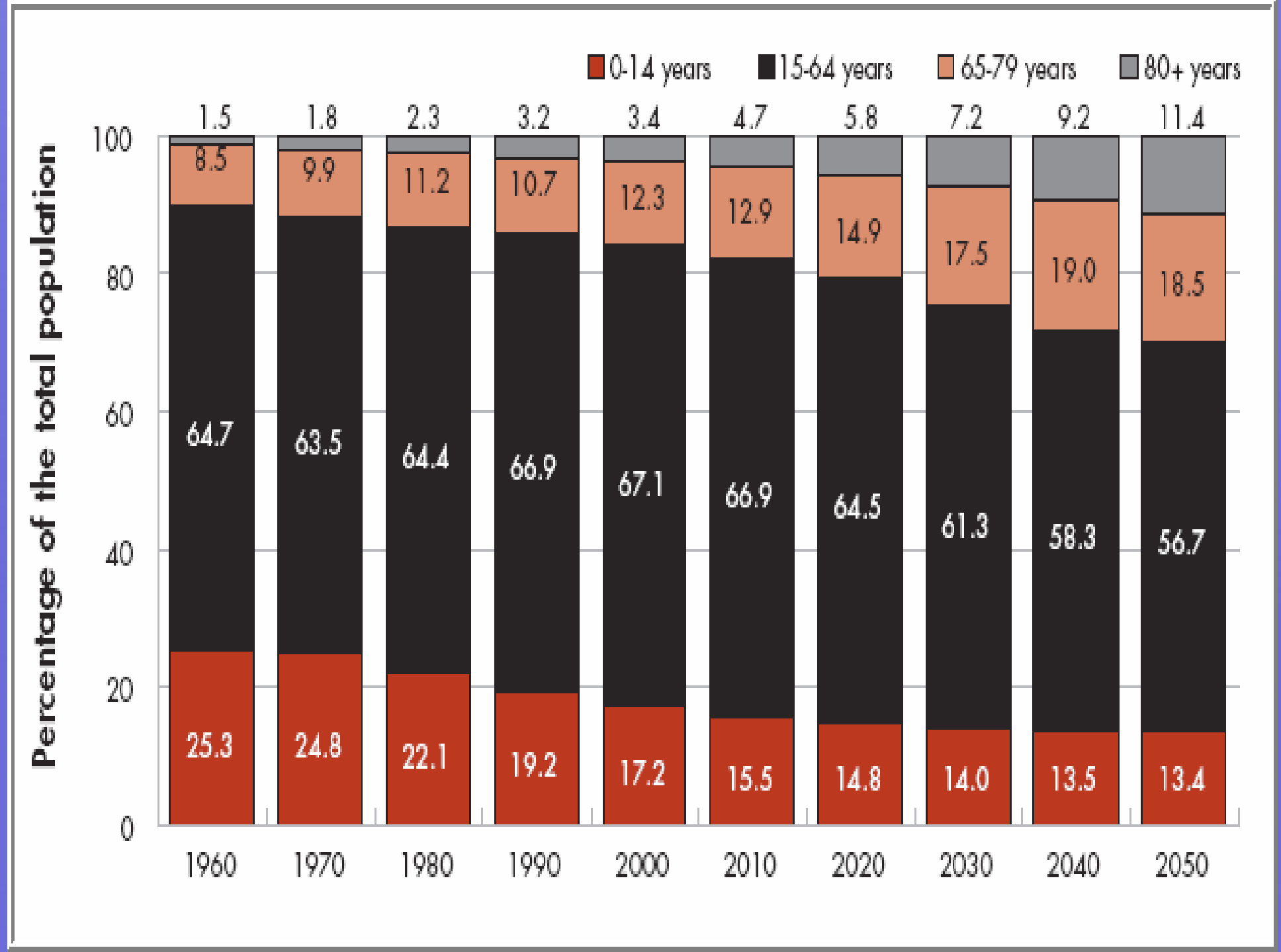
**+ GP, RN, HCA**

# Demographics

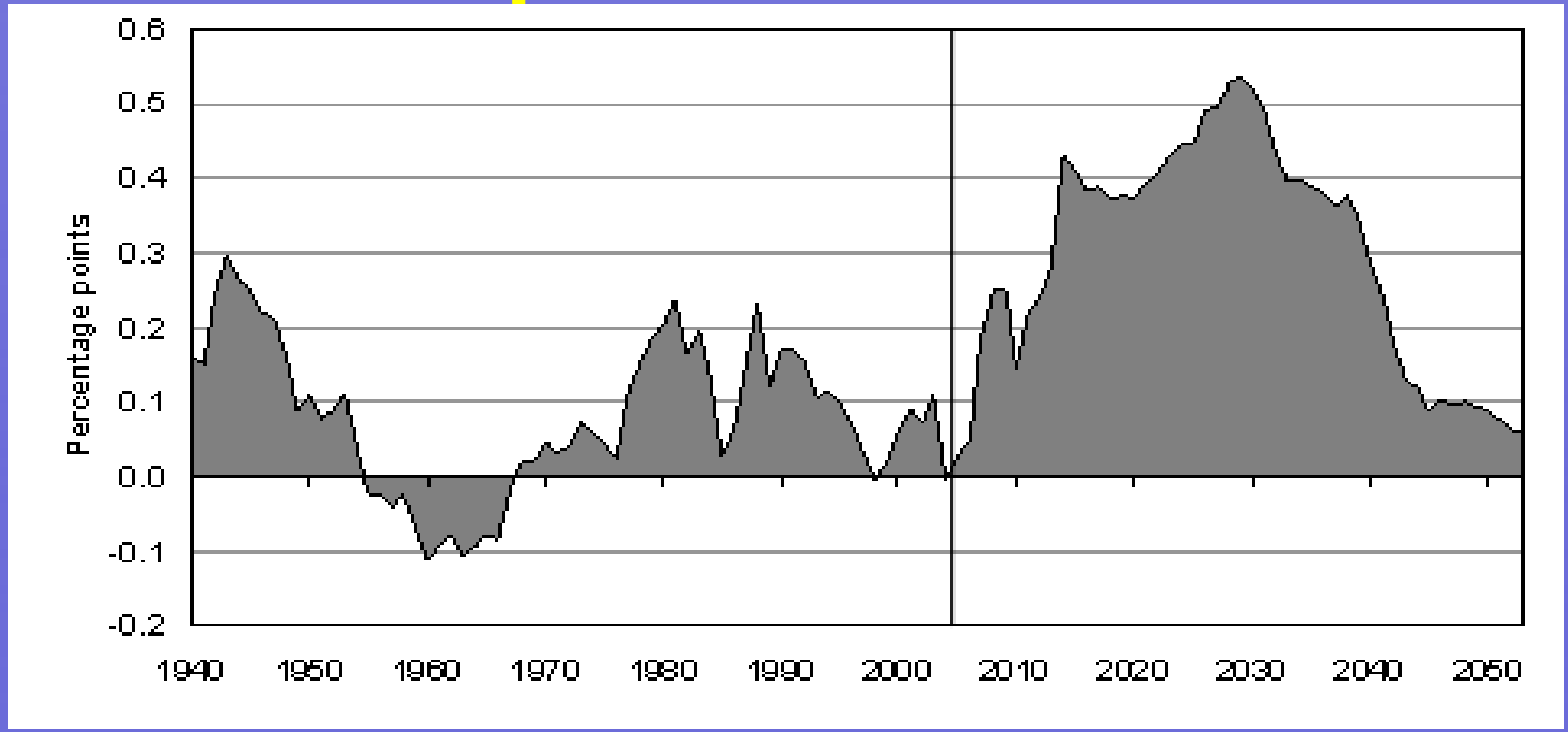
Ratio of those aged 65+ to 15-64




*Source: Statistics New Zealand*

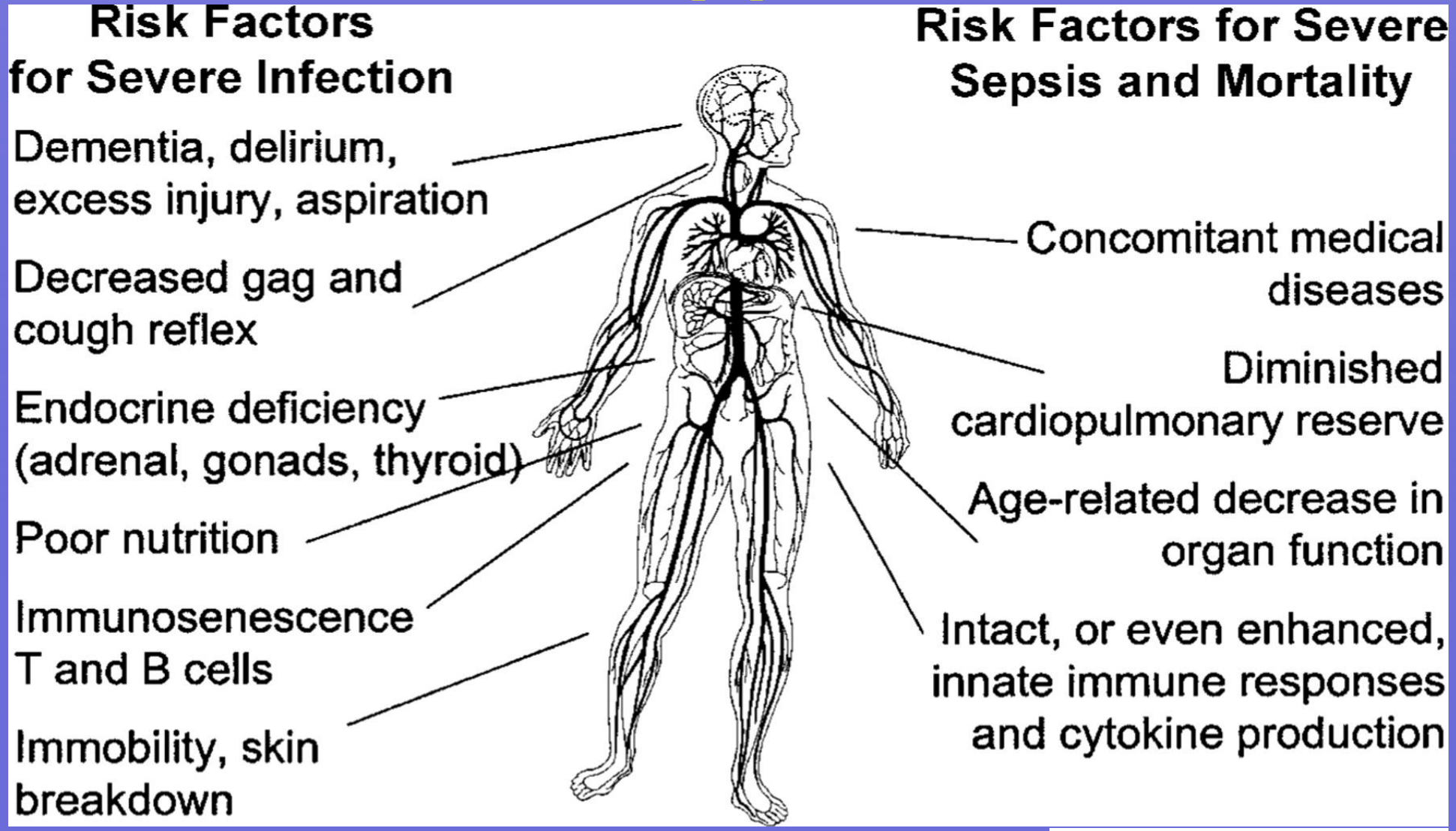

0-14 years
15-64 years
65-79 years
80+ years
Percentage of the total population
100
80
60
40
20
0
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
1.5
1.8
2.3
3.2
3.4
4.7
5.8
7.2
9.2
11.4
8.5
9.9
11.2
10.7
12.3
12.9
14.9
17.5
19.0
18.5
64.7
63.5
64.4
66.9
67.1
66.9
64.5
61.3
58.3
56.7
25.3
24.8
22.1
19.2
17.2
15.5
14.8
14.0
13.5
13.4

# NZ Yearly Change in Share of People 65 and Older




In 1900 there were 15 people working for every person over 65
Now 5 people working for every person 65 and over
by mid-century there are projected to be only two

