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# Intestinal infectious diseases

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# Notifiable intestinal infectious diseases

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- ▶ Cholera
- ▶ Bacillary dysentery
- ▶ Enteric fever
- ▶ Viral hepatitis
- ▶ Food poisoning
  
- ▶ Watery diarrhoea



# Ranking the intestinal infection in hospital admission

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Year	Rank	Percentage
2006	8	3.8
2005	8	3.9
2004	8	4
2003	8	3.8
2002	7	3.9
2001	6	4
2000	6	4.1



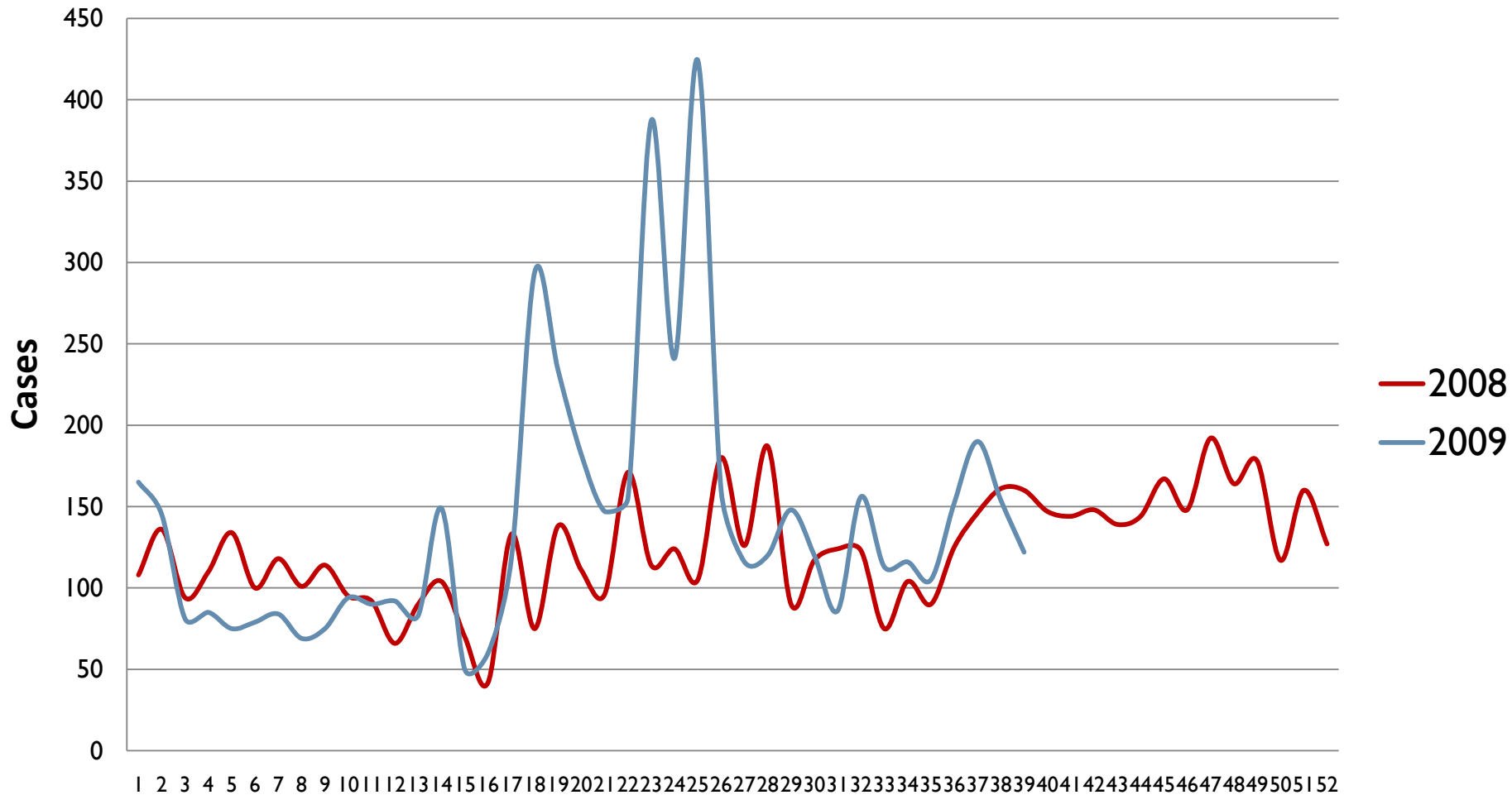
# Bacillary dysentery rates

	2Q 2009	1Q 2009	4Q 2008	3Q 2008	2Q 2008	1Q 2008
Kilinochchi	0.00	0.00	54.39	37.70	7.42	1.24
Mullaitivu	0.00	1.08	22.09	10.78	2.16	0.54
Colombo	2.39	2.02	3.80	4.91	1.69	1.90
Gampaha	2.41	1.68	3.19	3.10	2.11	2.07
Polonnaruwa	3.04	2.54	8.87	10.14	10.90	8.11
Kurunegala	3.59	3.13	5.74	3.07	2.28	7.05
Moneragala	4.30	3.39	15.16	16.07	37.11	14.48
Hambantota	4.65	4.65	10.19	6.26	4.47	4.83
Kalmunai	5.23	13.36	31.66	18.88	32.83	17.43
Galle	5.34	5.24	6.86	4.86	6.29	3.33
Puttalam	5.35	5.22	15.55	4.72	1.91	4.08
Anuradhapura	5.49	3.12	11.49	5.37	3.12	3.12
Kandy	6.01	7.35	5.57	7.87	5.34	5.05
Kegalle	6.79	4.20	7.16	7.16	7.78	17.65
Ampara	7.08	3.54	9.55	35.74	29.02	23.71
Matale	7.22	5.73	14.01	8.06	13.58	15.49
Kalutara	7.36	7.54	9.73	5.17	8.33	8.94
Trincomalee	8.10	6.84	8.86	8.61	7.85	6.84
Matara	9.50	11.50	9.75	7.00	6.75	7.38
Badulla	9.77	8.79	14.16	17.83	16.36	14.65098
Jaffna	10.44	8.84	9.37	12.05	10.71	11.25
Ratnapura	12.59	17.21	12.77	14.16	8.61	7.03
Total	13.86	6.57	10.66	8.79	7.90	7.33
Batticaloa	17.56	4.98	21.49	8.12	5.11	2.88
Nuwara-Eliya	21.47	15.04	14.22	10.80	10.53	8.20
Mannar	41.33	12.29	10.05	10.05	4.47	7.82
Vavuniya	672.14	19.92	12.17	11.62	12.72	6.64

