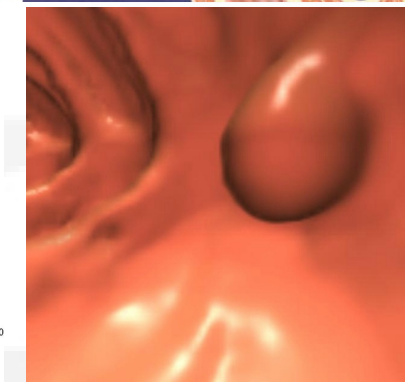
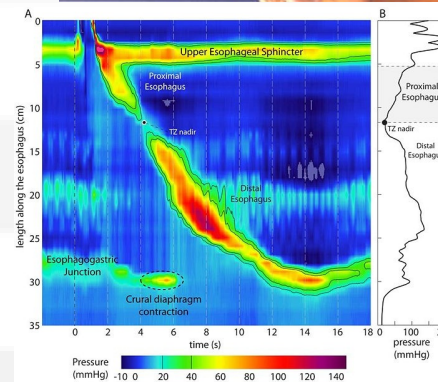
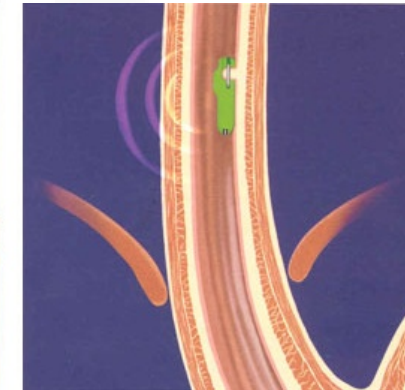
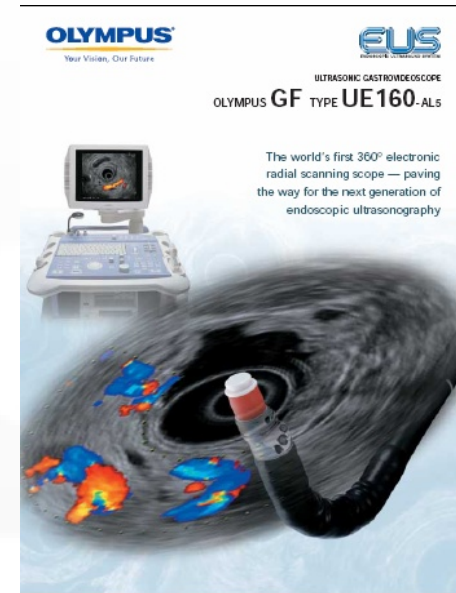


Dr Alasdair Patrick Gastroenterologist



5



Brand new facility in Remuera

5 Gastroenterologists
Upper GI surgeons
Lower GI surgeons
Dietician
Psychologist
Clinical nurse specialists

Comprehensive digestive disease centre

Consultations

BRAVO

pH/Impedance

Manometry

CT colonography

Full endoscopy services



How to investigate diarrhea!

Dr Alasdair Patrick
Gastroenterologist

MacMurray Gastroenterology
CMDHB
University of Auckland



Overview

- Background
 - History and examination
- Framework for diagnosis
 - Acute
 - Chronic
- Summary
- 5 Cases



Definition of diarrhea






- Stool weight in excess of 200g per day



Definition

- “Ask the patient”
- Patients vary enormously in what they call diarrhea
 - Consistency
 - Quantity
 - Frequency
 - Fecal incontinence
- AGA definition is reduced stool consistency

Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on its surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges (passed easily)
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces. Entirely Liquid

History

- Clear understanding of what the patient means by diarrhea
- Stool characteristics
- Duration and onset
- Alarm symptoms
- Nocturnal symptoms
- Extra intestinal symptoms
- Risk factors
 - Travel, contacts, family history



Examination

- Usually unhelpful for diagnosis
 - Check fluid balance
 - Abdominal/PR mass
 - Lymphadenopathy
 - Wasting
 - Mouth ulcers
 - Episcleritis



Investigations

- Clues to serious pathology
 - Blood tests
 - FBC and iron studies
 - U & E
 - Albumin
 - CRP and/or ESR
 - Stool specimen X3
 - C difficile
 - Pathogens culture and sensitivity
 - Transglutaminase antibodies