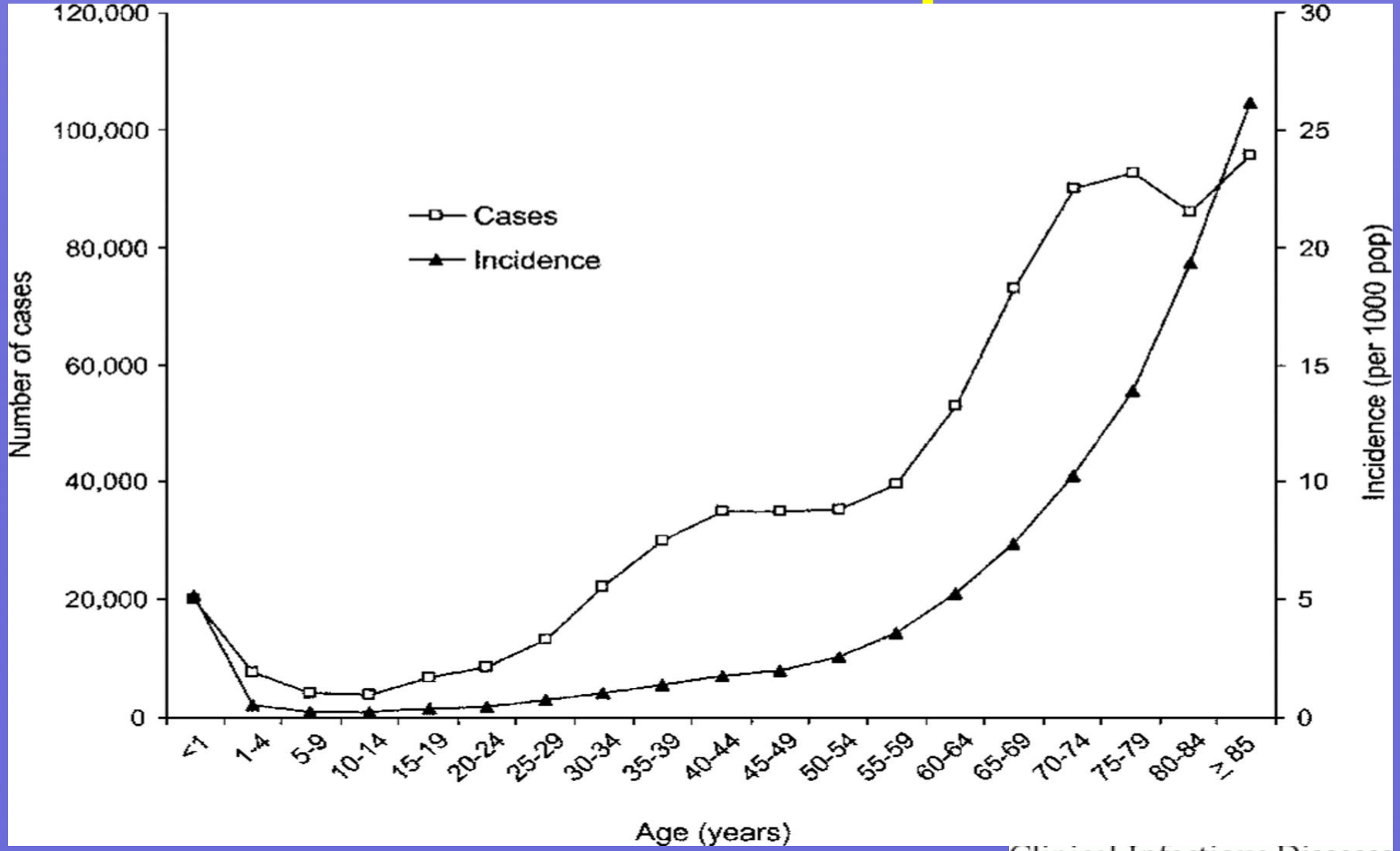
# Predisposing sepsis factors in elderly patients




Timothy D. Girard et al. Clin Infect Dis. 2005;40:719-727

Clinical Infectious Diseases

# Age-specific number and incidence cases of severe sepsis

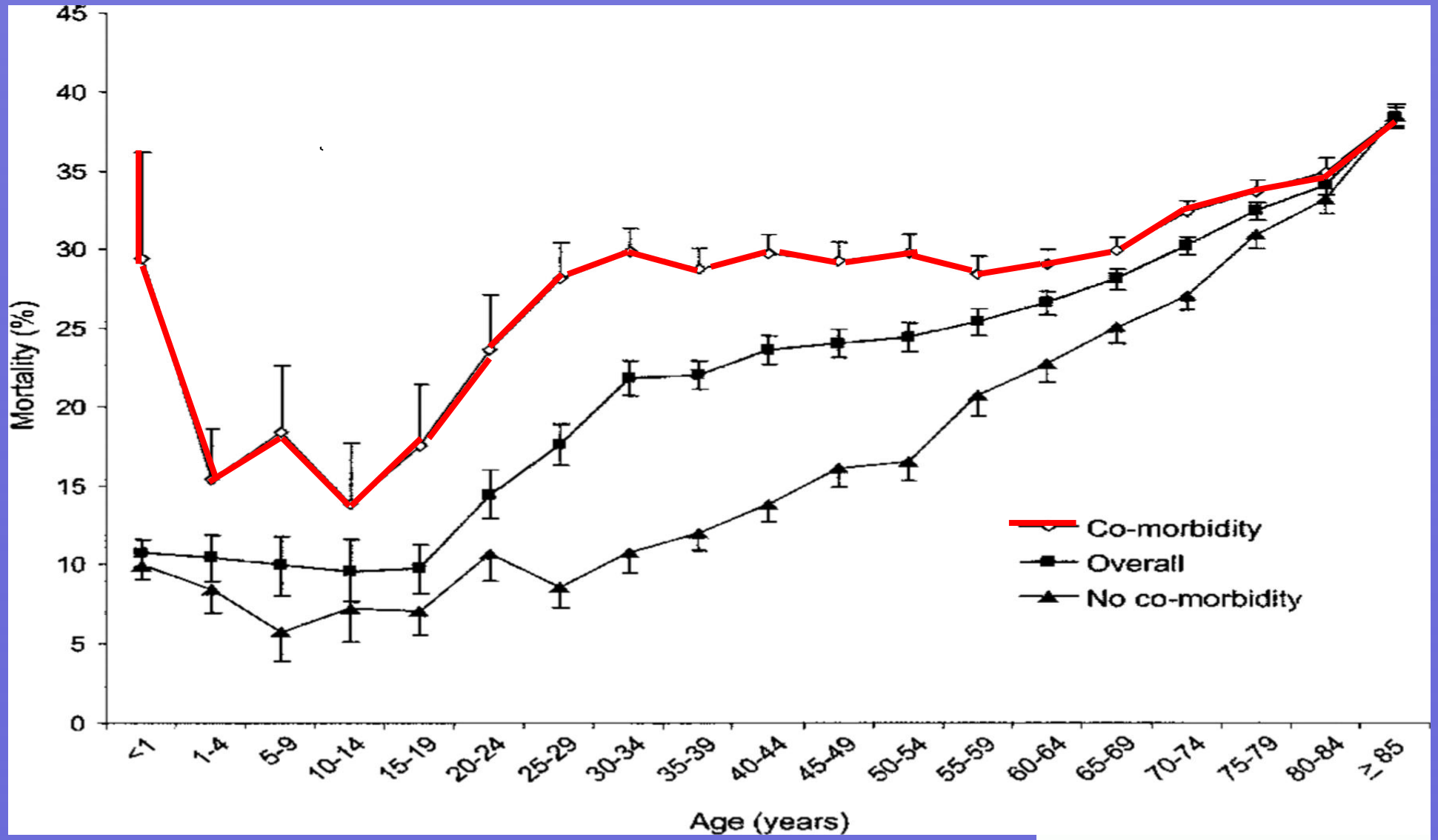





Timothy D. Girard et al. Clin Infect Dis. 2005;40:719-727

Clinical Infectious Diseases

# Age-specific mortality rates for all severe sepsis with or without associated underlying comorbidity






Timothy D. Girard et al. Clin Infect Dis. 2005;40:719-727

Clinical Infectious Diseases

# NZ Growth Projections

**Statistics NZ**

**4 million today to 5 million in 2050**
**25% increase in 45 years**

**The 'Old' - over 65 year olds projected growth three-fold by 2050 i.e. 300%↑**

**The 'Oldest of the Old' - 85 year olds and over grow six-fold by 2050 i.e. 600% ↑↑**

# Immigration Solution?

**One way of keeping the aged-dependency ratio under 20% (where it was in 2005) all the way out to 2050 would require 300,000 net immigrants each year from 2020**

**i.e. Immigration not a solution**

# LTCF Challenges

- ↑ demographic, ↑ ↑ > 80 year olds
- ↑ complex cases
- ↑ ↑ dementia
- Earlier public hospital discharge means ↑ LTCF hospital care cases
- Later community entry → ↑ care needs
- More underlying illnesses

# LTCF Challenges (2)

- ↓ Carer pool
- ↑ Gen Y  demand more equality or leave
  (e.g. shift ‘equality’)
- ↑ turnover
- ↓ continuity
- ↓ institutional knowledge
- ↓ IPC knowledge
- ↓ average formal training time

# Staff Turnover LTCF (USA)

| STAFF | TURNOVER | VACANCY |
| --- | --- | --- |
| Administrator | 43% | Sharp declines in new administrators |
| Registered nurse | 49% | 18% |
| Licensed practical nurse | 50% | 14% |
| Direct care workers | 76% | 12% |

# LTCF Challenges (3)

⬆⬆ Diagnostic challenges

- clinical
- subtle signs & symptoms
- lack readily available onsite tests
  e.g. radiology, laboratory
- good quality samples difficult to obtain (e.g. resp, urine)
- no routine onsite Dr or Specialist

# LTCF Challenges (4)

- ↑ **MDRO's** e.g. MRSA, ESBL, CRE, VRE
- ↑ **Outbreaks** e.g. *Norovirus*, *influenza, scabies* *(C. difficile)*
- **Financial constraints**
- **Prescribing often remote, by phone, etc**


DO NOT Pick
your nose and
wipe it on the
walls or doors
VEOLIA
TRANSPORT


S.PENNS

# Two Infection Sources

## A. Endogenous Source

- We 'catch' the infection from ourselves
- The microbes emerge from our normal microbial protective flora when a compromised site or situation

## B. Exogenous Source

- We catch the microbe (infection) from others who are infected (or carriers e.g. MDRO)