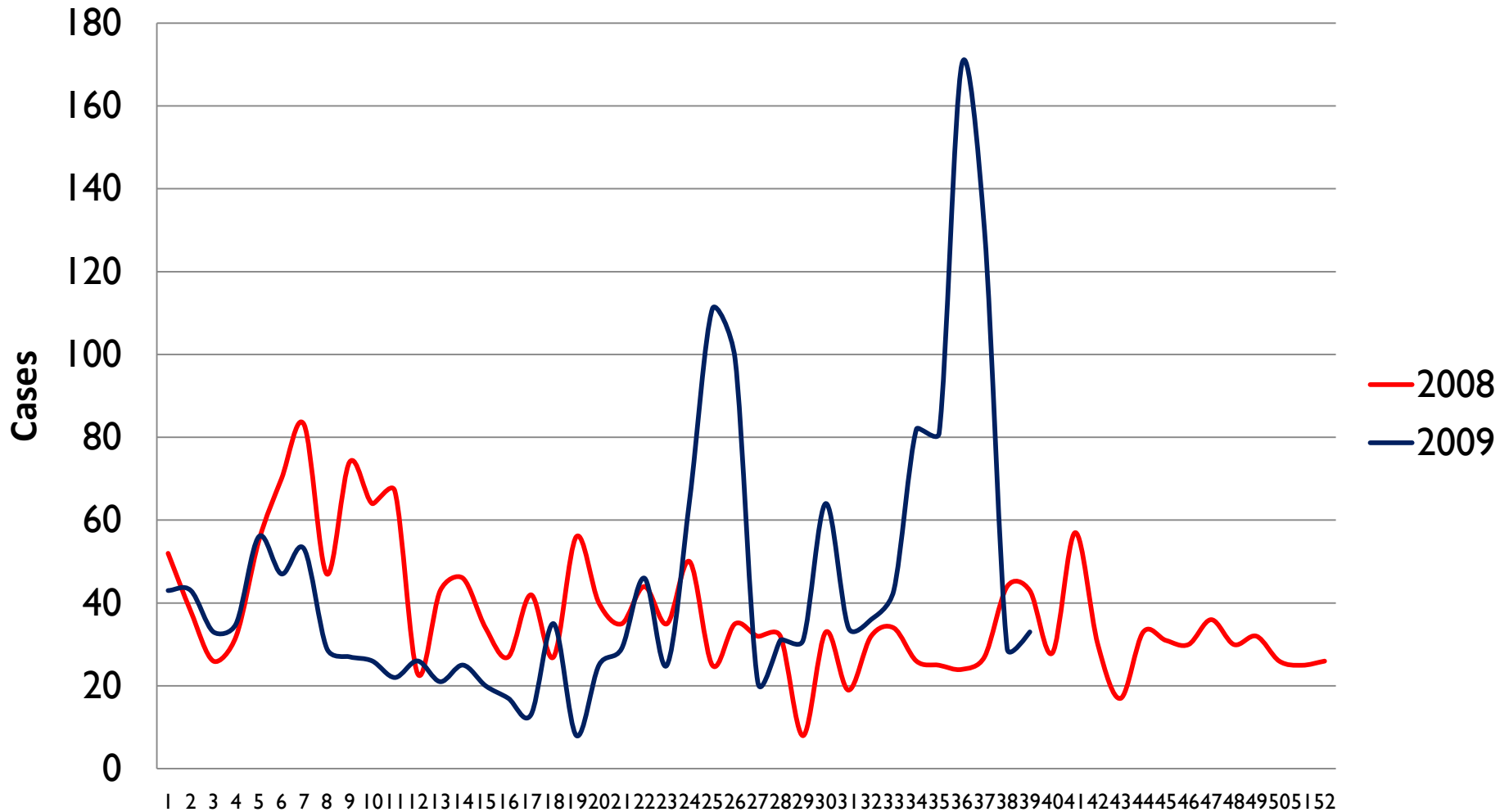
## Enteric fever rates (cases per 100,000 population)

	2Q 2009	1Q 2009	4Q 2008	3Q 2008	2Q 2008
Vavuniya	78.00	1.11	1.66	4.98	1.11
Mannar	24.58	62.56	11.17	44.69	32.40
Jaffna	23.56	19.28	9.91	5.89	19.81
Nuwara-Eliya	9.84	7.79	4.92	6.43	13.26
Puttalam	2.55	4.59	2.29	3.06	10.58
Total Sri Lanka	2.54	2.27	1.98	1.87	2.45