Diarrhea

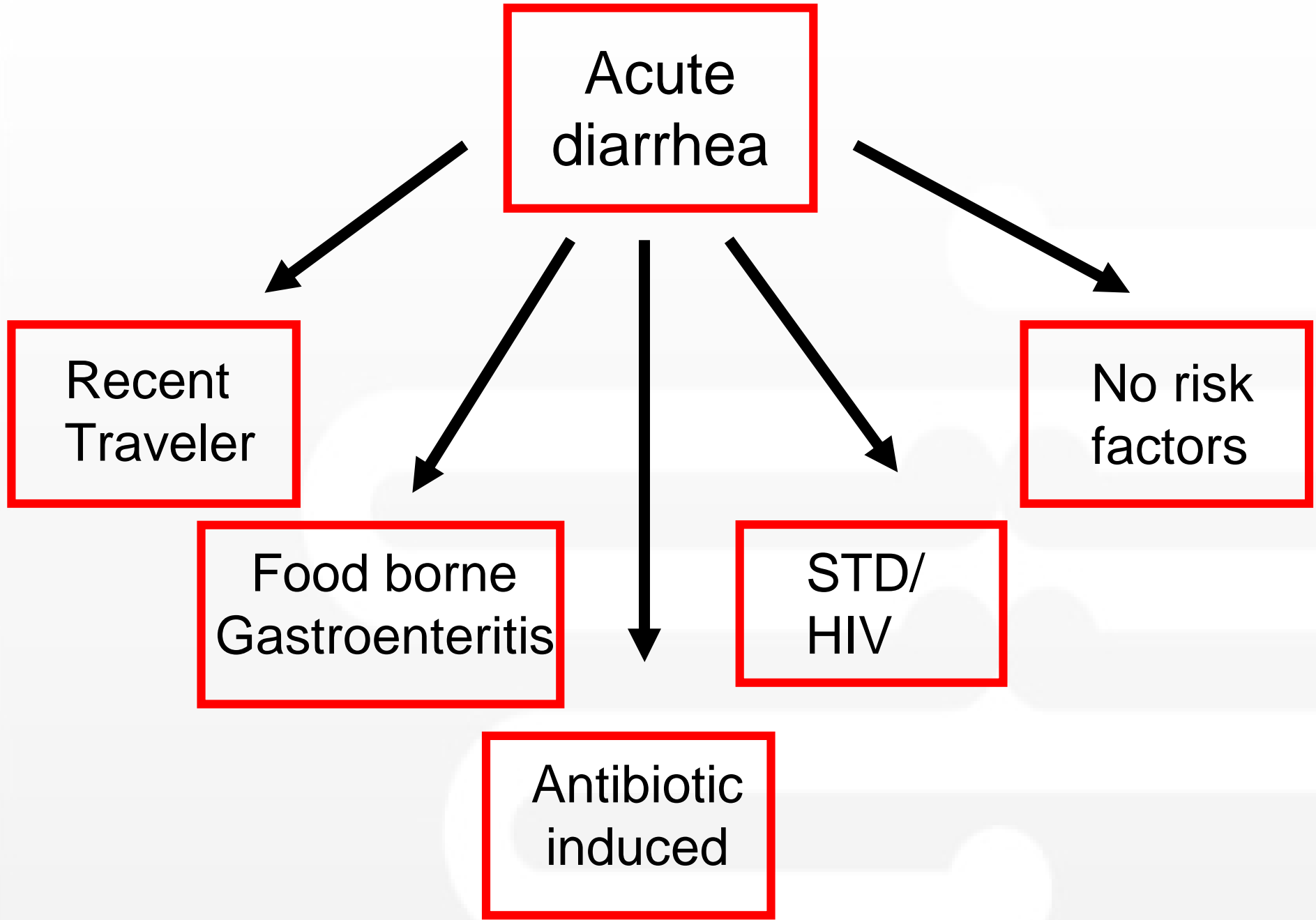
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graph TD; A[Diarrhea] --> B[Acute]; A --> C[Chronic];
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Acute

3 or more loose stools/ day
Decreased consistency
Increased frequency
Usually stops in 7 days

