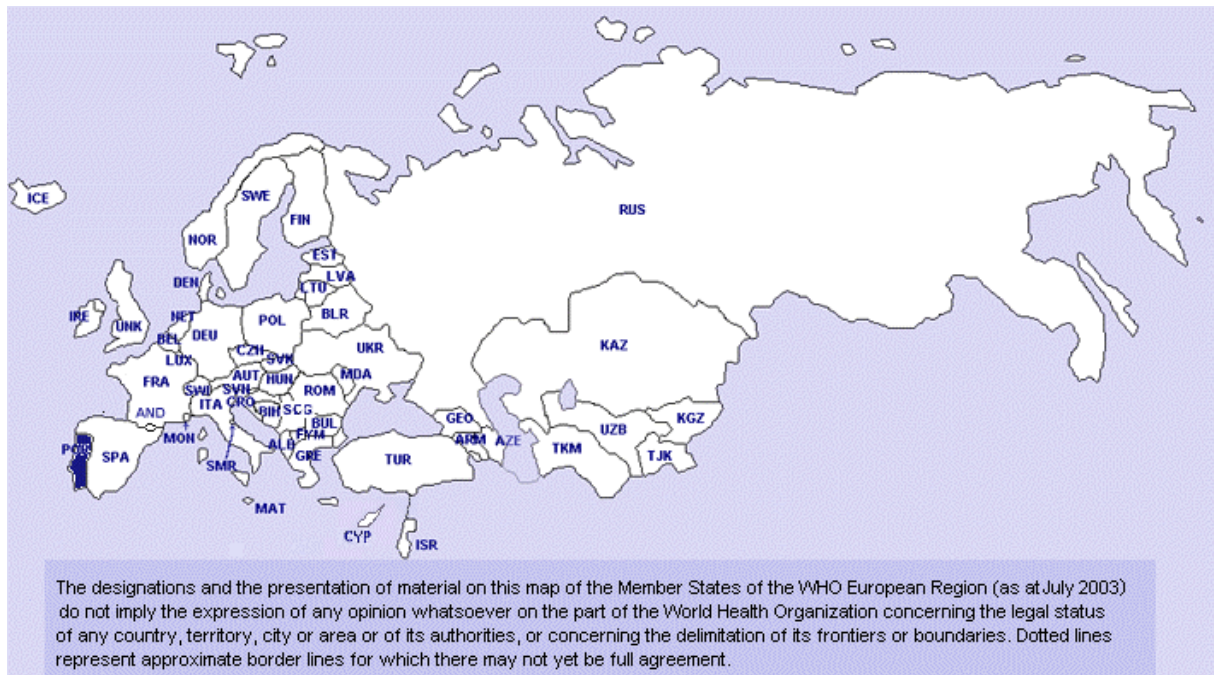


# PORTUGAL

Population 1999: 9 988 520

Population 2000: 9 997 590

Area: 92 082 km<sup>2</sup>



## 1. General information

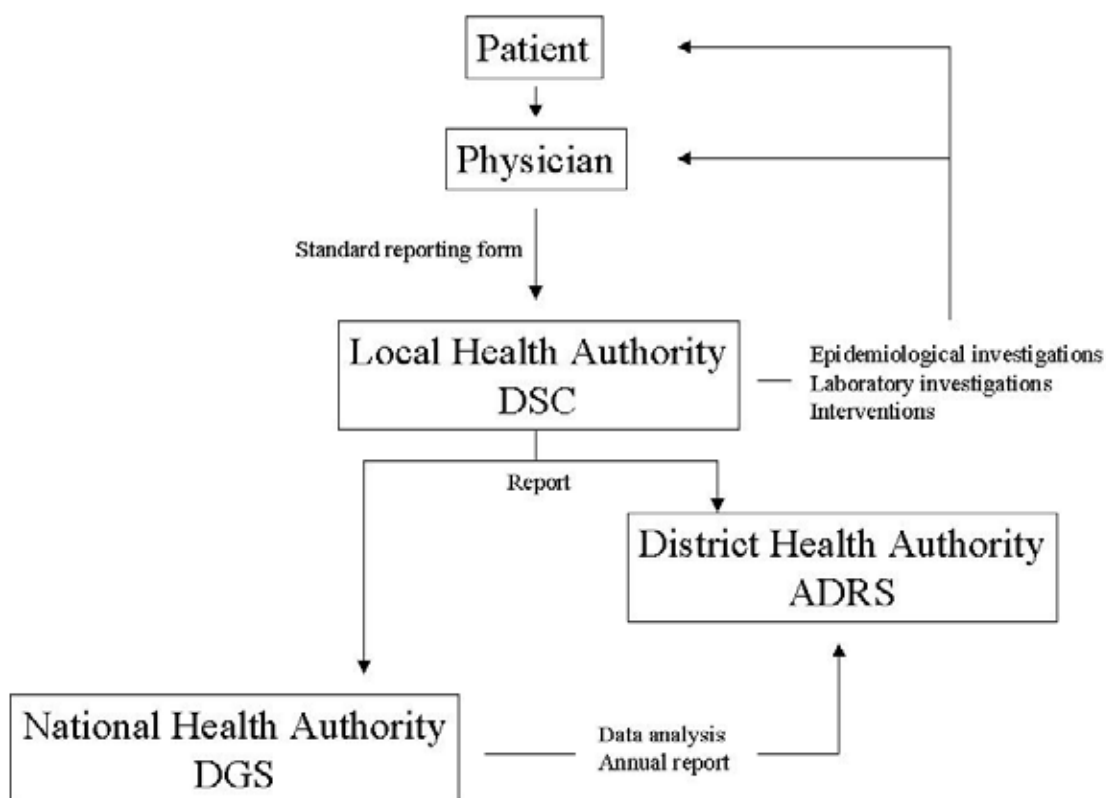
In Portugal (country abbreviation: PT), notifiable foodborne diseases include typhoid, paratyphoid fever and other types of salmonellosis. Other notifiable diseases of possible foodborne origin include brucellosis and shigellosis. Notifications are collated at the Department of Statistics and Epidemiology of the General Directorate of Health in Lisbon, and the statistics are published in annual summaries.