# Infections
# Endogenous vs Exogenous

## Endogenous

- Staph aureus
- E.coli, Klebsiella coliforms, etc
- Strep
- Anaerobes

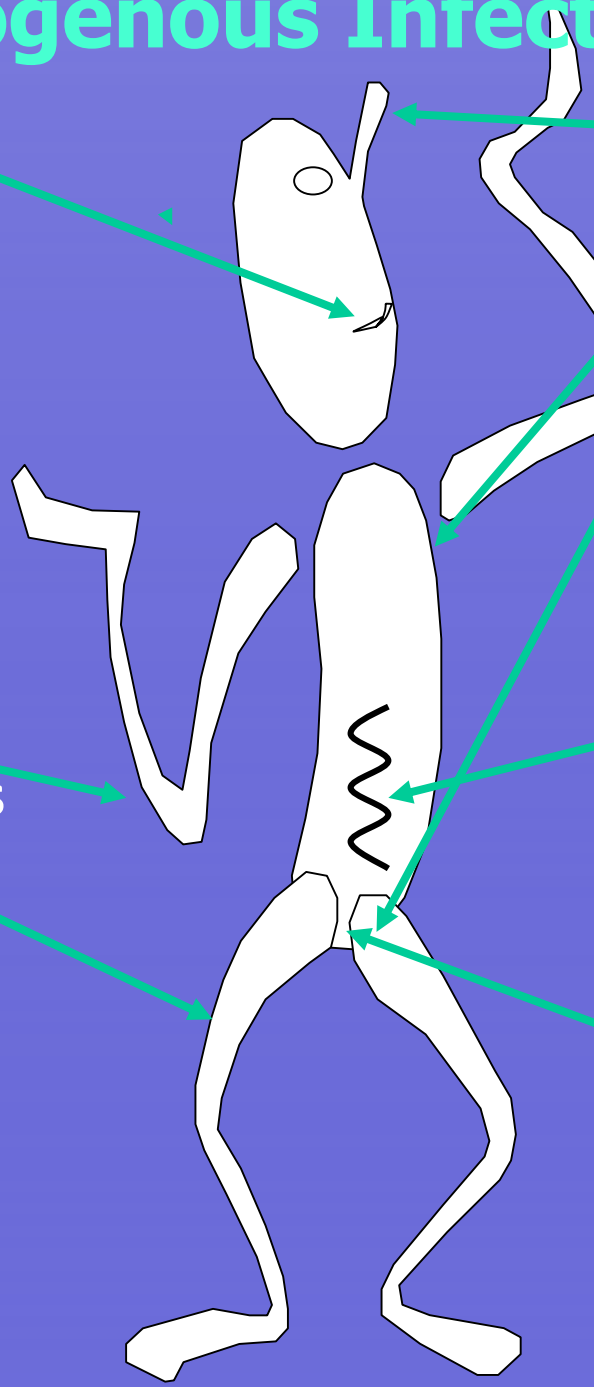
*i.e. Most non viral infections*

## Exogenous

- Influenza, Norovirus
- Scabies
- Hepatitis, HIV
- Bordetella pertussis

- TB
- Campylobacter
- Salmonella, Shigella

# Endogenous Infections



**MOUTH**

Strep.viridans
anaerobes
Candida

**SKIN & NASAL**

Staph. aureus

MSSA or MRSA

**SKIN**

Staph.epidermidis

**BOWEL**

Anaerobes

E.coli, ESBL, CRE VRE

**VAGINA**

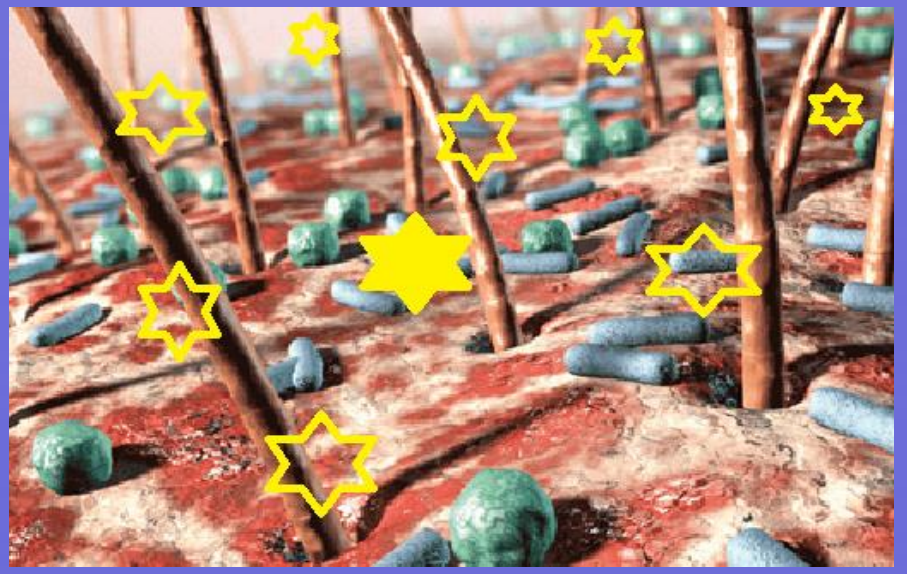
Lactobacilli
Gardnerella
Candida

# Microbial Sharing

Freshly washed skin 1,000 – 10,000 bacteria sq cm

We each carry 90 trillion bacteria normally

'my bugs are your bugs'



Newly arrived skin microbes

normal flora from

others skin (touch)

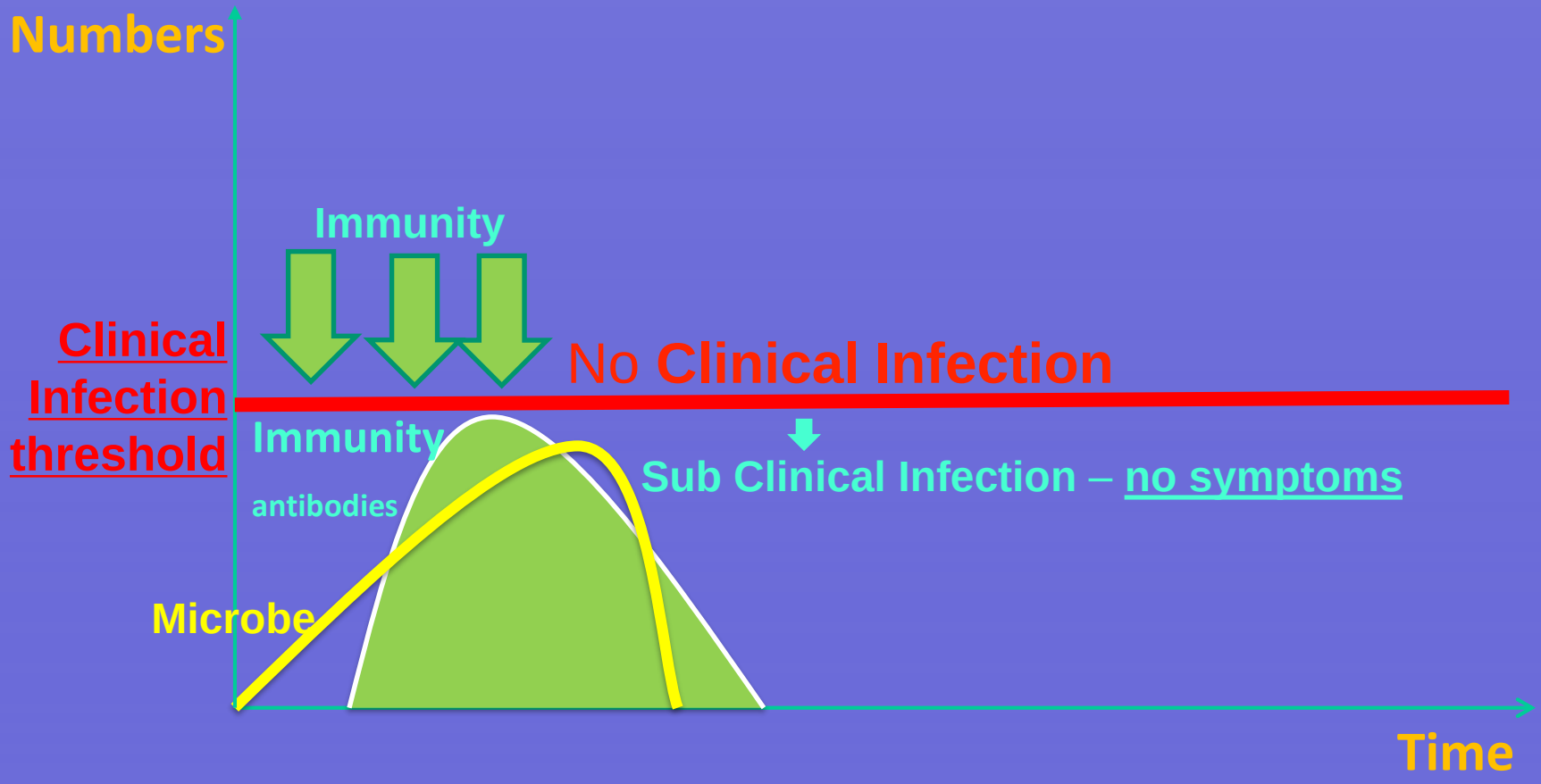
+ exogenous microbes from

someone else (infection) contact

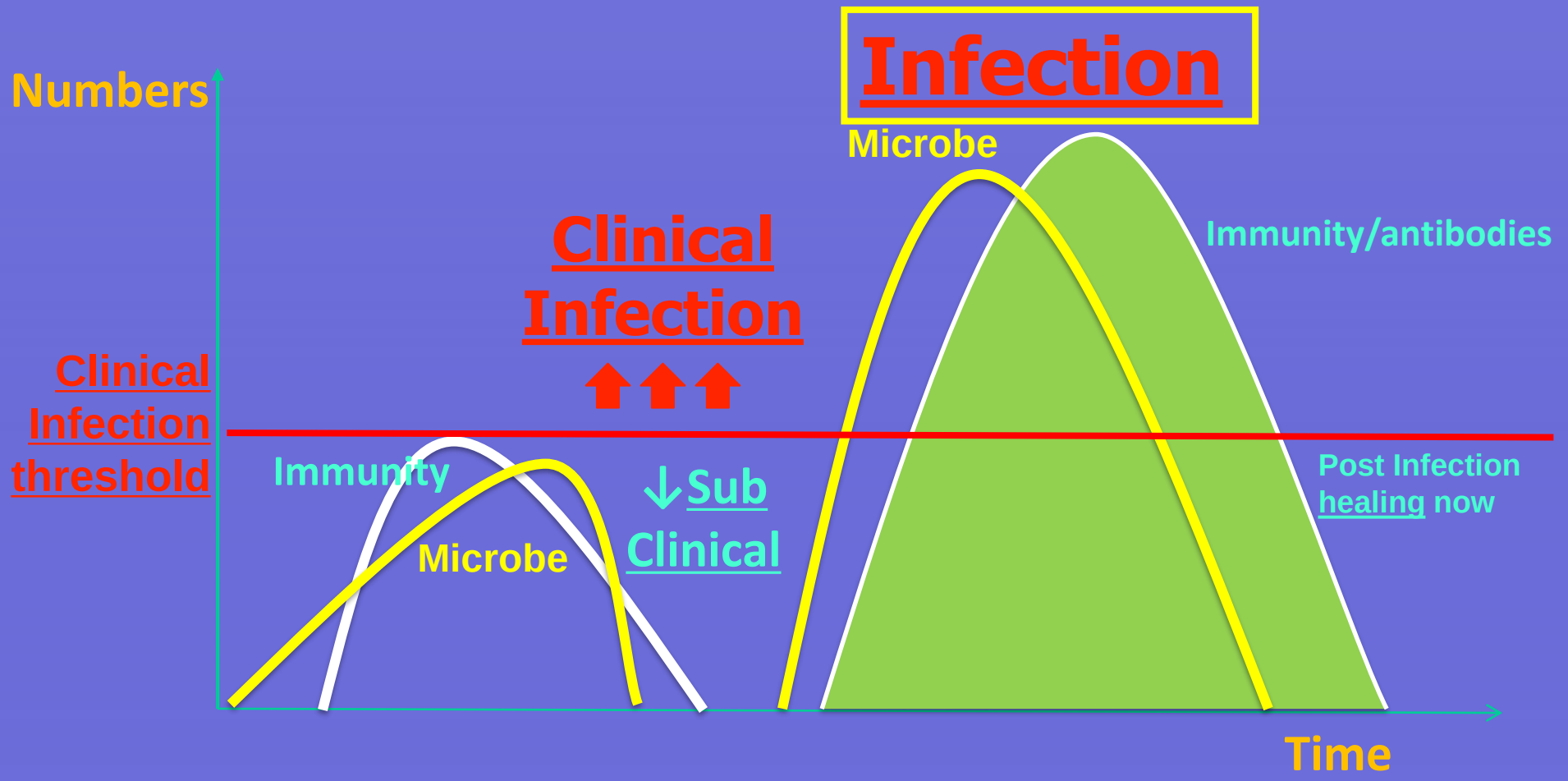
can always be washed off with good technique