# Notified cases of Bacillary dysentery 2008 & 2009 by weeks

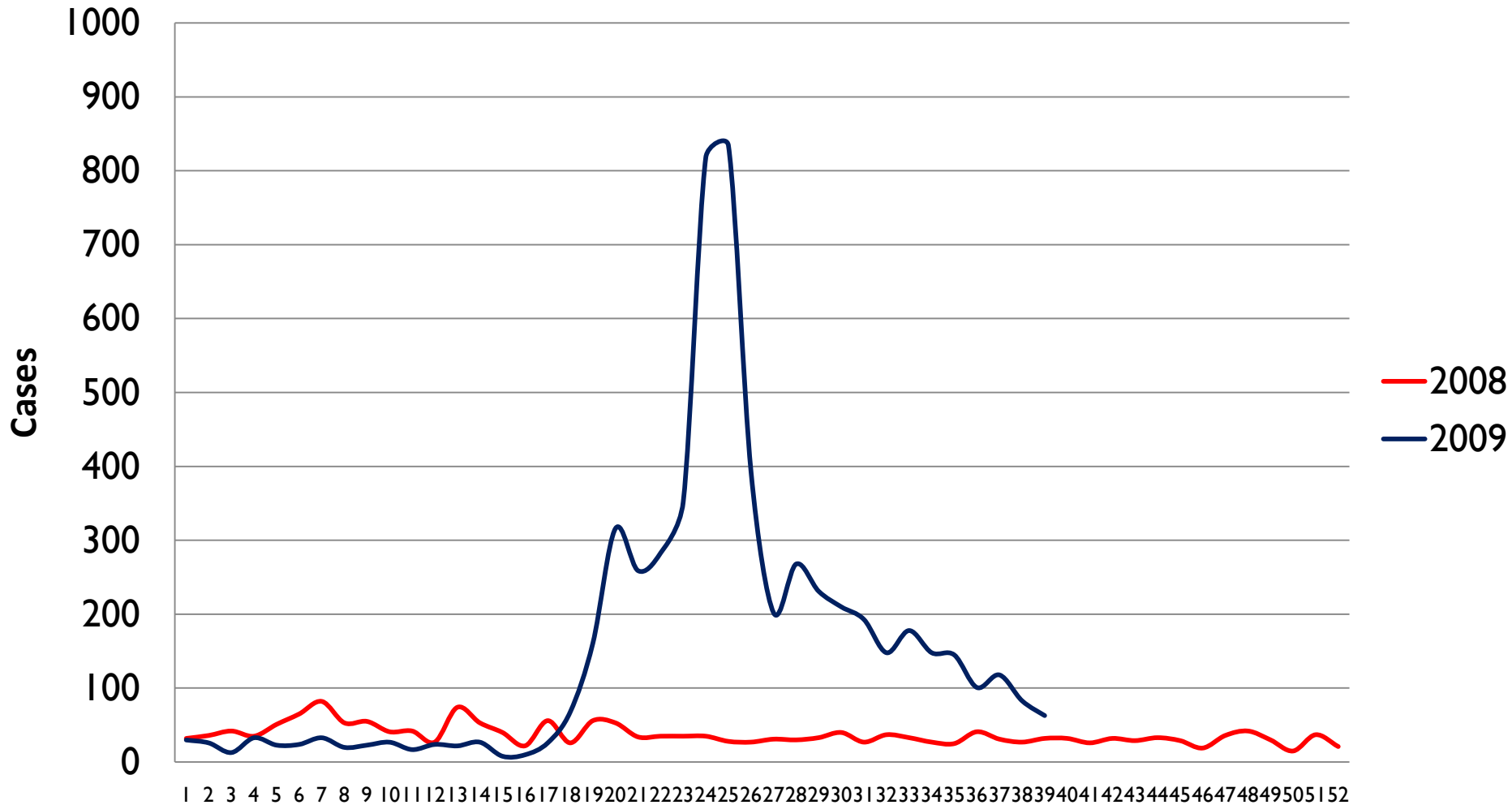


# Notified cases of Enteric fever 2008 & 2009 by weeks

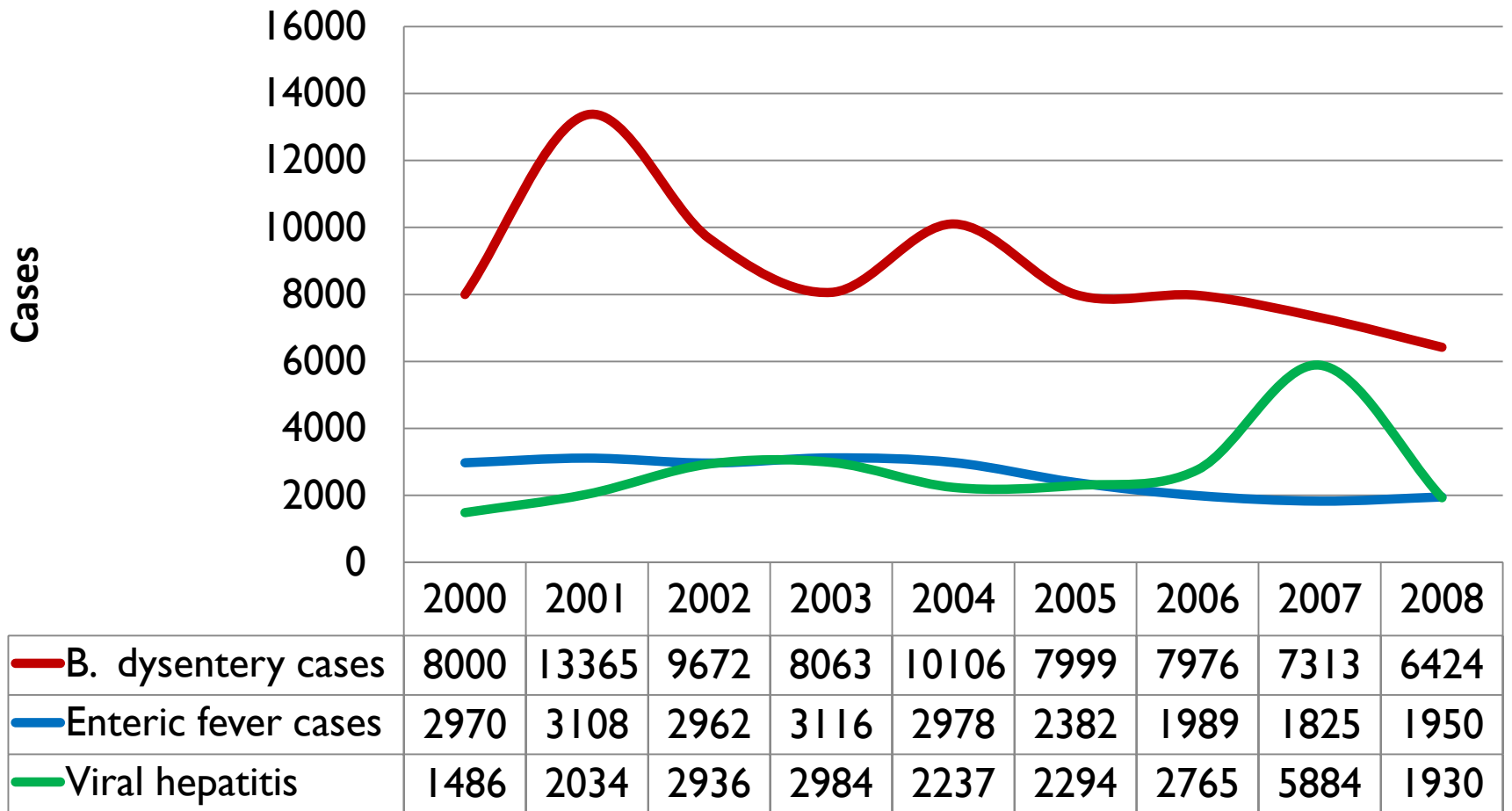