Chronic

Lasting more than 4 weeks



Acute diarrhea

Recent Traveler

Food borne Gastroenteritis

Antibiotic induced

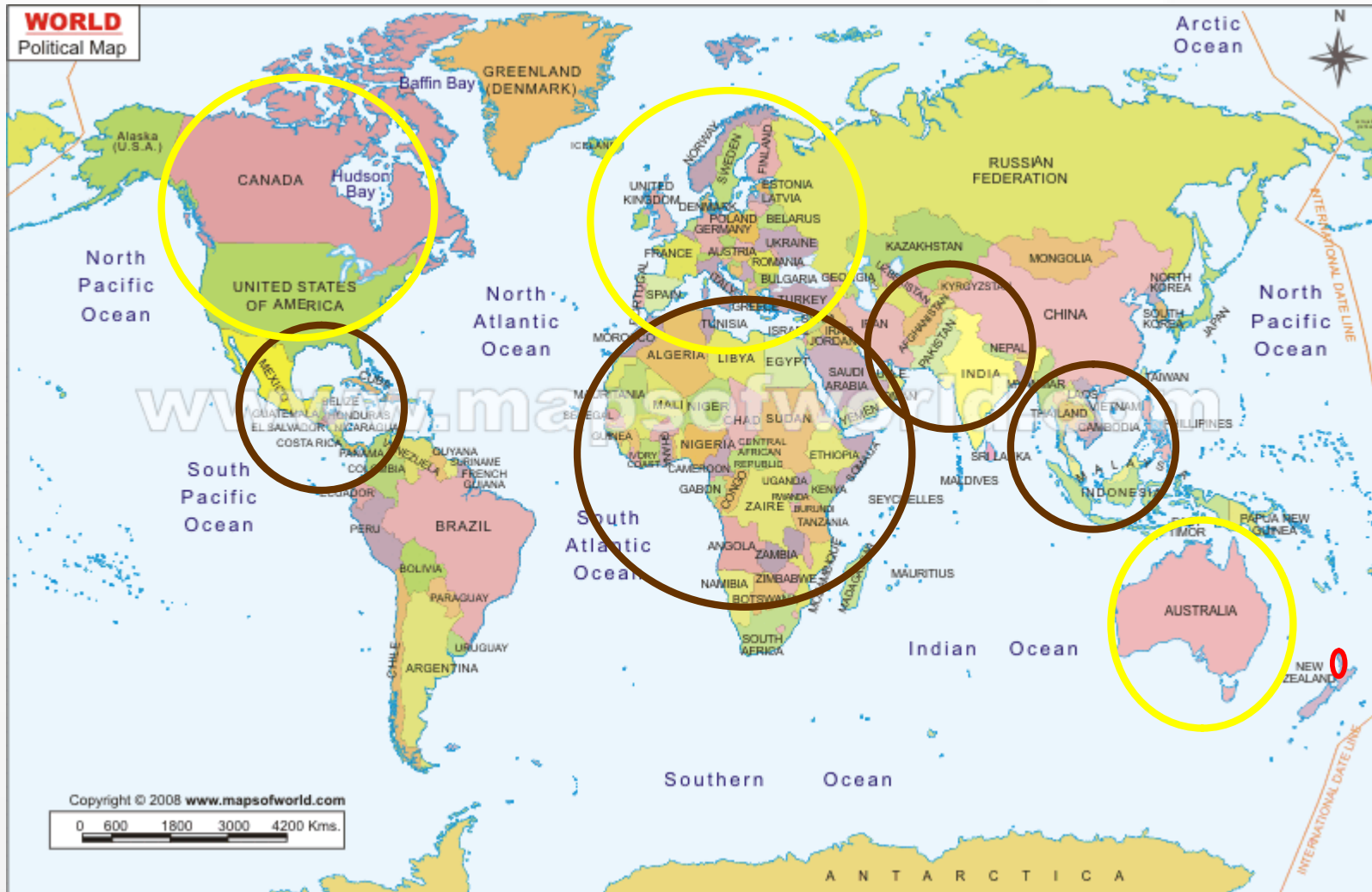
STD/ HIV

No risk factors

Travelers diarrhea

- Typical symptoms
 - Abrupt onset of cramps followed by watery diarrhea
 - 3-8 stools/day
 - Lasts 1-5 days
- Symptomatic treatment
 - Glucose containing electrolyte solution
 - Pinch of salt, ½ tsp sugar in glass of fruit juice
 - Reduced intake of fruit and vegetables
 - Loperamide 2mg (max 16mg/day)