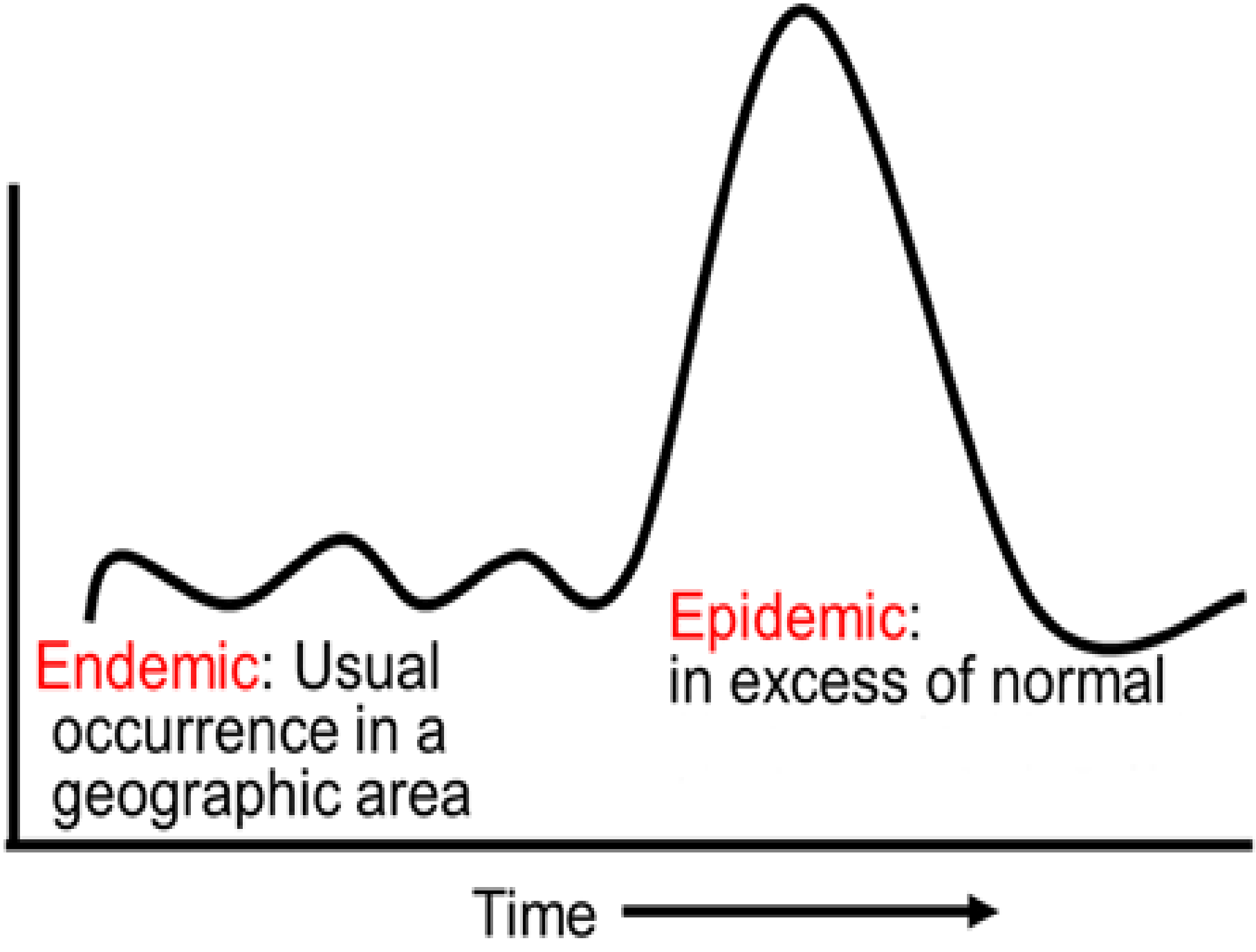
no matter how resistant or virulent

# Infection vs Immunity



# Infection vs Immunity




Endemic: Usual occurrence in a geographic area
Epidemic: in excess of normal
Time

# Gastroenteritis

## Bacteria

- Campylobacter
- Salmonella
- Shigella

- Clostridium difficile
- E. coli ( EPEC, EIEC, UTEC O157, etc)
- ‘travellers diarrhoea’

## Virus

- **Norovirus**
- Rotavirus
- Sapovirus

## Parasites

- Giardia
- Cryptosporidium

# NOROVIRUS

# YOU DON'T WANT IT

# DO NOT USE

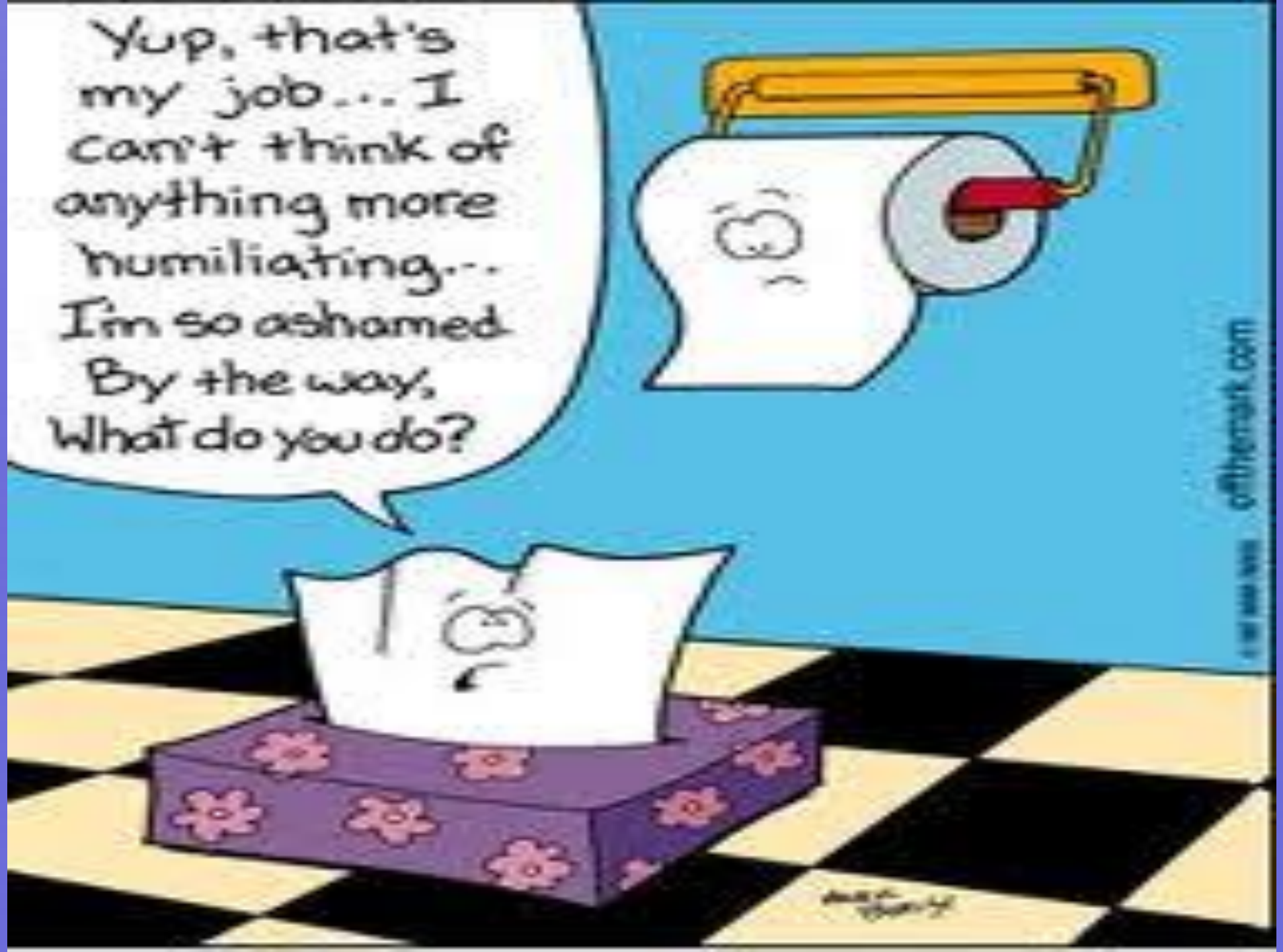
Restrooms for *VOMITING*! Vomit goes

# OVER RAIL ONLY!

Thank You,
Your Crew

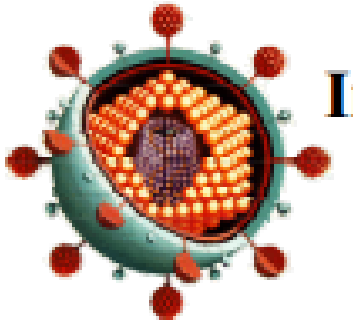
# Gastroenteritis

## use liquid soap water (Norovirus, *C. difficile*)



Yup, that's my job... I can't think of anything more humiliating... I'm so ashamed. By the way, What do you do?
offthemark.com

# Influenza Surveillance Criteria

## INFLUENZA-LIKE ILLNESS CASE DEFINITION



**Influenza-like Illness (ILI) =**
**fever (≥ 100° F)***
**AND**
**cough and/or sore throat**
**(in the absence of a known cause other than influenza)**

***Temperature can be measured in the office or at home***

Please report all patients that meet the ILI case definition above unless diagnostic tests confirm a cause other than influenza. For example, a patient with fever, cough, and

# ILI Frequency 207 Patients Hospitalised then found to have Influenza Infection 3 years retrospective evaluation

Ref: Infection Control & Hospital Epidemiology vol 27 No 3 pp266-270

TABLE 3. Symptoms and Signs Reported by 207 Patients Before Influenza Diagnosis, by Age

| Symptom | No. (%) of Patients, by Age: Aged Less Than 65 Years ($n$ = 116) | Aged 65 Years or More ($n$ = 91) | $P$ | Overall |
|---|---|---|---|---|
| Cough | 104 (90) | 82 (90) | .85 | 186 (90) |
| Subjective fever | 84 (72) | 53 (58) | **.04** | 137 (66) |
| Fatigue | 52 (45) | 56 (61) | **.02** | 108 (52) |
| Chills and/or rigors | 48 (41) | 29 (32) | .13 | 77 (37) |
| Nausea and/or vomiting | 51 (44) | 25 (28) | **.02** | 76 (37) |
| Myalgias | 41 (35) | 26 (29) | 0.11 | 67 (32) |
| Coryza | 42 (36) | 21 (23) | **.05** | 63 (30) |
| Headache | 35 (30) | 19 (21) | .12 | 54 (26) |
| Sore throat | 35 (30) | 9 (10) | **<.01** | 44 (21) |
| Diarrhea | 20 (17) | 16 (17) | .98 | 36 (17) |

NOTE. Data in bold type are statistically significant.

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MARCH 2006, VOL. 27, NO. 3

ORIGINAL ARTICLE

# Is Influenza an Influenza-Like Illness? Clinical Presentation of Influenza in Hospitalized Patients

Hilary M. Babcock, MD; Liana R. Merz, MPH; Victoria J. Fraser, MD

BACKGROUND. Early recognition of influenza virus

OBJECTIVE. To determine the clinical presentation

DESIGN. Case series. Data were collected retrospect
clinical symptoms and signs, microbiologic test result

SETTING. A 1,400-bed teaching hospital.

PATIENTS. A total of 207 inpatients who received a

RESULTS. Over the course of 3 seasons, 207 patient
were infected with influenza B virus). The most comm
patients [66%]); 124 patients (60%) had a documente
uncommon (44 patients [21%]). Centers for Disease Control and Prevention (CDC) criteria for influenza-like illness (ILI)—temperature 37.8°C or greater and either cough or sore throat—were met by 107 patients (51%). There were no differences in the proportion of patients who met ILI criteria with respect to age, sex, season, influenza virus type, or time to diagnosis in the hospital. Most patients (150 [72%]) received acetaminophen. Only 41 patients (20%) had positive results of clinical cultures; 178 patients (86%) received antibiotic therapy. Fifty-six patients (27%) had pneumonia: 36 (17%) required admission to the ICU, and 25 (12%) required ventilatory support. Patients with pulmonary disease were more likely to require ventilatory support (12 [26%] vs 13 [8%]; $P = .003$).

CONCLUSIONS. Only half of hospitalized patients with influenza met CDC criteria for ILI. These criteria may be more appropriate in outpatient settings. A high index of suspicion is needed to recognize influenza in hospitalized patients.