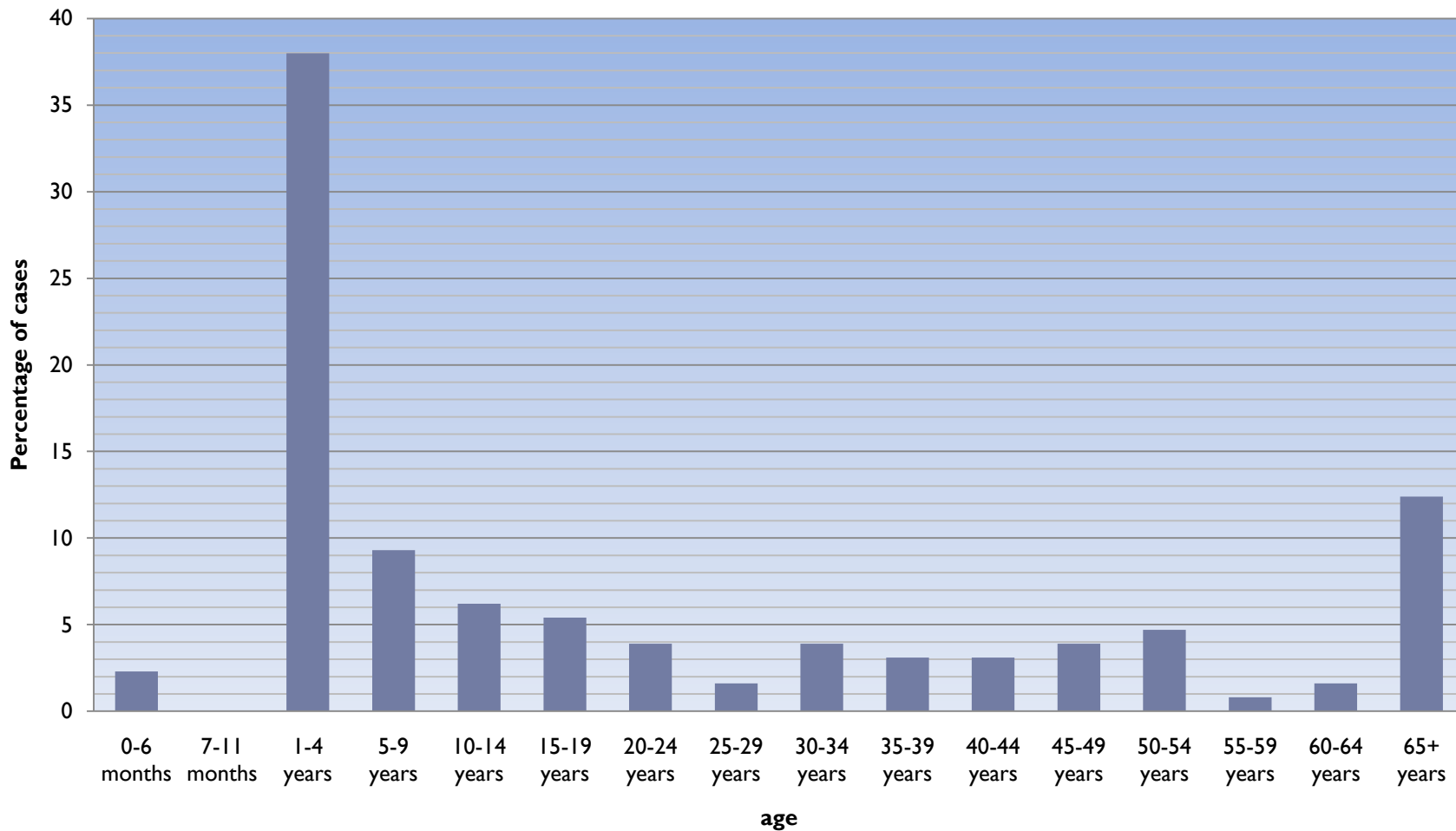
# Notified cases of Viral hepatitis 2008 & 2009 by weeks



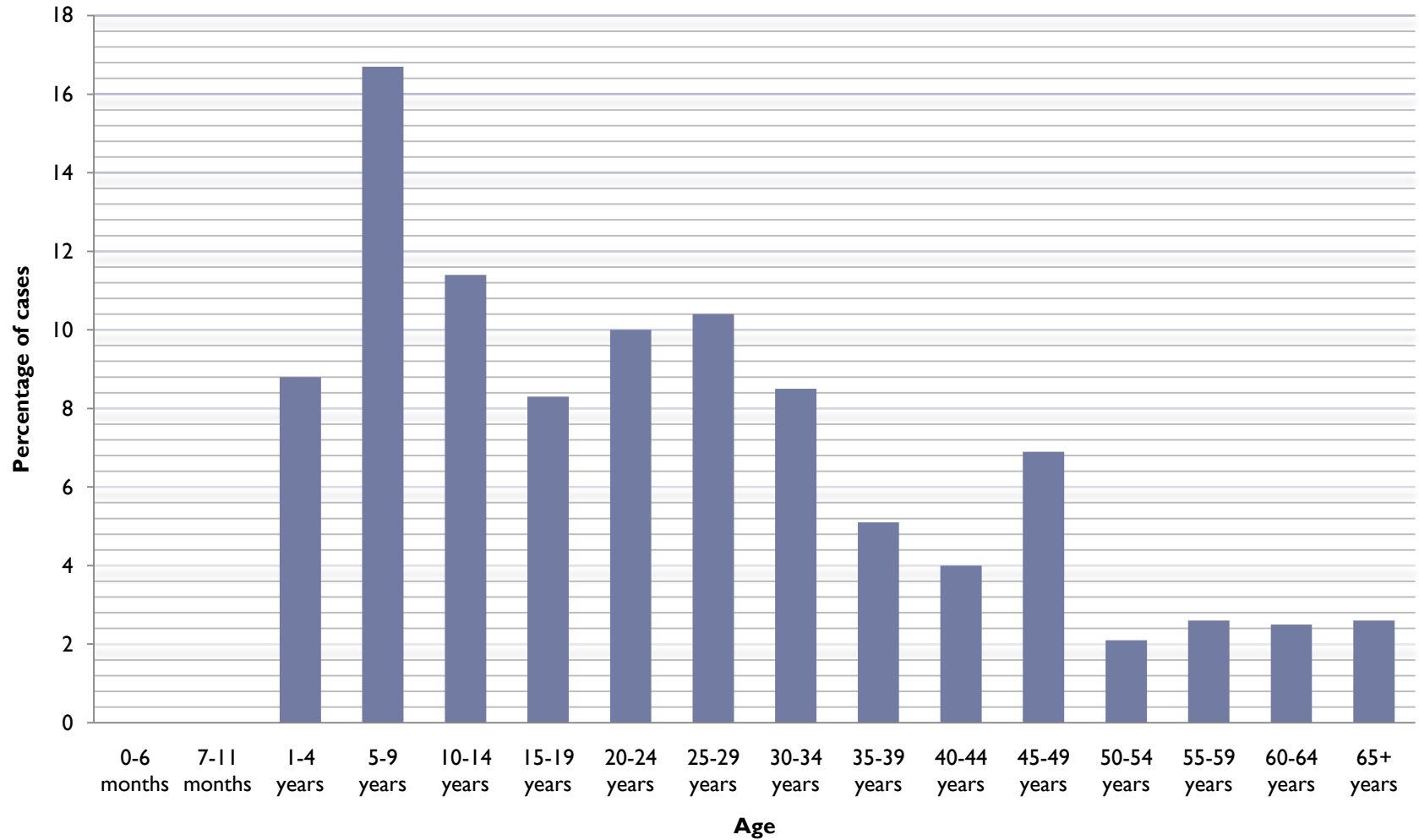
# Notified cases of intestinal infectious diseases by years