Travelers diarrhea



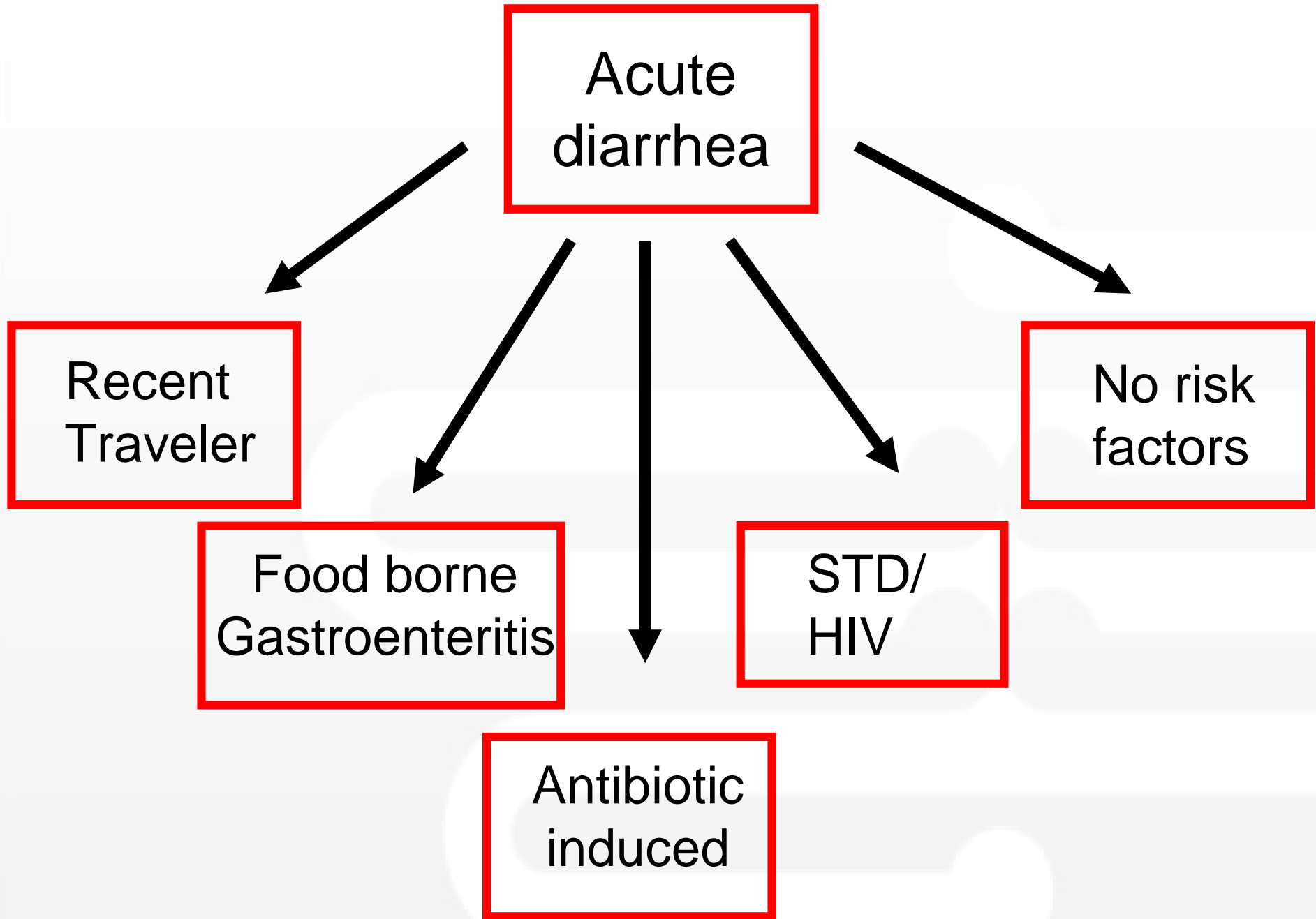
Travelers diarrhea

- If from low risk area is likely food borne and self limiting
- If from a high risk area then consider early empirical ciprofloxacin 500mg bd
 - If diarrhea persists check stool and treat appropriately
 - WCC up in E coli, shigella and campylobacter
 - Variable in the others

Pathogen	Developed %	Developing %	Traveler %
Rotavirus	20-45	15-40	<10
Norwalk + other	5-20	5-10	0
Campylobacter	5-10	5-10	5-15
Etoxicogenic Ecoli	<5	10-40	10-40
Epath Ecoli	<5	<5	<5
Shigella	5-10	5-10	10
Salmonella	<5	<5	5-10
Giardia	<5	<5	<5
Unknown	40	35-40	20

Enterotoxigenic E coli

- Fecal-oral transmission from food or water
 - Incubation 1-3
 - Profuse watery diarrhea for 3-4 days
- Self limiting
- No treatment required but cipro will shorten duration of symptoms



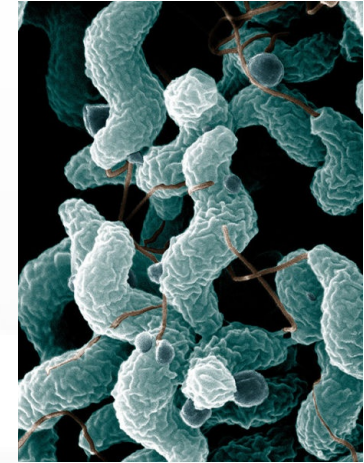
Incubation period gives clue to bug

- <6 hours due to preformed toxin
 - Staph, Bacillus
- 8-16 hours due to in-vivo toxin production
 - Clostridium species
- >16 hours due to tissue invasion
 - Salmonella, shigella, campylobacter, yersinia
 - Rotavirus
 - Can be bloody

Number of cases in NZ in 2008

- Campylobacter 6693
- Cryposporidiosis 764
- Giardia 1662
- Salmonella 1346
- Shigella 113
- VTEC/STEC 128
- Listeria 27
- Rotavirus ??

Campylobacter



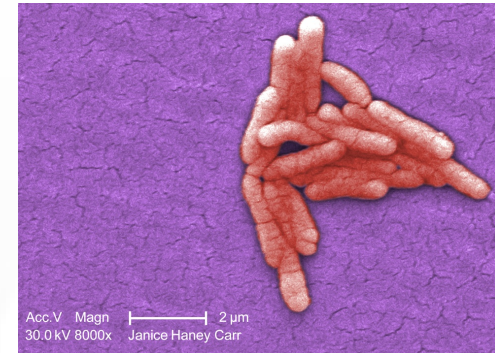
- Fecal-oral especially raw chicken
- Incubation period 1-7 days
- Prodrome headache and fevers
- Abdominal pain, vomiting and bloody diarrhea
- Lasts less than 7 days
- Antibiotics controversial