*Infect Control Hosp Epidemiol* 2006;27:266-270

**"CONCLUSIONS:**
**Only half of hospitalised patients with influenza met CDC criteria for ILI**
**A high index of suspicion needed to recognise influenza in hospitalised patients"**

# Surveillance vs Clinical criteria

## ILI Frequency 207 Patients Hospitalised then found to have Influenza Infection 3 years retrospective evaluation

Infection Control & Hospital Epidemiology 27 No 3 pp266-270

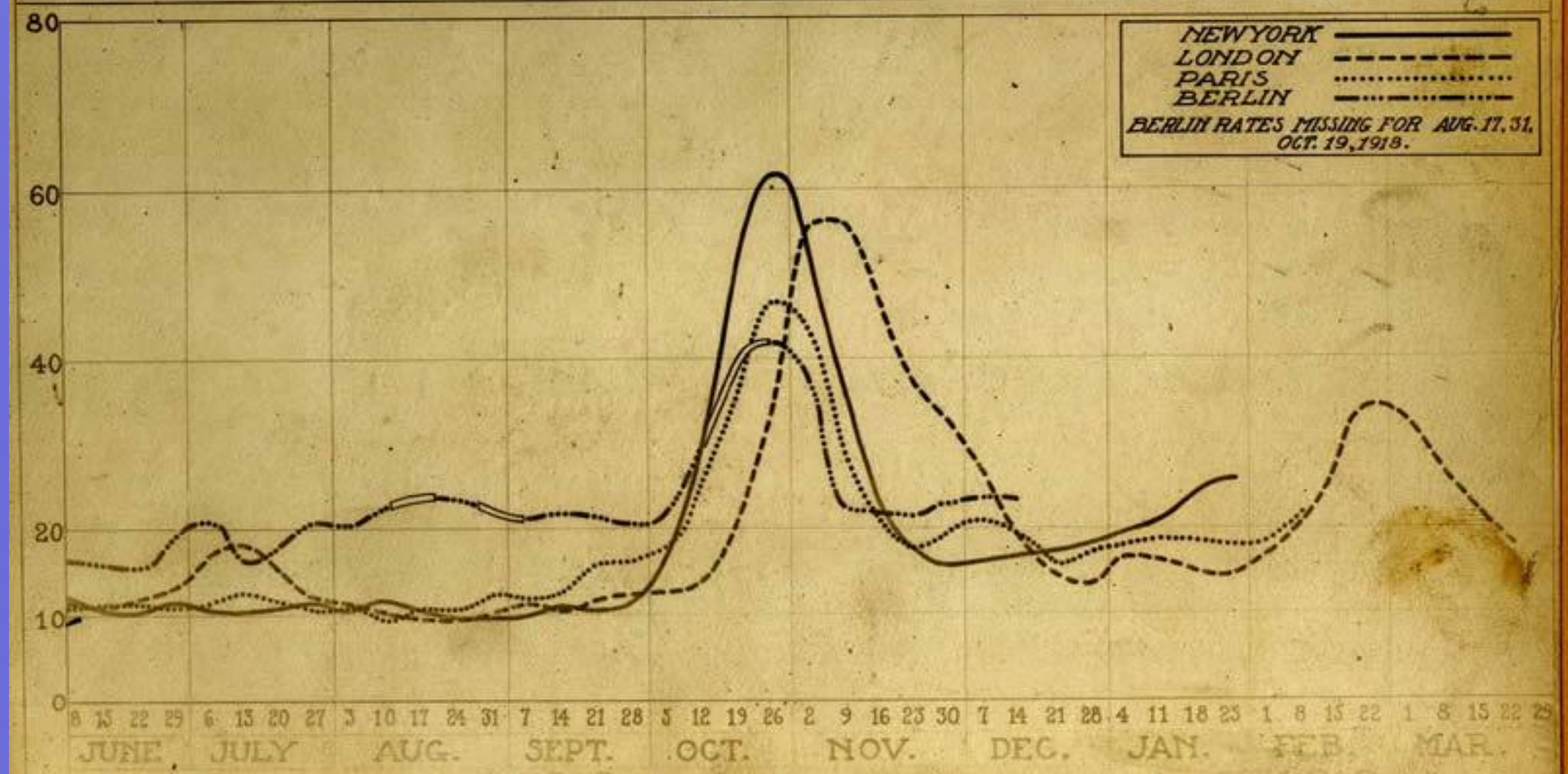
| ILI Symptom | % |
|---|---|
| • Temperature* ≥ 37.8 $^0$C | 60 |
| • Temperature ≥ 37.8 $^0$C **+ cough** | 51 |
| • Temperature ≥ 37.8 $^0$C **+ sore throat** | 12 |
| • Temperature ≥ 37.8 $^0$C **+ either cough or sore throat** | 51 |

* Measured temperature on admission

# INFLUENZA PANDEMIC

## MORTALITY IN AMERICA AND EUROPE DURING 1918 AND 1919

DEATHS FROM ALL CAUSES EACH WEEK
EXPRESSED AS AN ANNUAL RATE PER 1000



# UTI in LTCF's

## HAEMATOLOGY

- [x] CBC
- [ ] ESR
- [ ] Reticulocytes
- [ ] Iron Studies
- [ ] Ferritin
- [ ] Red Cell Folate
- [ ] B12/Folate
- [ ] INR (Prothrombin)
- [ ] Coag. Screen

## IMMUNOLOGY

- [ ] First Antenatal Screen
- E.D.D. __/__/__
- [ ] Later Antenatal Screen
- [ ] Hep BsAg
- [ ] Hep A IgG
- [ ] Hep BsAb
- [ ] Hep A IgM
- [ ] Hep B Core Ab
- [ ] Hep C Ab
- [ ] Thyroid Antibodies
- [ ] HIV
- [ ] Treponema
- [ ] ANA
- [ ] Rubella Status
- [ ] dsDNA
- [ ] Infect. Mono
- [ ] Tissue Autoabs
- [ ] EBV
- [ ] Rheumatoid Factors
- [ ] Toxoplasma
- [ ] C. Reactive Protein
- [ ] CMV
- [ ] Streptococcal Abs
- [ ] Brucella

## BIOCHEMISTRY

- [ ] Urea
- [x] Creatinine
- [ ] Electrolytes
- [ ] Uric Acid
- [ ] Calcium
- [ ] Amylase
- [ ] $PO_4$
- [ ] Lipid Profile
- [ ] PSA
- [ ] GTT (75g)
- [ ] Glucose
- [ ] Polycose Screen
- [ ] Urine Microalb
- [ ] HbA1c
- [ ] Myoc. Enzymes
- [ ] Prot & Elec
- [ ] Immunoglobulins
- [ ] Liver Function

### ENDOCRINE

- [ ] FT4
- [ ] FSH
- [ ] TSH
- [ ] LH
- [ ] FT3
- [ ] Progesterone
- [ ] Prolactin
- [ ] Quant HCG
- [ ] Oestradiol
- [ ] Cortisol am/pm

### THERAPEUTIC DRUGS Dose_____

Specify_____ Last dose at_____

## MICROBIOLOGY

- SWABS Site_____ [ ] Culture
- Site_____ [ ] Chlamydia
- Site_____ [ ] Herpes

### URINE MSU/CSU/OTHER (add details below)

- [x] Culture
- [ ] Tb Culture x 3

### SPUTUM

- [ ] Culture
- [ ] Tb Culture x 3

### FAECES

- [ ] Culture
- [ ] Occult Blood
- [ ] Ova & Parasites x2
- [ ] Giardia Antigen

### SKIN SCRAPING/FUNGI (add details below)

- [ ] Site(s)_____

### SEMINAL FLUID

- [ ] Fertility
- [ ] Post Vasectomy

### ASPIRATE Site_____

- [ ] Culture
- [ ] Crystals

- [ ] Blood Culture x2
- [ ] Skin Allergy*
- [ ] Mantoux

## CYTOLOGY

- [ ] Cx Smear [ ] One [ ] Two slides
- [ ] Vag Smear [ ] Cervex Broom
- LMP __/__/__ [ ] Spatula
- [ ] Post Menopause [x] Other 3
- [ ] Urine Cytology x3
- [ ] Sputum Cytology x3
- [ ] FNA* Add diagram & site details below

## HISTOLOGY

- [ ] Site (details below)

## SPECIMEN COLLECTION (Blood/Urine)

[ ] Fasting [ ] Non Fasting

Time_____ am/pm Date_____

## URGENT

- [ ] Phone_____
- [ ] Fax_____

Mark appropriate tests with "Ph" or "Fax"

*Tests requiring an appointment

[ ] Tick if not eligible for health benefit fee

I certify that this patient and these tests are eligible for publicly funded laboratory services.

Additional Tests:

**PSA**

Clinical Details:

Medication:

**Discomfort with full bladder ? cause**

Prices all GST exclusive

Date: __/__/__

Signature:

## GYNAECOLOGY

- H.V./Cx Swab
- Chlamydia
- Herpes
- Smear ☐ Cx ☐ Vag
- ☐ Spatula ☐ One Slide
- ☐ Cervex Broom ☐ Two Slides
- MP: __/__/__ ☐ Brush

## HISTOLOGY FNA

ite(s) _____

**Seminal fluid**

- ☐ Fertility
- ☐ Post-vasectomy

**Aspirate**

- ☐ Culture
- ☐ Crystals

Site _____

## MYCOLOGY

Site(s) _____

- Streptococcal abs
- C. Reactive Protein
- Rheumatoid Factors
- ANA
- ds DNA
- Tissue Autoabs
- Skin Allergy*
- Tuberculin

## URGENT

☐ Ph _____

☐ Fax _____

Mark appropriate test(s) with Ph or Fax

RF-C-V / 2

tests.

Collection Date: / / Time:

Clinical Details:

Medication: **Yellow Urine**

Date _____

mmunity laboratory since 1960


and Reading Time

# Urine Dipstick

**30-50% LTCF residents have bacteria in their urine without symptoms**

**i.e. asymptomatic bacteriuria**

**The urine will likely be turbid, smelly**
**WBCs present, often nitrites positive**

**i.e. DIPSTICK POSITIVE**

**DO NOT TREAT**

**DO NOT SEND URINE TO LAB !!**

# Urine Dipstick

**Half of the rest will have WBCs in their urine without bacteria**

**i.e. DIPSTICK POSITIVE**

**DO NOT TREAT**

**DO NOT SEND URINE TO LAB !!**

# Urine Dipstick

**Only 20% average of all residents will have a negative dipstick**

**Every dipstick use promotes significant antibiotic overuse to the detriment of all**

**i.e. a simple, misleading, ‘dangerous’, test**

**⬆⬆ Facility wide MDRO making & sharing**

**plus significant microbiome damage**

# Urine Dipstick LTCF

**A positive dipstick is of no diagnostic value**

**A positive culture is not helpful without Genitourinary Symptoms**

**The Lab report can NEVER make the Diagnosis of UTI**

# UTI LTCF

- Residents with Symptoms from any cause will likely have a ‘positive’ urine culture
- Acute confusion can be a UTI indicator but most acute confusion has other causes – e.g. respiratory infection
- In absence of fever, UTI an unlikely cause of a non specific decline in clinical status (non catheterised)

# UTI LTCF

- Mortality is rarely associated with UTI, unless febrile and/or catheterised then this can be much more serious
- Only about 10% of fever episodes without localising GU Sx have a urine source (if not catheterised)
- But if catheterised this increases to about one third (30%)

# Elderly, urine

**Asymptomatic**

**Untreated bacteriuria**

**has no effect on mortality**

**But treating will promote needless**

**Antibiotic resistance, shared by all**

# E.coli in Midstream Urine

| | |
|---|---|
| Ampicillin | - resistant |
| Augmentin | - resistant |
| Cefotaxime | - intermediate |
| Ciprofloxacin | - resistant |
| Gentamicin | - resistant |
| Co-Trimoxazole | - resistant |
| Cephalothin | - resistant |
| Chloramphenicol | - resistant |
| Nitrofurantoin | - intermediate |
| Tetracycline | - resistant |
| Imipenem | - sensitive |

**BUT how much? longer**


PROBIOTIC

Myoc. Enzymes | Prot & Elec

Immunoglobulins

Liver Function

CRINE

T4 | FSH

SH | LH

T3 | Progesterone

Prolactin | Quant HCG

Oestradiol

Cortisol am/pm

APEUTIC DRUGS Dose_____

_____ Last dose at_____

FAECES

Culture | Occult Blood

Ova & Parasites x2 | Giardia Antigen

SKIN SCRAPING/FUNGI (add details below)

Site(s)_____

SEMINAL FLUID

Fertility | Post Vasectomy

ASPIRATE Site_____

Culture | Crystals

Blood Culture x2

Skin Allergy* | Mantoux

FNA* Add diagram & site details below

HISTOLOGY

Site (details below)

SPECIMEN COLLECTION (Blood/Urine)

☐ Fasting ☐ Non Fasting

Time_____am/pm Date_____

URGENT

☐ Phone_____

☐ Fax_____

Mark appropriate tests with "Ph" or "Fax"

*Tests requiring an appointment

☐ Tick if not eligible for health benefit fee

I certify that this patient and these tests are eligible for publicly funded laboratory services.