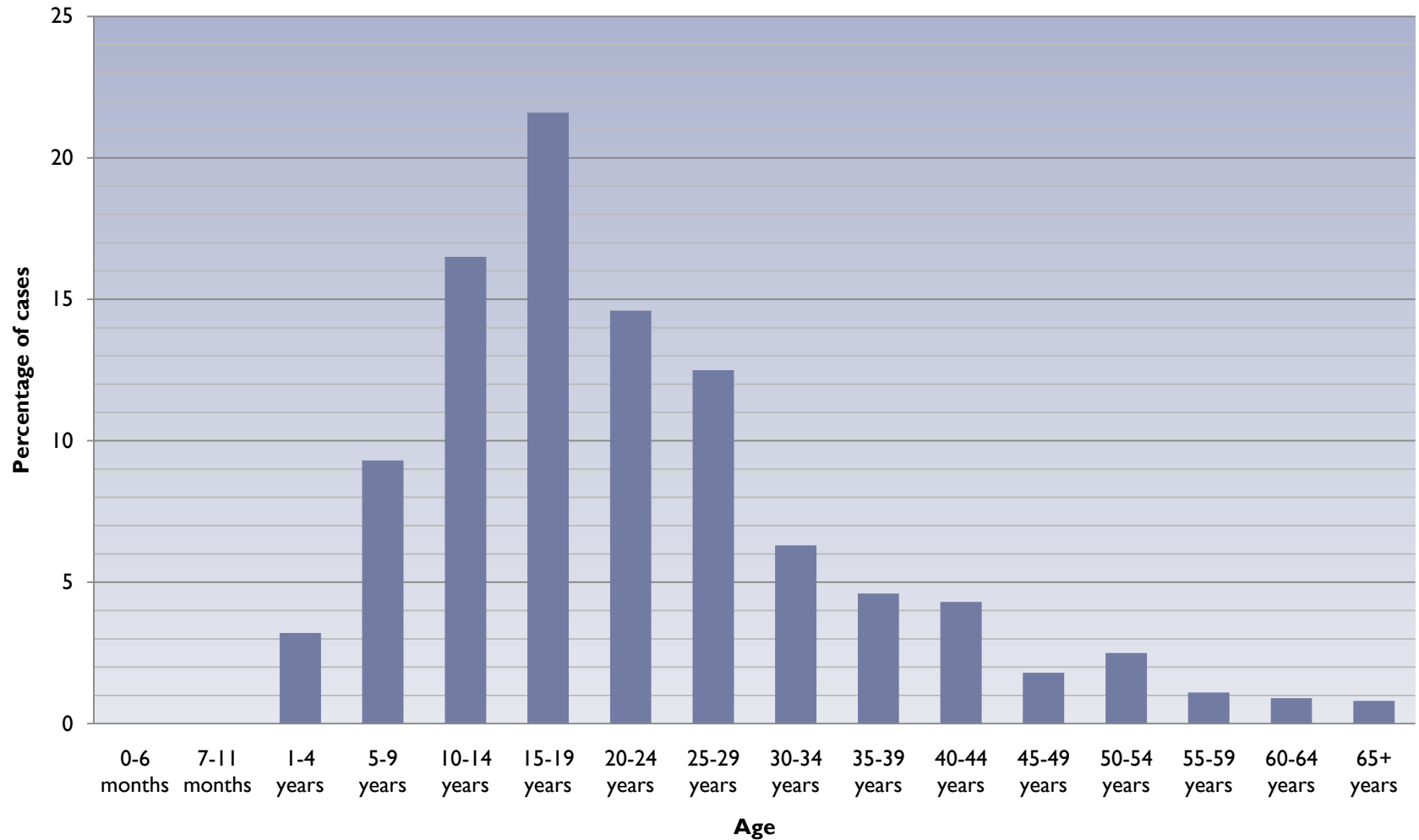
# Age distribution of the notified cases of Watery diarrhoea in 2008



# Age distribution of the notified cases of Enteric fever in 2008



# Age distribution of the notified cases of Viral hepatitis in 2008



# Intestinal Infectious diseases in 2008 by districts

	Dysentery
Colombo	298
Gampaha	243
Kalutara	367
Kandy	321
Matale	241
Nuwara-Eliya	320
Galle	224
Hambantota	144
Matara	247
Jaffna	162
Kilinochchi	163
Mannar	29
Vavuniya	78
Mullaitivu	66
Batticaloa	287
Ampara	277
Trincomalee	127
Kurunegala	278
Puttalam	206
Anuradhapura	185
Polonnaruwa	150
Badulla	516
Moneragala	366
Ratnapura	460
Kegalle	322
Kalmunai	347

# Intestinal Infectious diseases in 2008 by districts

	Enteric fever
Colombo	206
Gampaha	64
Kalutara	87
Kandy	69
Matale	58
Nuwara-Eliya	261
Galle	18
Hambantota	8
Matara	38
Jaffna	271
Kilinochchi	1
Mannar	165
Vavuniya	15
Mullaitivu	18
Batticaloa	32
Ampara	9
Trincomalee	13
Kurunegala	58
Puttalam	165
Anuradhapura	12
Polonnaruwa	29
Badulla	132
Moneragala	58
Ratnapura	57
Kegalle	89
Kalmunai	17