Giardia

- Spread by ingestion of cysts that can survive 2-3 months in cold water
- Incubation period 1-2 weeks
- Most infections asymptomatic
 - Insidious IBS like symptoms and constitutional
 - Malabsorption
- Test with stool antigen
 - 3 stools 2 days apart
- Treat with Metronidazole
 - 2g od for 3/7



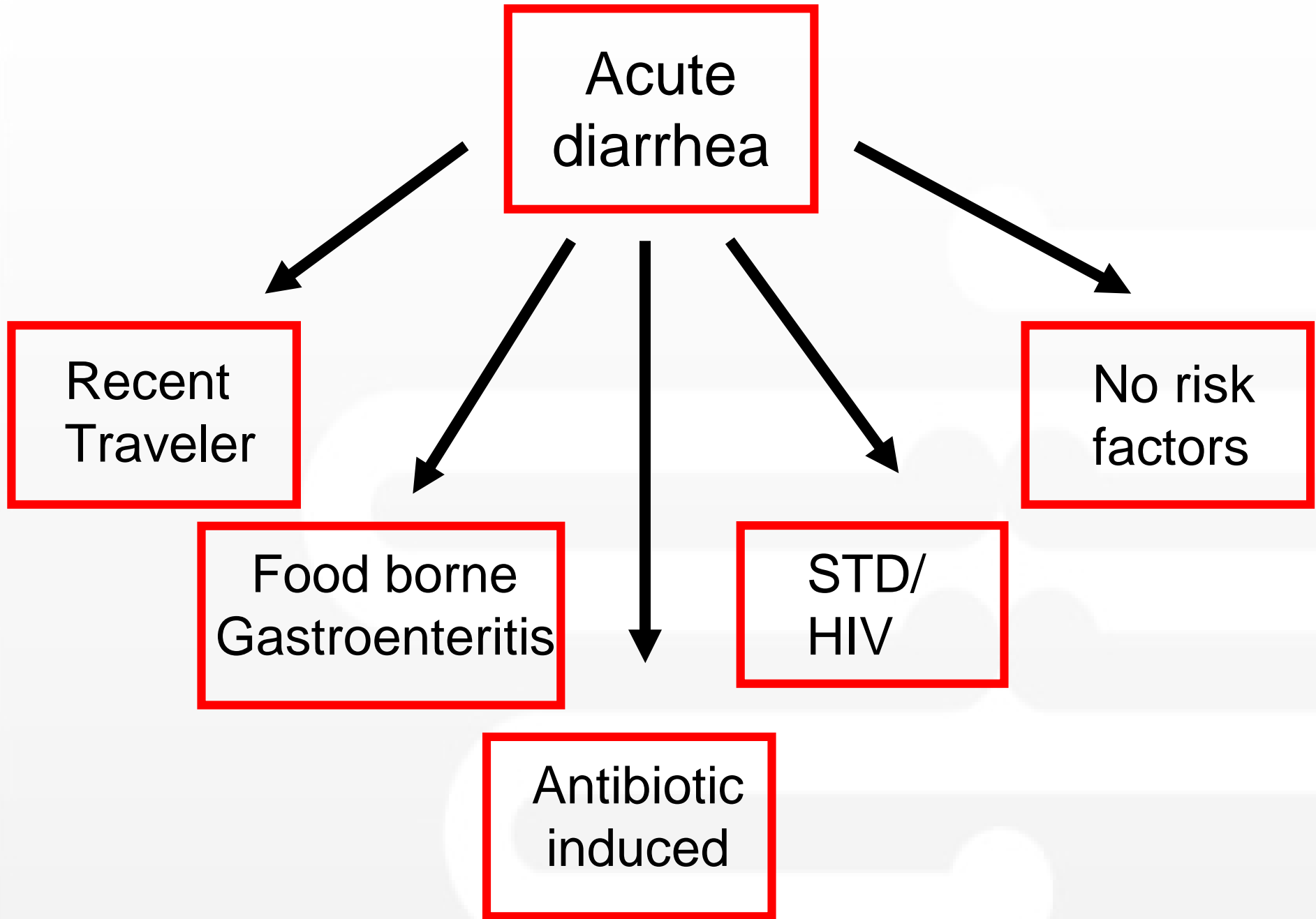
Salmonella



- From eggs and poultry
- Gastroenteritis
 - 8-48 hour incubation
 - Fever/ chills/ enteritis for 3-7 days
 - No treatment required
- Typhoid fever
 - 5-21 days
 - 7 day prodrome then disseminated symptoms
 - Antibiotics and refer

Transmission	Microbes
Water	Vibro/Norwalk/Giardia/Crypto
Poultry	Salmonella/Shigella/Campylobacter
Beef	Hemorrhagic Ecoli
Seafood	Vibro/Salmonella/HepA
Diary	Listeria
Eggs	Salmonella
Mayonnaise	Staph food poisoning
Fried Rice	Bacillus Cereus
Canned veges/fruit	Clostridium species
Animal to person	Salmonella/Campylobacter/Giardia
Day care centers	Shigella/campylo/crypto/giardia
Hospitals/antibiotics	C diff
Pools/rivers	Giardia/crypto