Clinical Details:

Medication:

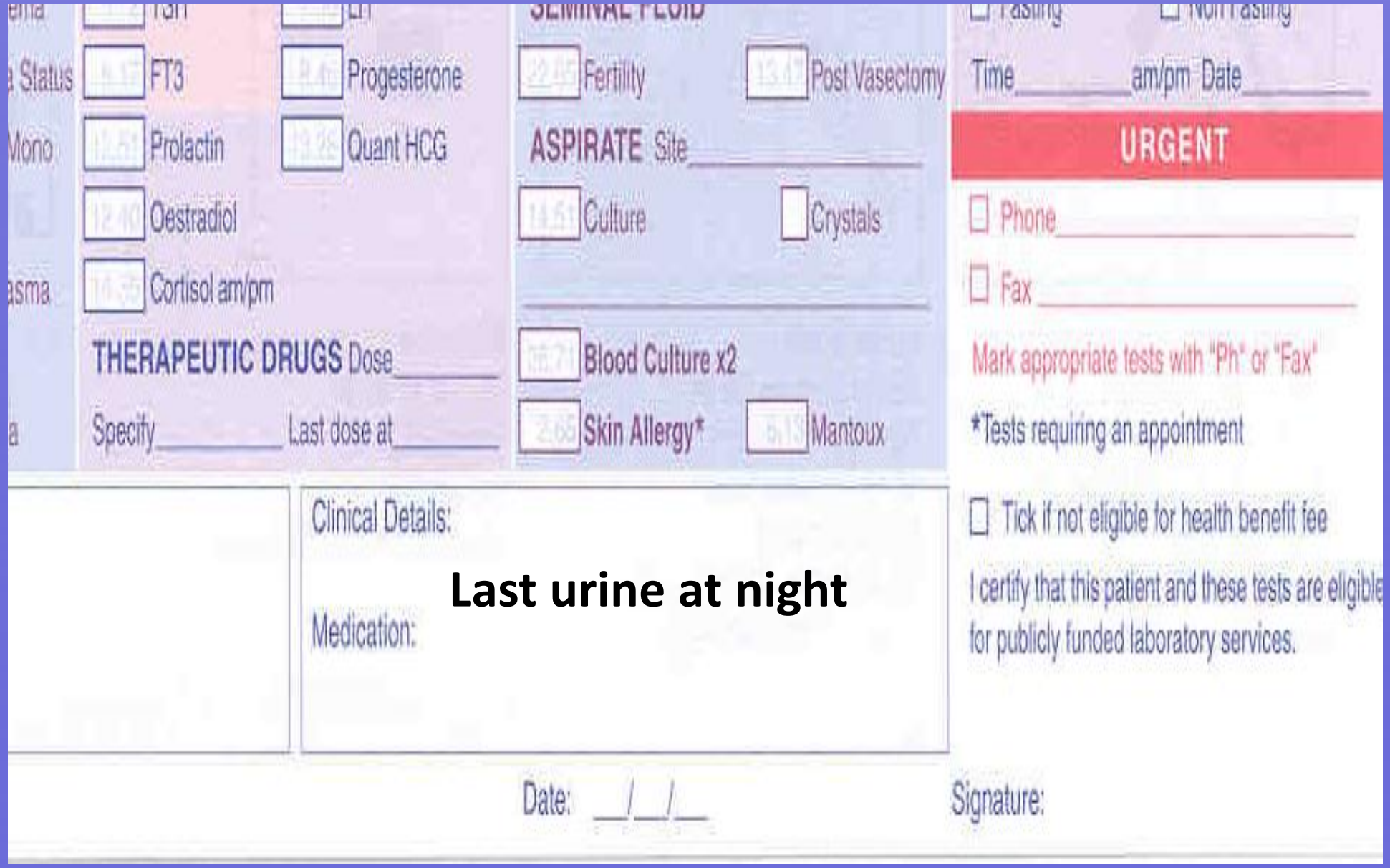
**Dark, smelly urine**

**? UTI**

**Reluctant to drink**

Date: __/__/__

Signature:


Status
Mono
asma
FT3
Progesterone
Prolactin
Quant HCG
Oestradiol
Cortisol am/pm
THERAPEUTIC DRUGS Dose
Specify
Last dose at
SEMINAL FLUID
Fertility
Post Vasectomy
ASPIRATE Site
Culture
Crystals
Blood Culture x2
Skin Allergy*
Mantoux
Fasting
Non Fasting
Time am/pm Date
URGENT
Phone
Fax
Mark appropriate tests with "Ph" or "Fax"
*Tests requiring an appointment
Tick if not eligible for health benefit fee
I certify that this patient and these tests are eligible for publicly funded laboratory services.
Clinical Details:
Medication:
Last urine at night
Date: __/__/__
Signature:

# Pneumonia LTCF

# Bedside Criteria ? Pneumonia

≥2 following symptoms or signs :

- New cough onset with or without sputum
- Fever (rectal temperature ≥37.8 C)
- Shortness of breath
- Respiratory rate ≥25 breaths per minute
- Heart rate ≥100 beats per minute
- Hypoxemia (oxygen saturation <94% breathing room air)
- Acute change in cognitive or functional status
- Localised congestion (rales/ronchi)

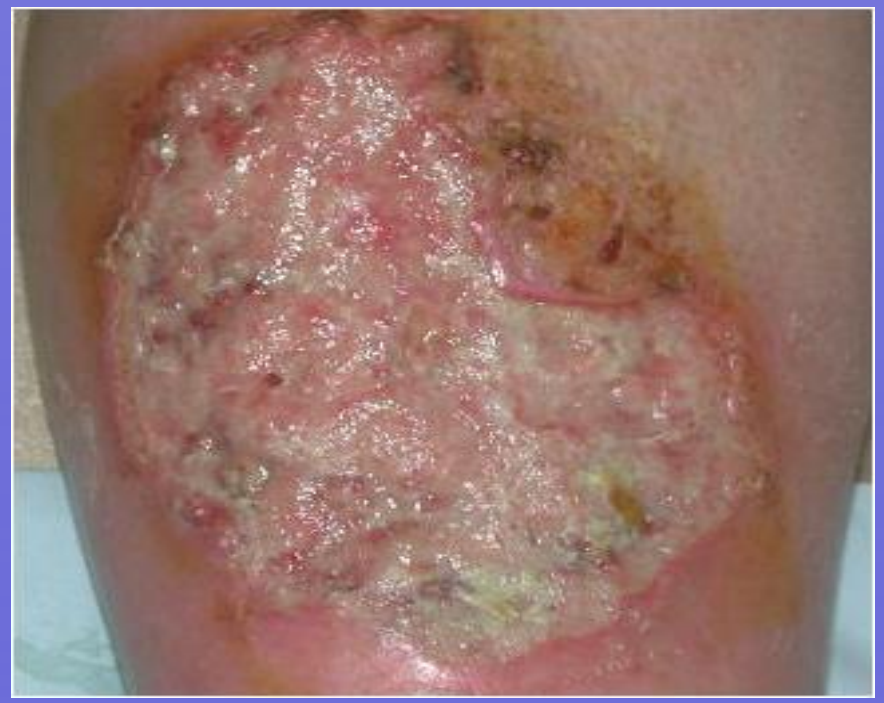
Evidence-based guidelines for management of nursing home-acquired pneumonia. J Fam Pract 2002; 51:709–716

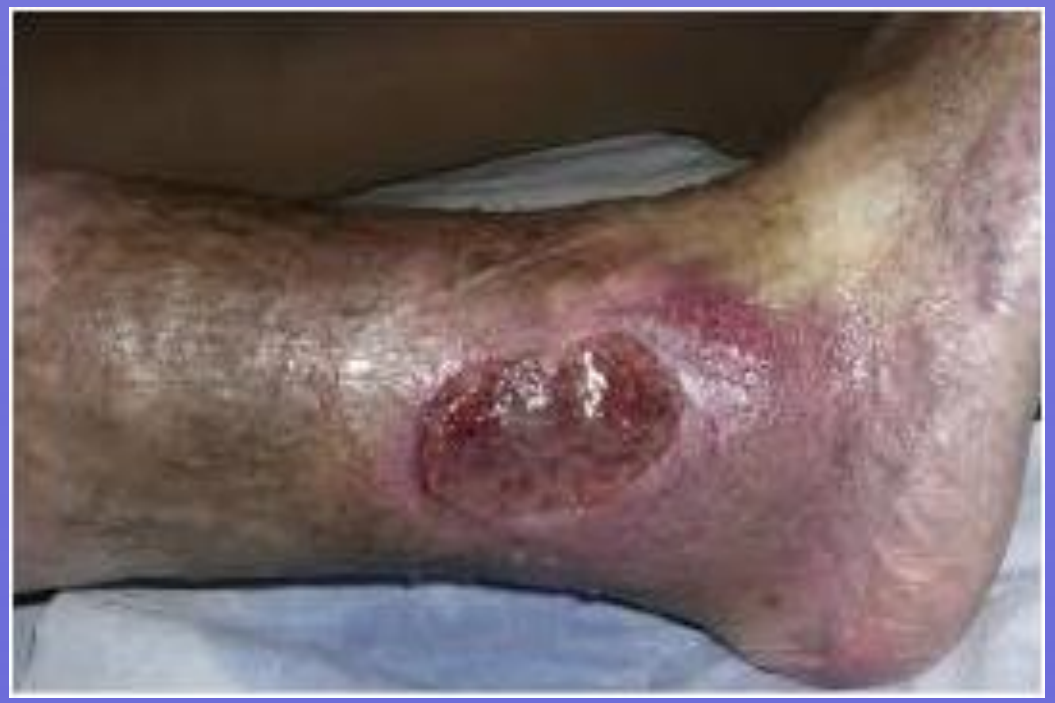
# Diagnostic Studies ? Pneumonia LTCF

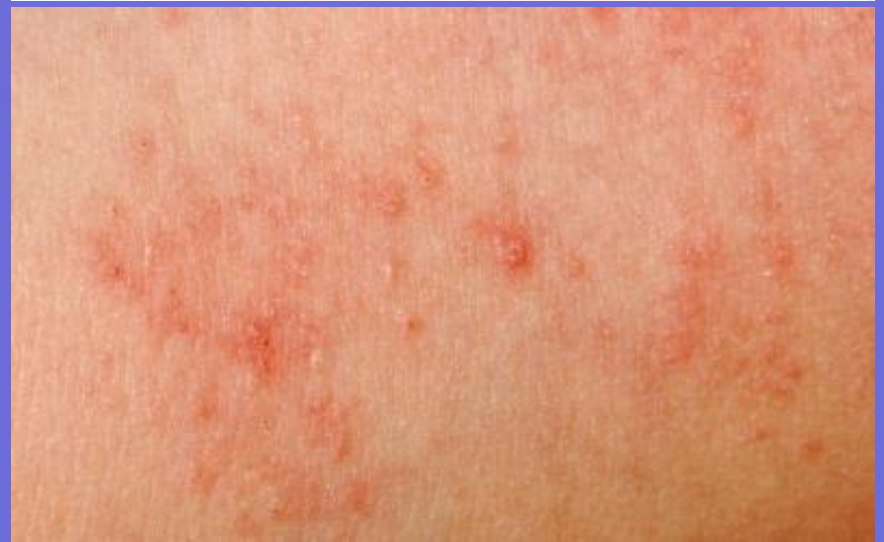
- Pulse oximetry
- Chest radiograph (??!)
- Sputum, if obtainable, gram stain & culture
- Complete blood count with differential
- Blood urea nitrogen to assess hydration status