# Intestinal Infectious diseases in 2008 by districts

	Viral hepatitis
Colombo	118
Gampaha	200
Kalutara	48
Kandy	134
Matale	31
Nuwara-Eliya	109
Galle	8
Hambantota	17
Matara	15
Jaffna	46
Kilinochchi	2
Mannar	17
Vavuniya	5
Mullaitivu	10
Batticaloa	95
Ampara	16
Trincomalee	15
Kurunegala	89
Puttalam	34
Anuradhapura	16
Polonnaruwa	23
Badulla	201
Moneragala	63
Ratnapura	65
Kegalle	523
Kalmunai	30



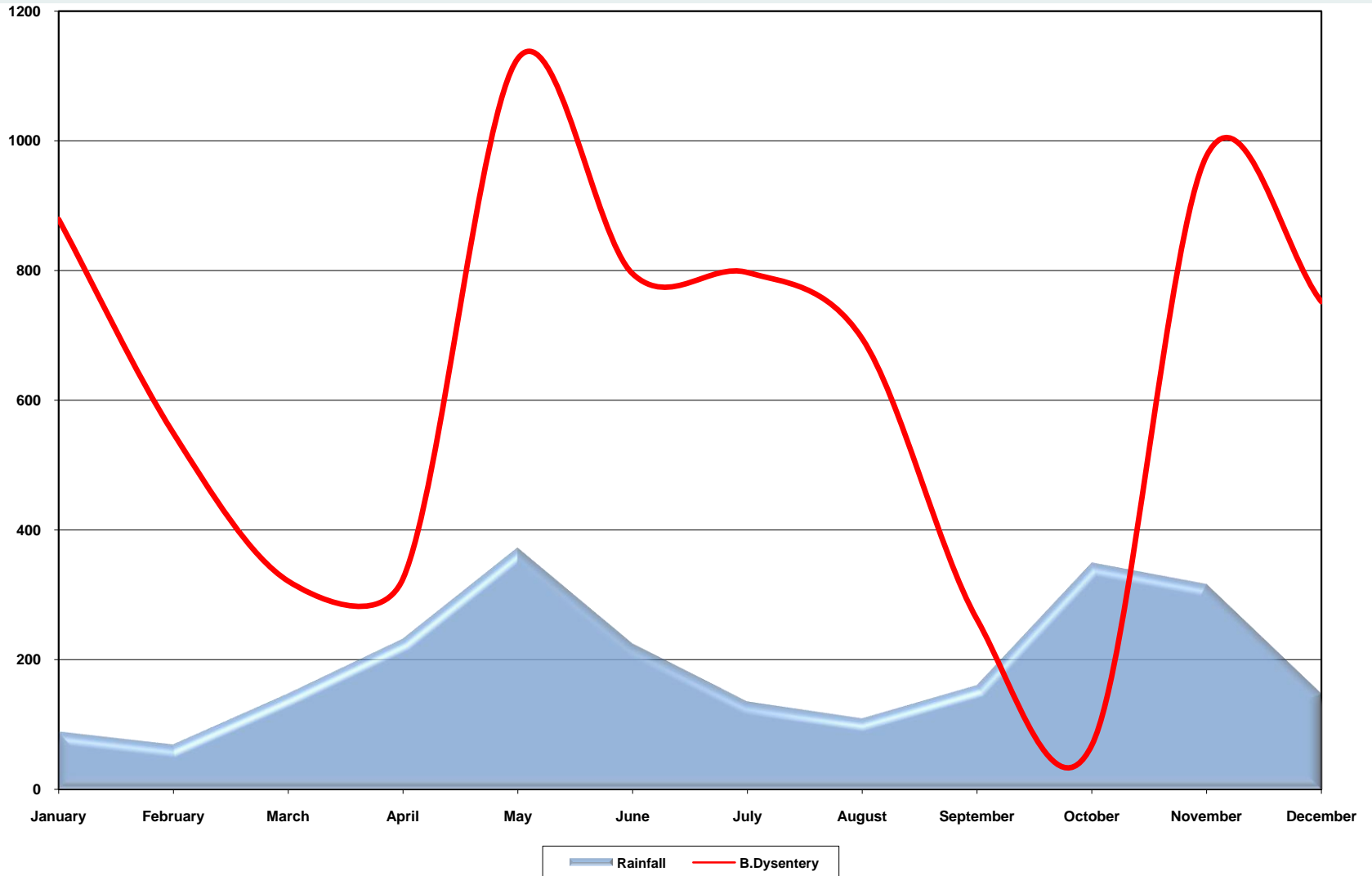
# Intestinal Infectious diseases in 2008 by districts

	Watery diarrhoea
Colombo	1
Gampaha	0
Kalutara	0
Kandy	26
Matale	190
Nuwara-Eliya	0
Galle	1
Hambantota	20
Matara	0
Jaffna	0
Kilinochchi	0
Mannar	0
Vavuniya	0
Mullaitivu	0
Batticaloa	2
Ampara	0
Trincomalee	0
Kurunegala	0
Puttalam	10
Anuradhapura	5
Polonnaruwa	0
Badulla	0
Moneragala	0
Ratnapura	0
Kegalle	58
Kalmunai	0

# Intestinal Infectious diseases in 2009 by districts

2009 by 39 weeks				
	Dysentery	Enteric fever	Viral hepatitis	Watery diarrhoea
Colombo	177	177	106	0
Gampaha	126	37	179	0
Kalutara	298	49	72	0
Kandy	230	24	107	62
Matale	105	26	80	74
Nuwara-Eliya	363	160	73	0
Galle	210	3	28	0
Hambantota	79	6	40	2
Matara	228	6	53	3
Jaffna	99	221	166	0
Kilinochchi	0	0	0	0
Mannar	82	99	55	0
Vavuniya	1584	602	3753	2111
Mullaitivu	2	1	0	0
Batticaloa	242	15	18	0
Ampara	56	12	29	1
Trincomalee	113	9	49	0
Kurunegala	188	61	134	1
Puttalam	129	64	38	5
Anuradhapura	100	7	170	0
Polonnaruwa	73	21	68	0
Badulla	255	39	278	0
Moneragala	103	23	81	0
Ratnapura	426	47	153	16
Kegalle	157	41	209	14
Kalmunai	91	14	19	0
	5516	1764	5958	2289