Organism	Therapy
amoebiasis	metronidazole
<i>Campylobacter jejuni</i>	erythromycin or quinolone
cholera	tetracycline or quinolone
<i>Clostridium difficile</i>	metronidazole
cryptosporidiosis	paromomycin but treatment often unhelpful
enteropathogenic <i>E coli</i>	symptomatic treatment only but quinolone if immunocompromised, elderly, has comorbid conditions or is severely ill
enterotoxigenic <i>E coli</i>	symptomatic treatment only but quinolone if immunocompromised, elderly, has comorbid conditions or is severely ill
giardia	metronidazole
Norwalk virus	symptomatic treatment only
Rotavirus	symptomatic treatment only
<i>Salmonella</i>	symptomatic treatment only but quinolone if immunocompromised, elderly, has comorbid conditions or is severely ill
<i>Shigella</i>	quinolone
typhoid	intravenous ceftriaxone or quinolone if sensitive



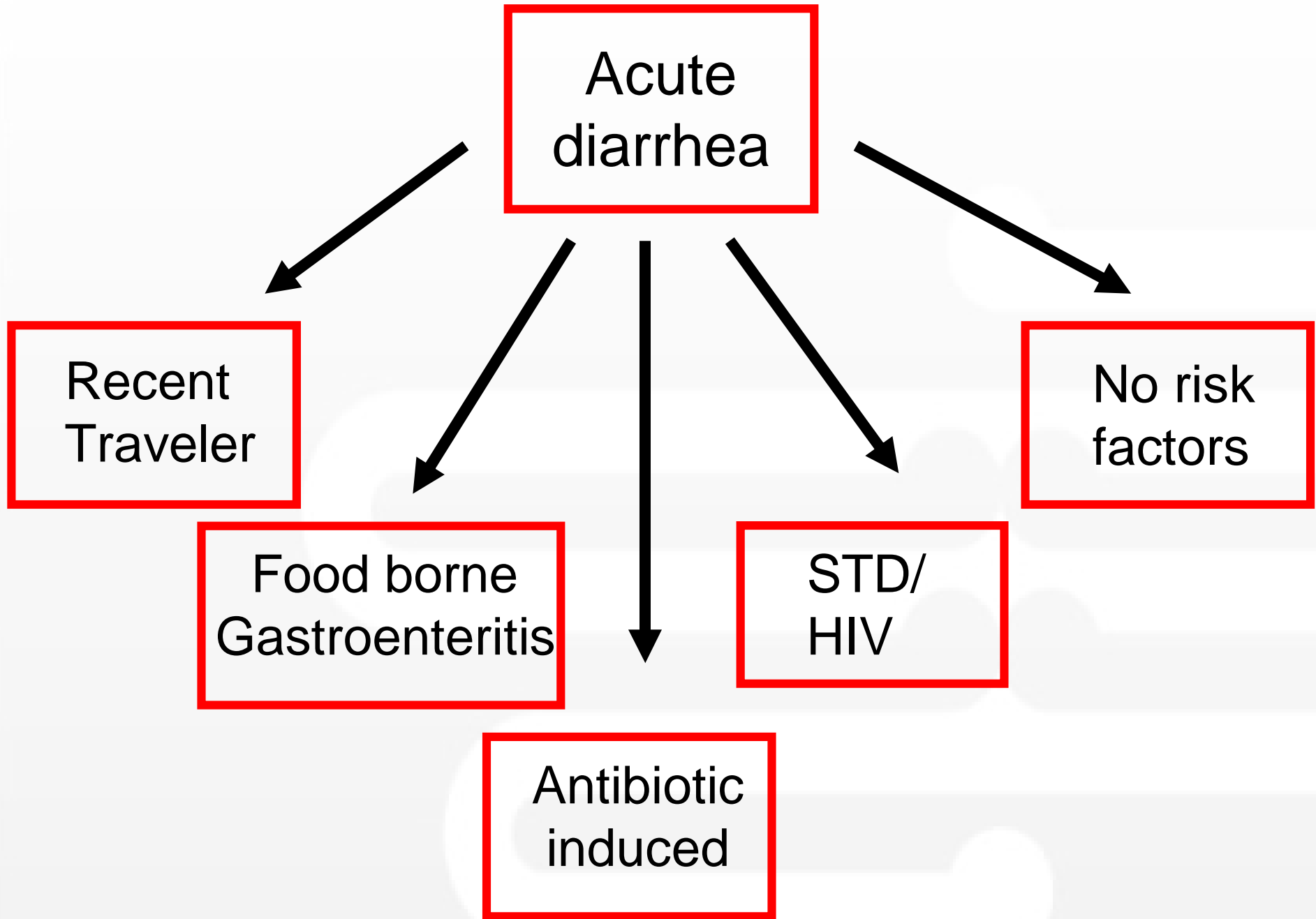
Antibiotic induced

- If any recent broad spectrum antibiotics
 - Can be due to antibiotic or C diff
 - Stop antibiotic
 - After 3 days check for C diff toxin
 - 25% of people recently treated are colonized