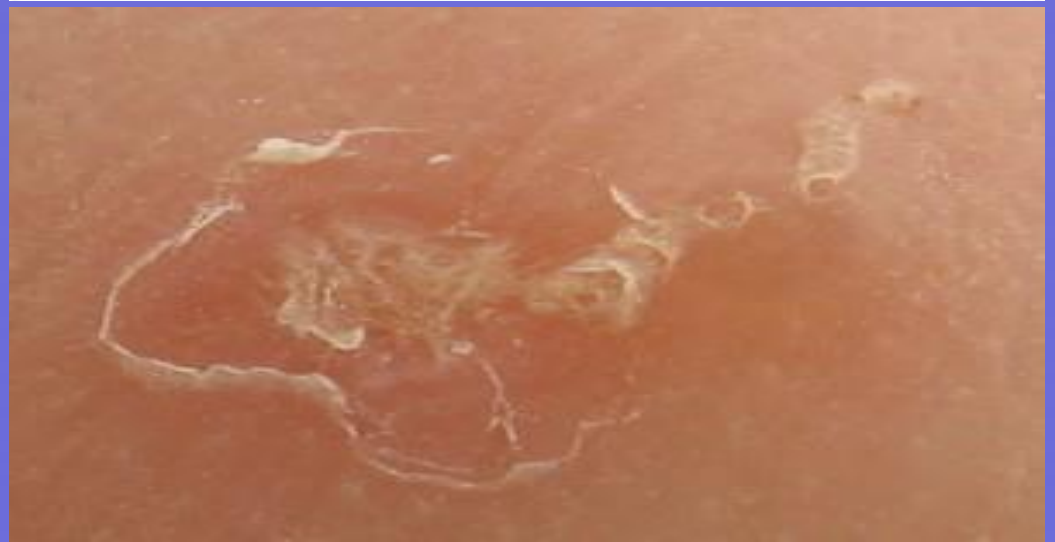
Practice guideline for evaluation of fever and infection in long-term care facilities. Clin Infect Dis 2000; 31:640–653

# Skin & Soft Tissue



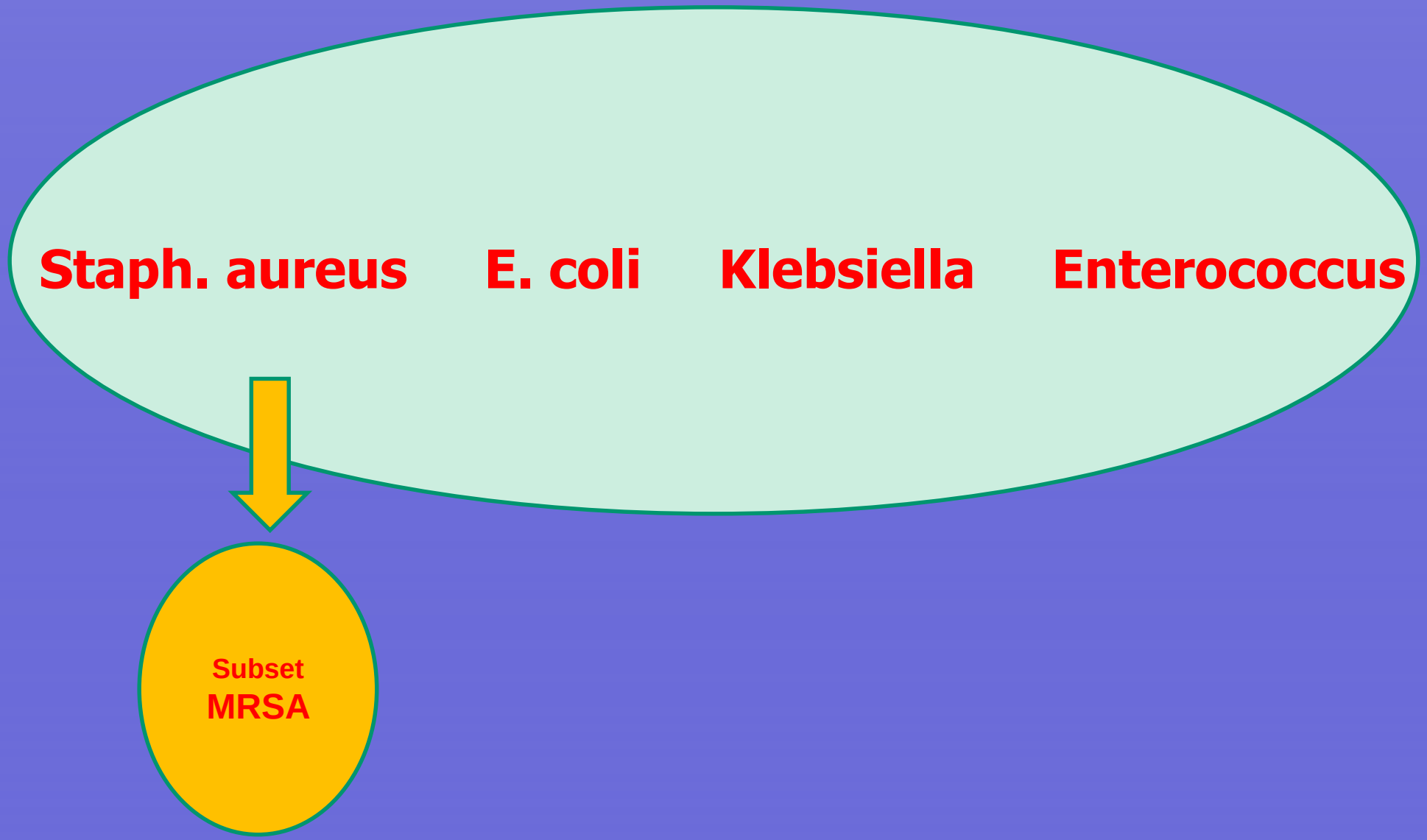




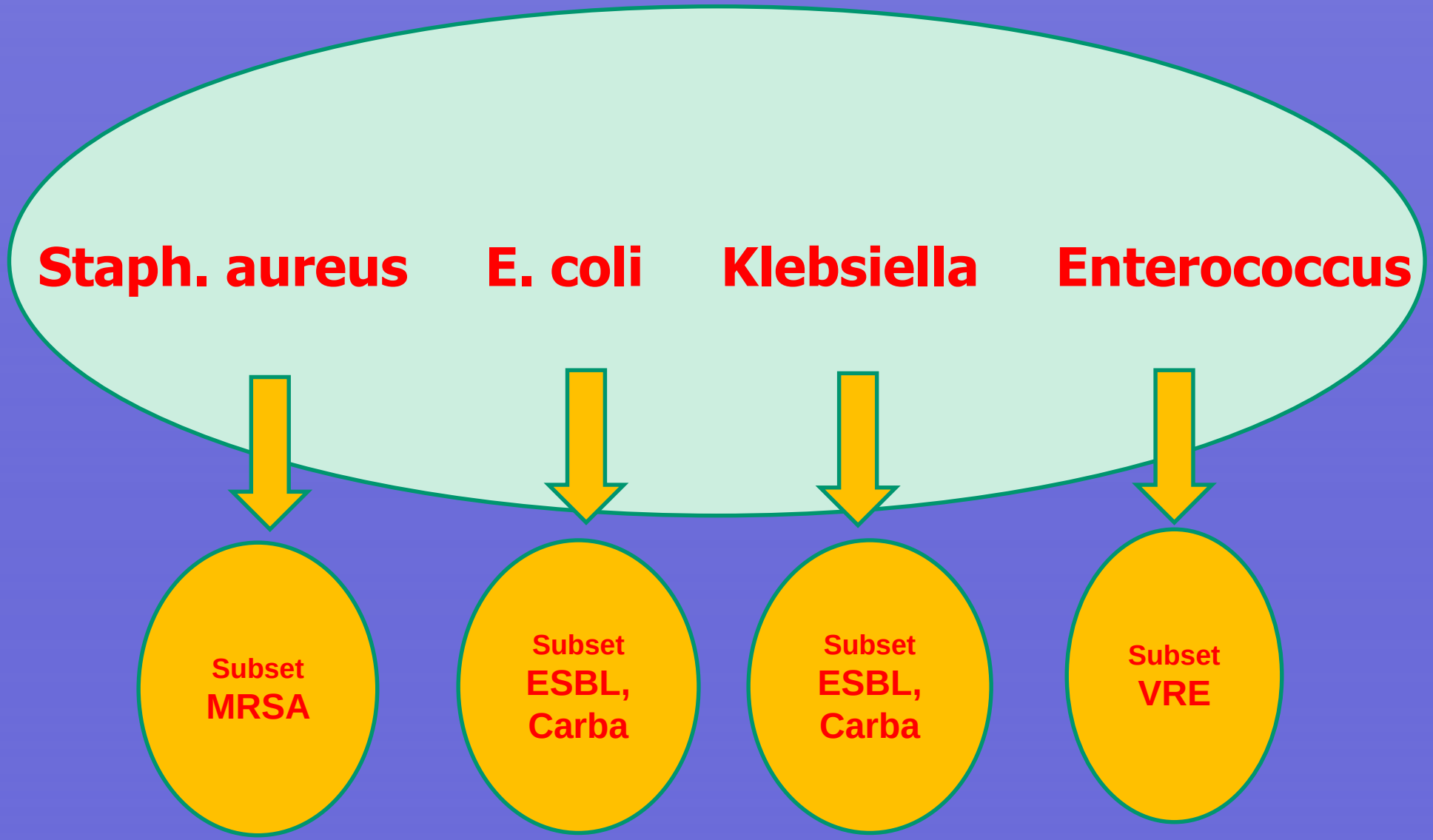



Known MRSA positive
Unknown MRSA Carriers

# MDRO Approach
# Silo or Horizontal Required ?



# MDRO Approach
# Silo or Horizontal Required ?



# Largest Rest Home MRSA Study
# Std Precautions vs 'Search & Destroy'

**104 LTCF's** **6,036 residents** Vaud Switzerland

**Largest Randomised Controlled one-year MRSA study**

**A. Standard Precautions only** **e.g. hand hygiene**

**(51 LTCF's control group)**

**versus**

**B. Universal MRSA screening followed by decolonisation of all MRSA carriers**

**(53 LTCF's intervention group)**

Ref: C. Bellini*, C. Petignat, E. Masserey, C. Büla, B. Burnand, D. Blanc, G. Zanetti (Lausanne, CH) April 27, 2013

# MRSA
# Std Precautions vs 'Search & Destroy'

- **51 LTCF Control:** **Standard Precautions ONLY**

  anonymised MRSA screening at study entry

- **53 LTCF Intervention group:**

  **all residents + new admissions MRSA screened**

  **all MRSA carriers 5-day topical decolonisation**
  **chlorhexidine skin + pharynx + Nasal mupirocin**
  **plus environmental disinfection**

  **(daily change clothes, sheets, bedding,**
  **+ alcohol disinfection of surrounds)**

**Decolonisation process was repeated when failure**

# MRSA
# Std Precautions vs 'Search & Destroy'

## Results:

- Mean MRSA prevalence at baseline

  8.9% in both groups (range 0- 44%)
  declined to 6.6% (control group)
  and 5.8% (intervention group)

60% of carriers in the intervention group were successfully decolonised, and 47% remained negative at study end

but others became MRSA carriers

# MRSA Std Precs vs 'Search & Destroy' i.e. decolonisation

## Conclusions:

Universal MRSA screening followed by decolonisation of carriers had

no significant additional impact in reducing prevalence of MRSA carriage rate

at one year compared to only Standard Precautions

# 5% of 500 Infections
# which ones are MRSA positive???

# 5% + 5% of 500 People
# ? MRSA &/or ESBL positive???

# 3 of this 500 have infected wound should the MRSA be isolated??

**Mary Saybolt**
*Port Richmond*
*The only thing golden about my golden years is my urine.*

*t ev-*
*ldren*
*en I*

**Dolores**
*Port Ric*
*The bes*
*ing old*
*more t*


ANNIVERSA


We're not
ALL BAD!!