# Association of B. Dysentery with annual rainfall in Sri Lanka



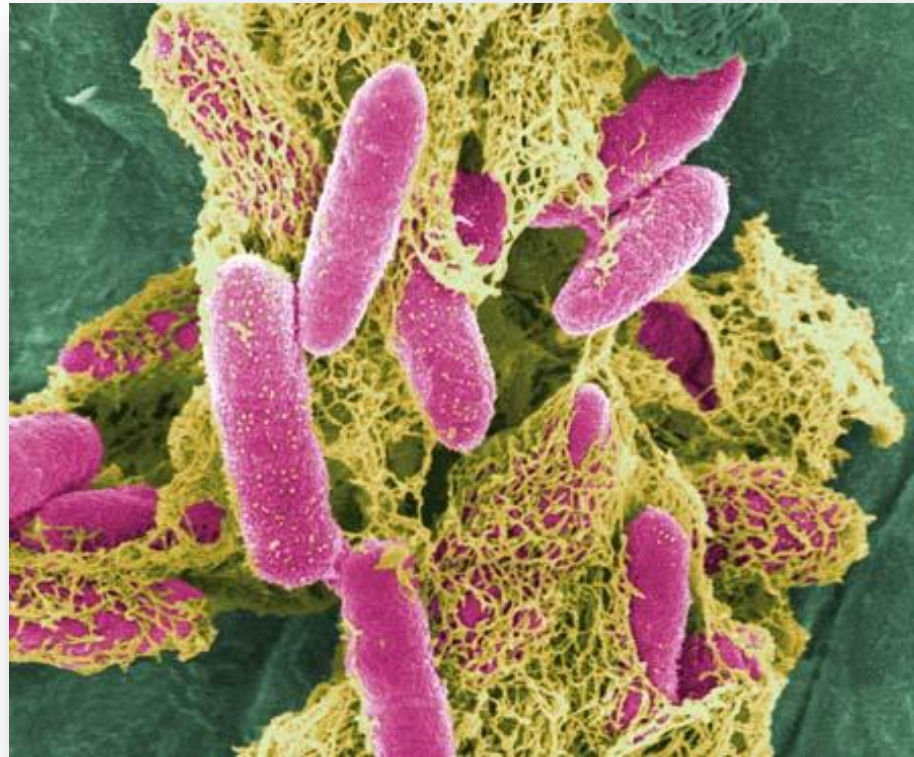
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# Watery diarrhoea

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## Enterotoxigenic *E. coli* gastroenteritis



*E. coli* bacterium. Leading cause of infant morbidity worldwide. Infects by consuming sewage contaminated water

# What is E. coli?


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- ▶ *Escherichia coli*: a bacteria (germ) that causes severe cramps and diarrhea
- ▶ The symptoms are worse in children and older people, and especially in people who have another illness



- ▶ Symptoms start about 7 days after the infection,
- ▶ The first sign is severe abdominal cramps that start suddenly.
- ▶ After a few hours, watery diarrhea starts.
- ▶ The diarrhea causes your body to lose fluids and electrolytes (dehydration).
- ▶ The infection makes sores in intestines, so the stools become bloody.
- ▶ May have a mild fever or no fever, nausea or vomiting.



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- ▶ The diagnosis is made by finding *E. coli* in a stool culture.
  - ▶ Antibiotic treatments available
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# Bacillary dysentery

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# Shigella

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Caused by species of *Shigella* bacteria. Most infection is seen in children 1-10 years old; a very low dose can cause illness. Waterborne transmission is responsible for a majority of the outbreaks.

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Shigellosis is caused by;

- ▶ *Shigella sonnei*,
- ▶ *Shigella flexneri*,
- ▶ *Shigella dysenteriae*



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- ▶ People infected with the bacteria release it into their stool.
  - ▶ The bacteria can spread from an infected person to contaminate water or food, or directly to another person.



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- ▶ Getting just a little bit of the Shigella bacteria into your mouth is enough to cause symptoms.
  - ▶ Outbreaks of shigellosis are associated with poor sanitation, contaminated food and water, and crowded living conditions.



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- ▶ Symptoms usually develop about 1 to 7 days (average 3 days) after you come in contact with the bacteria.



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## Symptoms

- ▶ Acute (sudden) abdominal pain or cramping
- ▶ Acute (sudden) fever
- ▶ Blood, mucus, or pus in stool
- ▶ Crampy rectal pain (tenesmus)
- ▶ Nausea and vomiting
- ▶ Watery diarrhea



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- ▶ The symptoms usually last 2 to 7 days.
  - ▶ Treatment is to replace fluids and electrolytes (salt and minerals) lost in diarrhoea.
  - ▶ Antibiotics can help
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- ▶



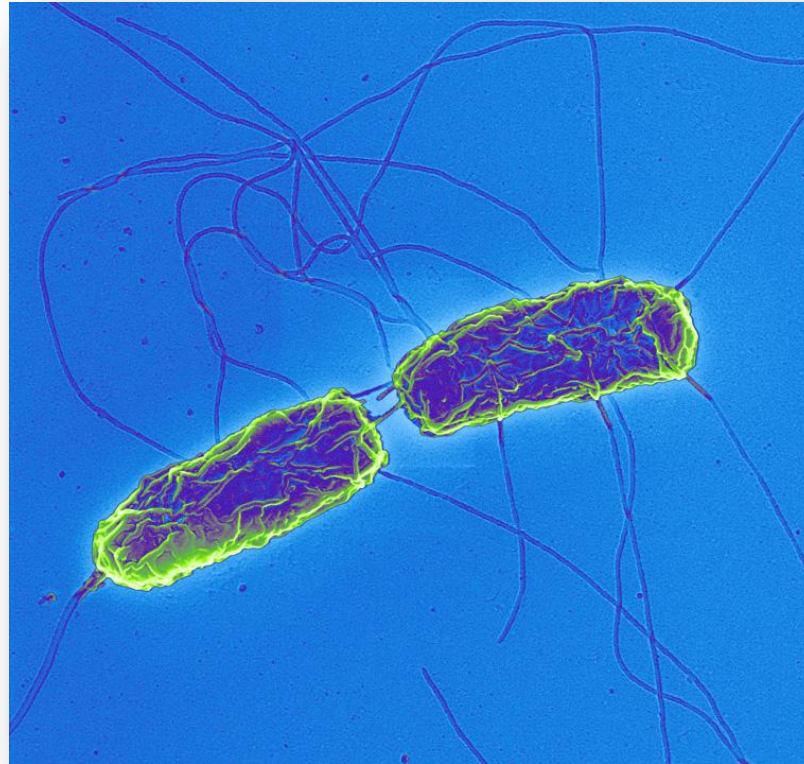
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# Typhoid & Paratyphoid fever (ENTERIC FEVER)




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# Enteric fever



Caused by *Salmonella typhi* bacterium, The well that supplied water to the camp was contaminated by surface water.