Clostridium difficile

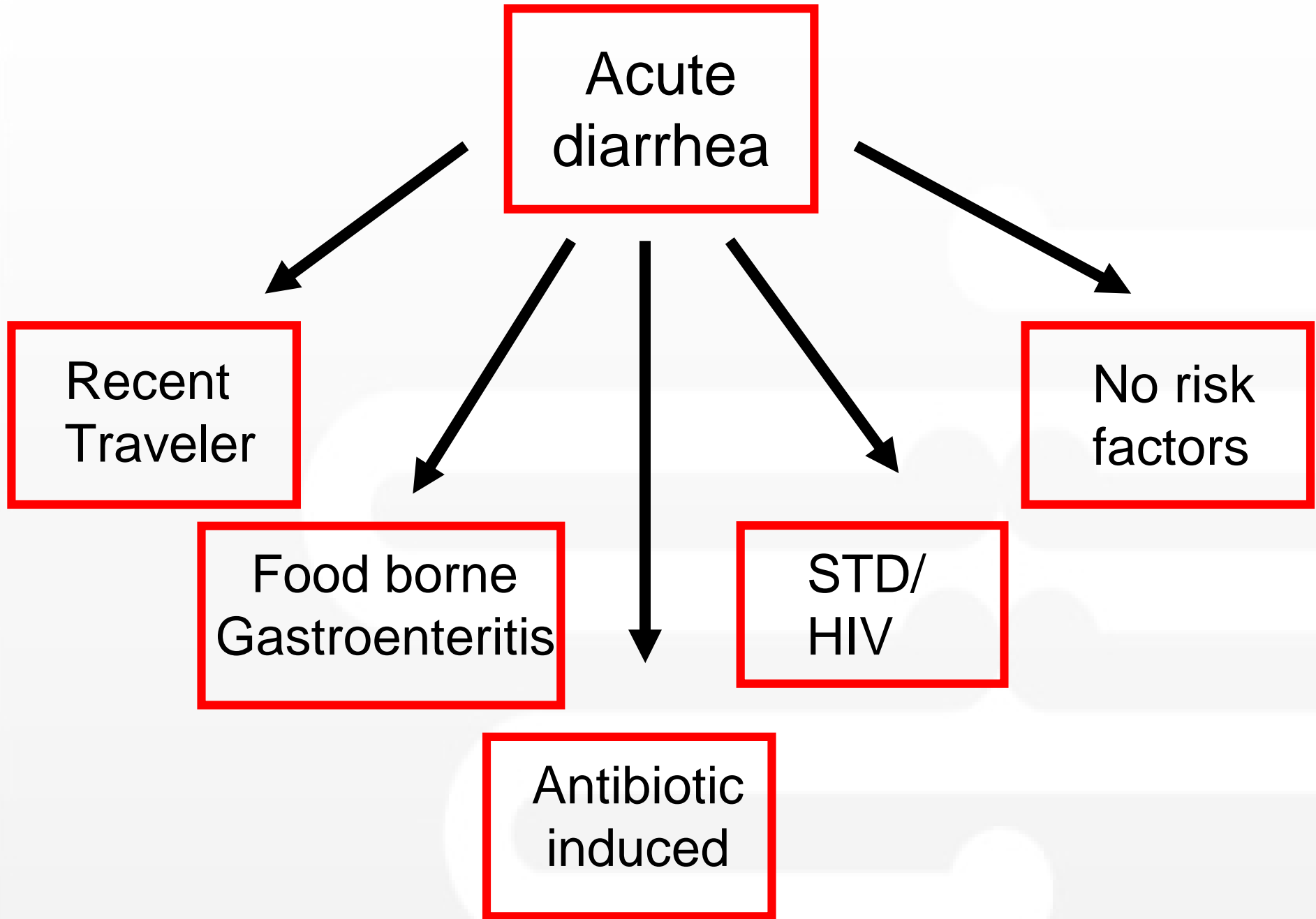
- Acquired by 20% of hospitalized patients
- Can occur up to 10 weeks after exposure
- Stool antigen only 69-87% sensitive
 - If suspicious refer for endoscopy
- Stop antibiotic
 - Metronidazole 400mg tds
 - Probiotics
- Relapse is common





STD/HIV

- Consider risk factors
 - Unprotected sex, anal sex, HIV risk factors
- STD that can cause diarrhoea
 - HIV
 - Shigella/ Salmonella
 - E Histolytica
 - Campylobacter
 - Giardia
 - Chlamydia/gonorrhoea/herpes proctitis
 - Amoebiasis



Acute diarrhea and no risk factors

- Often Norwalk or Rotavirus
- Usually self limiting
 - Low residue/lactose free diet
 - Observation

Rules of thumb for referral to hospital (acute):