Until the end of 2000, there was no mandatory notification of foodborne disease outbreaks, and only individual cases of disease were notifiable. The system is based on clinical notifications. Clinicians who diagnose a case of disease report it to the Local Health Authority (DSC) using a standard notification form. The DSC forwards a copy of the notification form to the National Health Authority (DGS) and to the District Health Authority (ADRS). The DSC proceeds with the epidemiological investigations, laboratory investigations and interventions. A final report on the outbreak is sent to the ADRS and DGS. The data provided through the notification forms is stored in a national database system and analysed on an annual basis. The report emanating from this analysis is distributed to all Health Authorities in Portugal.

Figure PT 1

**Surveillance of notifiable foodborne diseases**

PORTUGAL 1999-2000



**2. Statutory notification**

In 1999 and 2000, 2924 and 2224 cases of foodborne diseases were notified in Portugal. Brucellosis accounted for 23% of these cases in both years, while salmonellosis was responsible for 21% and 20% of the cases notified in 1999 and 2000 (Table PT 1). An overview of some of the foodborne diseases notified between 1993 and 2000 is given in Figure PT 2.

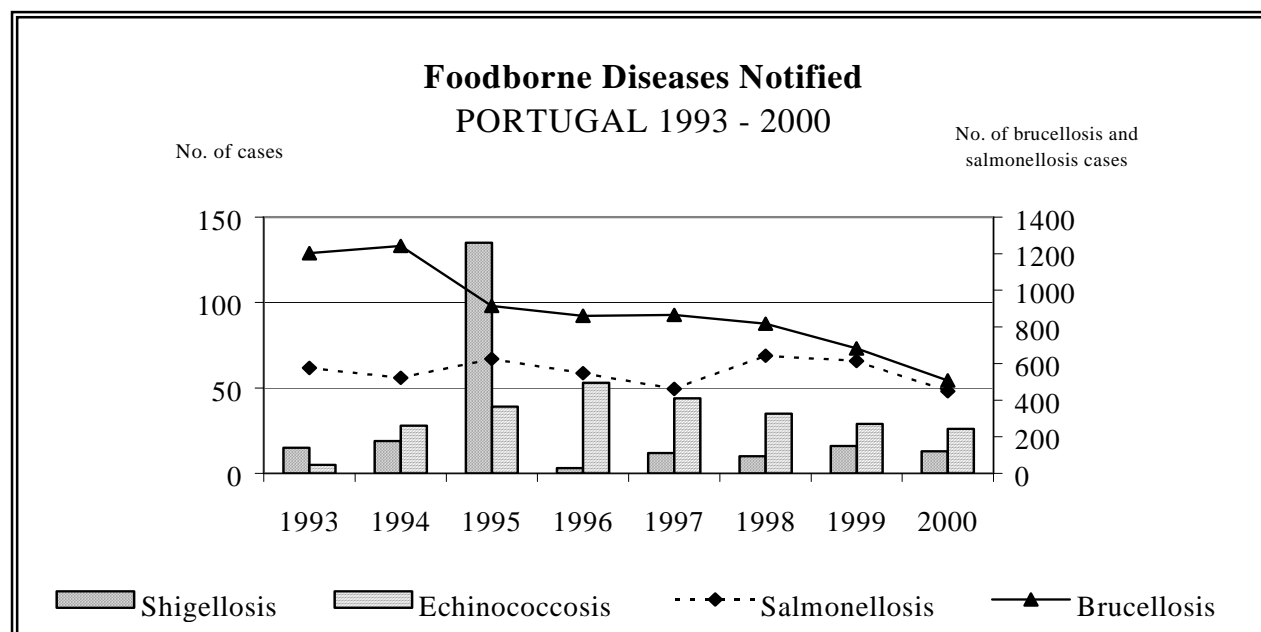
Table PT 1

**Foodborne diseases**  
PORTUGAL 1999-2000

Disease	1999		2000	
	No. of cases	Incidence rate	No. of cases	Incidence rate
Salmonellosis	614	6.15	449	4.49
Staphylococcosis	N.n.	-	N.n.	-
Botulism	2	0.02	31	0.31
Campylobacteriosis	N.n.	-	N.n.	-
Shigellosis	16	0.16	13	0.13
<i>E.coli</i> enteritis	N.n.	-	N.n.	-
Listeriosis	N.n.	-	N.n.	-
Cholera	0	0	0	0
Brucellosis	683	6.84	507	5.07
Other bacterial foodborne diseases	0	0	0	0
Hepatitis A	118	1.18	86	0.86
Other viral enteritis	N.n.	-	N.n.	-
Echinococcosis	29	0.29	26	0.26
Trichinellosis	0	0	0	0
Giardiasis	N.n.	-	N.n.	-
Amoebiasis	0	0	0	0
Infectious enteritis of unknown origin	0	0	0	0
Other foodborne diseases	1462	14.64	1112	11.12
<b>Total</b>	<b>2924</b>	<b>29.27</b>	<b>2224</b>	<b>22.25</b>