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- ▶ *Salmonella Typhi* lives only in humans. Persons with typhoid fever carry the bacteria in their bloodstream and intestinal tract.
  - ▶ A small number of persons, called carriers, recover from typhoid fever, but continue to carry the bacteria.
  - ▶ Both ill persons and carriers shed *S. Typhi* in their feces (stool).
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# Signs and symptoms

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- ▶ Sustained fever as high as 103° to 104° F (39° to 40° C).
- ▶ Feel weak, or have stomach pains, headache, or loss of appetite.
- ▶ In some cases, patients have a rash of flat, rose-colored spots.
- ▶ The only way to know for sure if an illness is typhoid fever is to have samples of stool or blood tested for the presence of *S. Typhi*.



# Prevention

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- ▶ Vaccination at least one week before you travel
- ▶ However, persons who do not get treatment may continue to have fever for weeks or months, and as many as 20% may die from complications of the Infection.



## "Boil it, cook it, peel it, or forget it"

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- ▶ You drink boiled cool or bottled water .
- ▶ Bottled carbonated water is safer than uncarbonated water.
- ▶ Ask for drinks without ice unless the ice is made from bottled or boiled water.
- ▶ Avoid popsicles and flavored ices that may have been made with contaminated water.
- ▶ Eat foods that have been thoroughly cooked and that are still hot and steaming.



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- ▶ Avoid raw vegetables and fruits that cannot be peeled.
  - ▶ When you eat raw fruit or vegetables that can be peeled, peel them yourself. (Wash your hands with soap first.)
  - ▶ Do not eat the peelings.
  - ▶ Avoid foods and beverages from street vendors.



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# Hepatitis

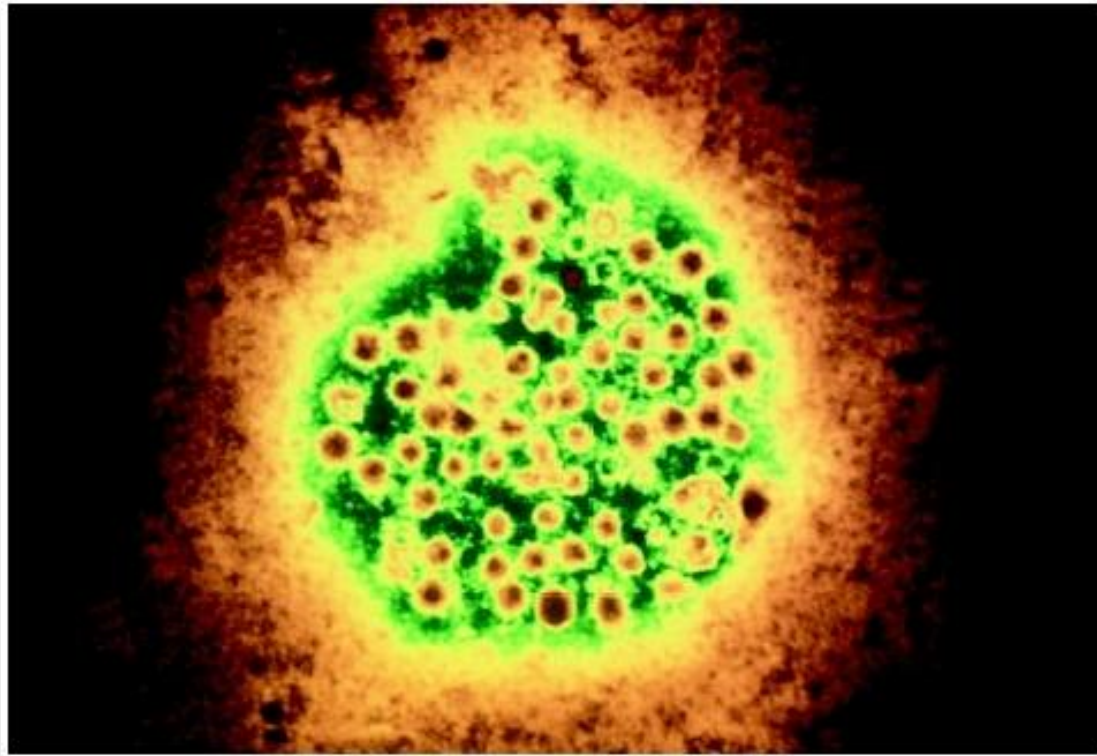
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# Hepatitis A

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Caused by *Hepatitis A* virus. The term hepatitis relates to inflammation of the liver. water/food borne

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- ▶ Hepatitis is an inflammation of the liver.
  - ▶ Inflammation causes soreness and swelling.
  - ▶ Hepatitis is most commonly caused by one of the six hepatitis viruses (A, B, C, D, E or G).



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- ▶ There are 2 main kinds of hepatitis, acute hepatitis (short-lived) and chronic hepatitis (lasting at least 6 months).
  - ▶ Acute hepatitis, the liver might become inflamed very suddenly and you might have nausea, vomiting, fever and body aches



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- ▶ When the inflammation doesn't go away in 6 months, the person has chronic hepatitis



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## Symptoms:

- ▶ Nausea , Vomiting , Jaundice (the yellowing of the skin and the whites of the eyes)
- ▶ Low-grade fever (fever up to 102 degrees)
- ▶ Fatigue
- ▶ Pain in your abdomen, especially on your right side
- ▶ Dark-colored urine
- ▶ Loss of appetite
- ▶ Muscle pain



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- ▶ Contagious soon after infection and before symptoms appear.
  - ▶ Adults are no longer contagious 2 weeks after the illness begins.
  - ▶ Children and people who have weak immune systems may be contagious for up to 6 months.



# Botulinum

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Clostridium botulinum bacteria - gastro-intestinal food/water borne; can grow in food

# Cholera

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*Vibrio cholerae* bacterium This disease is extremely contagious; if untreated, dehydration can lead to death.

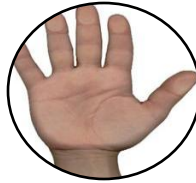
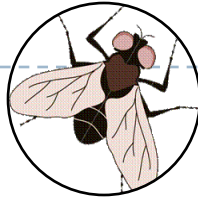


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# Prevention

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Thank you

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