- Take a history
 - Patient is elderly with multiple co-morbidities or poor mobility
 - PR bleeding
 - Significant abdominal pain
 - C diff not settling
- Examine the patient
 - Patient is toxic
 - Patient has postural hypotension or dehydration

If diarrhea persists for 2 weeks

- Check FBC, U & E and creatinine
- Check stool
 - Culture
 - Ova
 - Cysts
 - Parasites
 - C diff toxin
- Try empirical metronidazole/ ciprofloxacin
- Refer after 3-4 weeks

Diarrhea

```
graph TD; A[Diarrhea] --> B[Acute]; A --> C[Chronic];
```

Acute

3 or more loose stools/ day
Decreased consistency
Increased frequency
Usually stops in 7 days

Chronic

Lasting more than 4 weeks

Chronic diarrhea

- Specific diagnosis can be made in 90%
- Must do rectal exam
 - Looking for rectal cancer
- 3 stool specimens for culture and sensitivity include C difficile
 - Giardia, amoebiasis, C difficile
- Check FBC, U&E, ESR, CRP, Albumin, TTG
- Refer

Chronic diarrhea

- Fecal fat screen
 - Malabsorption
- Bile salt malabsorption
- TFT, drug history etc
- Colonoscopy if over age 45 or alarm features
 - Inflammatory
 - Diverticular disease
 - Cancer
 - Normal
 - Irritable bowel syndrome

Diverticular disease

- 90% arise in the sigmoid colon
- Cause a range of symptoms
 - Functional
 - Infective
 - Bleeding
- All should have a colonoscopy to exclude another cause

Diverticular disease

- High fiber diet
- Trial of fecal bulking agent
- Antispasmodics for pain
- Intermittent antibiotics if suggestion of inflammation
- If recurrent severe symptoms consider sigmoid colectomy

Bowel cancer

- Vast majority asymptomatic (76%)
- 2700 NZers develop this per year
 - 90% over the age of 50
 - 1200 die annually
- 2nd most common Ca in men and woman
- Screening announced May 2008
 - Awaiting pilot study

Irritable bowel syndrome

- There is a physiologic basis
 - Altered gut sensitivity
 - Altered gut reactivity (motility, secretion)
 - Dysregulation of brain gut axis
- Treatment response = Dr-pt relationship
 - Education
 - Reassurance
 - Symptom control
 - Referral

Take home messages

- History
 - What do they mean?
 - Nocturnal symptoms?
 - Alarm symptoms?
- Examination
 - Dehydration
 - Abdominal masses
 - PR
- Acute
 - Travelers
 - Food borne
 - Antibiotic induced
 - STD
 - No risk factors
- Chronic
 - Many causes
 - Basic screen and consider referral

Case 1

- 23 year old well European female with diarrhea
- History
 - 6 months
 - Same frequency, softer stool
 - No nocturnal symptoms
 - No alarm symptoms
 - No recent travel
- Examination
 - Fluid balance



What other tests would you do?

- Stool specimens
 - Negative including giardia
- FBC, U&E, albumin, CRP, ESR normal
- Transglutaminase antibodies
 - Positive
- What is the diagnosis?
- What would you do?

Case 2

- 48 year old Indian lady with diarrhea
- History
 - 3 days severe 6/daily watery with cramps
 - 5 times at night
 - No blood, fever
 - Returned from India 6 days ago
- Examination
 - Not dehydrated

What other tests would you do?

- Stool specimens
 - Unable to obtain
- FBC mild neutrophilia
- U&E mild raised Cr, normal albumin
- CRP and ESR mildly raised

- What is the diagnosis?
- What would you do?

Case 3

- 45 year old Korean lady with diarrhea
- History
 - 8 years intermittent
 - Increased frequency and changed form
 - No nocturnal symptoms
 - No alarm symptoms but anxious
 - Father had bowel cancer at aged 55
- Examination
 - Normal PR, fluid status, no abdominal mass

What other tests would you do?

- Stool specimen
 - Normal
- FBC, U&E, CRP, ESR, albumin
 - Normal
- What is the diagnosis?
- What would you do?

Case 4

- 78 year old PI lady with diarrhea
- History
 - 8 months
 - Stool leaks out constantly even at night
 - No alarm symptoms
- Examination
 - PR empty rectum
 - Lax anal tone

What other tests would you do?

- FBC, U & E, CRP, ESR, albumin
 - Normal
- Stool specimen
 - Probably not useful
- What other history would you ask about?
- What is the diagnosis?
- What would you do?

Case 5

- 45 year old European man with diarrhea and recent antibiotics
- History
 - 3 weeks (antibiotics 5 weeks ago)
 - Increased volume, frequency and soft stools
 - No nocturnal or alarm symptoms
- Examination
 - Fluid status normal
 - Normal PR

What other tests would you do?

- WCC, CRP, ESR
 - Elevated
- Albumin and U&E
 - Normal
- What is likely diagnosis?
- What would you do?

Thanks

- Dr Alasdair Patrick
– 021681323