MEDLAB South

Canterbury SCL

ben.harris@sclabs.co.nz

www.canterburyscl.co.nz

Infection Control tab

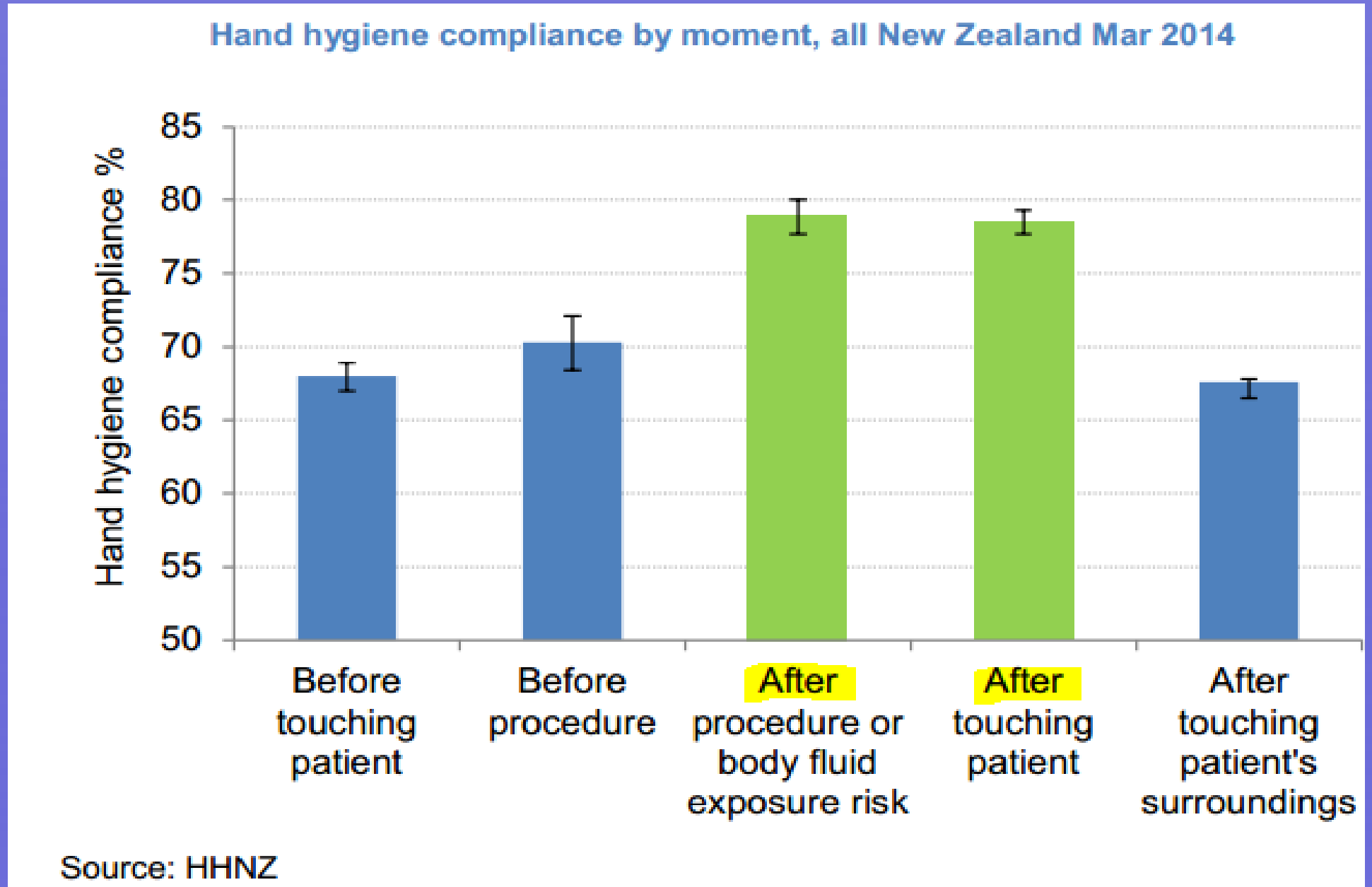
# NZ Hand Hygiene Compliance Rates

# 80% average

**X20 DHBs**

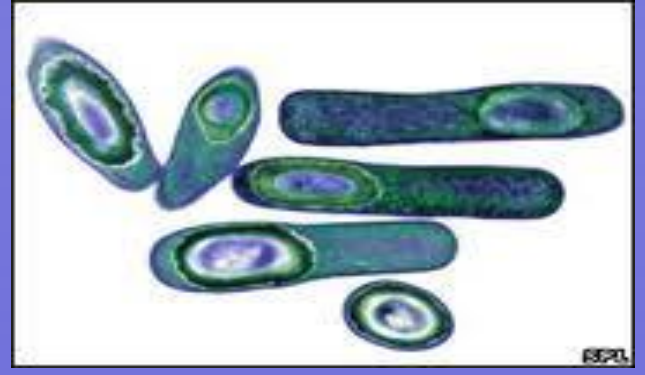
**1 April – 30 June 2015**

# NZ DHB Hand Hygiene




Source: HHNZ

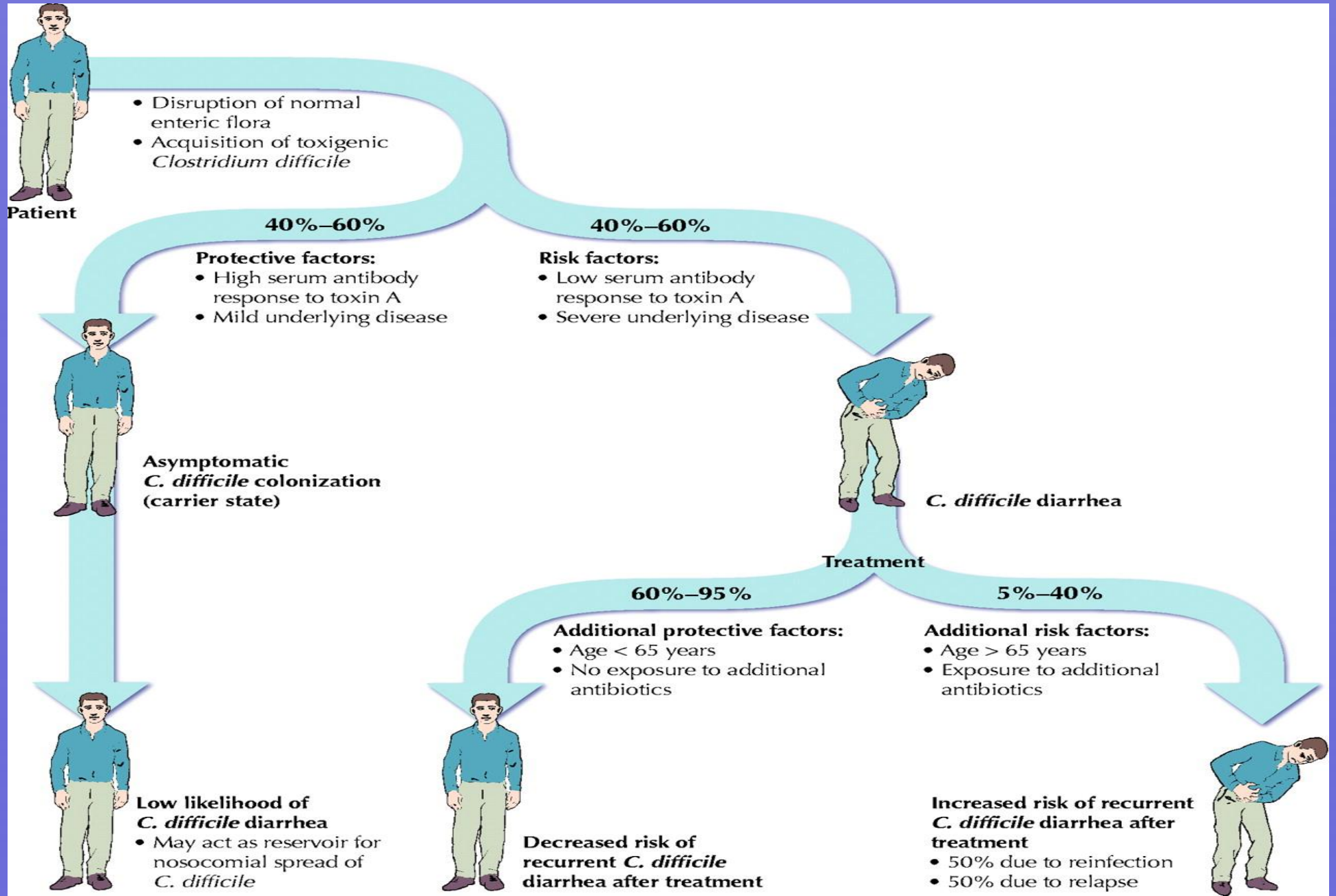
# Clostridium difficile



## Brat to Tyrant

- 50% infants colonised with CD
- 3% adults colonised, but greater in health institutions
- Only an issue when toxin A, B or hypervirulent CD binary toxin strain BI/NAP1/027 produced
- Mortality in the northern hemisphere has more than doubled from 3.6% to 8% since year 2000

# Clostridium difficile



# Clostridium difficile

**Issues**

- **Antibiotics** (use, type and stewardship)
- **Hand Hygiene** ( spores alcohol resistant)
- **Environmental** cleaning (scrupulous, chlorine, how to monitor)
- Binary toxin ↑ mortality (8%)
- Recurrence - discharge to LTCF implications
- Faecal transplants

# ? UTI Empiric ABs when

**A. <u>No indwelling urinary catheter</u>:**

1. Acute dysuria (pain on urination) ***alone, or***

2. Fever ≥ 37.9°C or 1.5°C above baseline **plus at least one** of the following:

(a) New or worsening urgency

(b) Frequency

(c) Suprapubic pain

(d) Gross haematuria (new)

(e) Costovertebral angle tenderness

(f) Urinary incontinence

# ? UTI Empiric ABs when

**B. Indwelling urinary catheter:**

**At least one** of the following

(a) Fever ≥ 37.9°C or 1.5°C above baseline

(b) New costovertebral angle tenderness

(c) Rigors

(d) New onset of delirium

# UTI LTCF

## Pyuria, Dipstick, WBC

- 90% colonised urines have pyuria (WBC)
- 25 – 50% residents will have positive white cells/leucocytes in the urine without UTI
- A negative dipstick or culture effectively rules out UTI (only ? 20% of all residents)

# ? Respiratory Infection Empiric Antibiotics

1. Fever > 38.9°C plus at least one of the following:
   - (a) Respiratory rate > 25 breaths per minute
   - (b) Productive cough

2. Fever > 37.9°C but ≤ 38.9°C plus cough plus at least one of the following:
   - (a) Pulse > 100 beats per minute
   - (b) Delirium
   - (c) Rigors
   - (d) Respiratory rate > 25 breaths per minute

# ? Respiratory Infection
# Empiric Antibiotics

3. **Afebrile and high risk COPD** (age ≥ 65 years)
    - New or worsening cough **and** purulent sputum

4. **Afebrile without COPD**
    - New cough, purulent sputum **plus at least one** of the following:
        - Respiratory rate > 25 breaths per minute
        - Delirium

# Pneumonia & Pulse Oximetry

**Pulse oximetry good if fully aware of its limitations**

**A normal pulse oximetry is difficult to interpret in LTCF residents with baseline functional and mental deficits**

**But a saturation of less than 90% oxygen + respiratory rate >*25 is suggestive impending respiratory failure***

**Then consider some urgent interventions**

**e.g. aggressive suctioning, chest physical therapy & bronchodilators to improve the residents condition. Nursing staff in a LTCF would need to determine their own comfort level based on their knowledge of the resident's medical problems**

# Pneumonia
# Pulse Oximetry

**A single oxygen saturation of <94% is 80% sensitive and 91% specific for the diagnosis of pneumonia with a PPV of 95%**

**A decrease in oxygen saturation of 3% from baseline is less sensitive (73%) but more specific (100%) for pneumonia with a PPV of 100%**

Utility of pulse oximetry in diagnosing pneumonia in nursing home residents . *American Journal of Medical Sciences , 2002, 324 ,* 237 – 242