N.n. = Not notifiable

Figure PT 2



The salmonella serotype was identified for the five cases of salmonellosis reported in both 1999 and 2000. The results are shown in Table PT 2.

Table PT 2

<b>Salmonella serotypes</b>		
PORTUGAL 1999-2000		
Serotype	1999	2000
	No. of cases	No. of cases
<i>S. Enteritidis</i>	4	3
<i>S. Typhimurium</i>	0	0
<i>S. Infantis</i>	0	0
<i>S. Virchow</i>	0	0
<i>S. Muenchen</i>	1	0
<i>S. Gloucester</i>	0	1
<i>S. sp.</i>	0	1
<b>Total</b>	<b>5</b>	<b>5</b>

### **3. Epidemiologically investigated incidents**

In 1999, 42 outbreaks of foodborne diseases involving 666 cases were investigated; 17 outbreaks of foodborne diseases involving 140 cases were investigated in 2000. The outbreaks lasted an average of two days. Four and 23% of the cases in outbreaks investigated in 1999 and 2000 were hospitalised. Fifty-three percent of the hospitalisations in 1999 were due to Salmonellosis, while 39% of those that same year were *Cl. botulinum* infections; all hospitalisations reported for 2000 were due to *Cl. botulinum* infections. No deaths were recorded in the foodborne disease outbreaks investigated in 1999 and 2000. The most frequently reported clinical symptoms in 1999 were diarrhoea and vomiting, while in 2000, neurological symptoms were those most frequently reported. All patients displaying neurological symptoms in foodborne disease outbreaks investigated in 1999 and 2000 were infected with *Cl. botulinum* (Table PT 4). Information on the laboratory examinations carried out in connection with outbreak investigations in 1999 and 2000 is given in Table PT 3. Figure PT 3 gives an overview of the foodborne disease investigations carried out between 1987 and 2000.

In addition to outbreaks of foodborne diseases, five and three single cases of foodborne infections and intoxications were reported in 1999 and 2000 respectively. In all of these incidents, the patients were hospitalised. Seven of the hospitalised patients were infected with *Cl. botulinum*, while one suffered from shellfish poisoning. No deaths occurred in these cases mentioned.

Figure PT 3

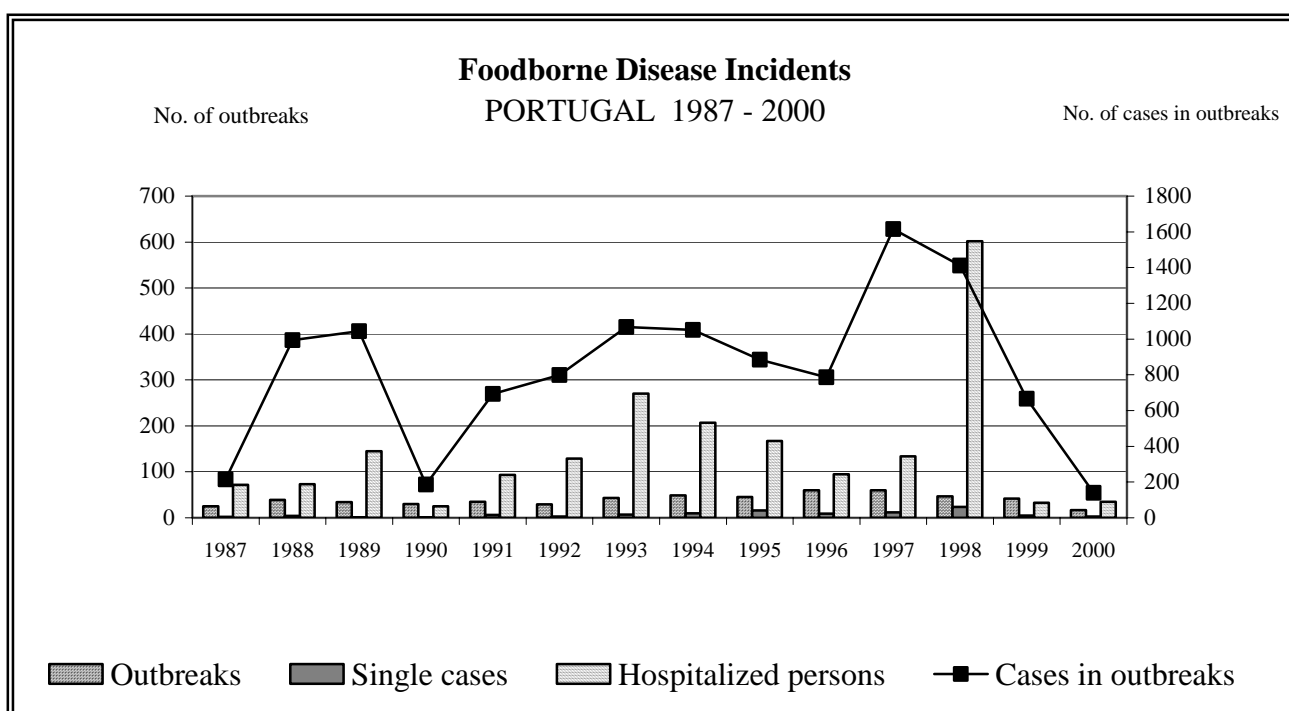


Table PT 3

**Laboratory tests carried out during investigations of foodborne disease outbreaks**  
PORTUGAL 1999-2000

	1999	2000
No. of ill persons laboratory tested	42	49
No. of ill persons laboratory positive	28	43
No. of healthy persons laboratory tested	4	7
No. of healthy persons laboratory positive	0	1
No. of food handlers laboratory tested	47	0
No. of food handlers laboratory positive	9	0
No. of suspected food laboratory tested	59	23
No. of suspected food laboratory positive	33	14
No. of other food laboratory tested	27	6
No. of other food laboratory positive	0	0
No. of environment laboratory tests done	0	0
No. of environment laboratory tests positive	0	0

Table PT 4

**Morbidity, mortality and clinical symptoms of foodborne disease outbreaks investigated**

PORTUGAL 1999-2000

Morbidity, Mortality and Clinical Symptoms	1999	2000
Mean duration of outbreak (d)	2,4 (range 1-12)	1,7 (range 1-6)
<i>Morbidity</i>		
No. of persons at risk	6601	185
No. of persons at risk 0 to 4 years old	3	0
No. of persons at risk 4 to 15 years old	1027	1
No. of persons at risk 15 to 60 years old	955	184
No. of persons at risk > 60 years old	2	0
No. of persons ill	666	140
No. of persons ill 0 to 4 years old	3	40
No. of persons ill 4 to 15 years old	105	6
No. of persons ill 15 to 60 years old	273	94
No. of persons ill > 60 years old	7	0
No. of persons hospitalised	28	32
No. of persons hospitalised 0 to 4 years old	2	0
No. of persons hospitalised 4 to 15 years old	1	2
No. of persons hospitalised 15 to 60 years old	8	30
No. of persons hospitalised > 60 years old	2	0
<i>Mortality</i>		
No. of persons dead	0	0
<i>Clinical symptoms</i>		
No. of persons with nausea	57	0
No. of persons vomiting	131	3
No. of persons with diarrhoea	137	1
No. of persons with abdominal pain	97	1
No. of persons with fever	80	0
No. of persons with neurological symptoms	11	27
No. of persons with cardiovascular symptoms	0	0
No. of persons with other symptoms	52	4

**3.2 Causative agents**

The causative agent was identified in 76% and 100% of the foodborne disease outbreaks investigated in 1999 and 2000 respectively. In 71% and 94% of the outbreaks investigated in those years, the causative agent has been confirmed by laboratory diagnosis. *S. Enteritidis* was the most frequently reported causative agent, with 29% and 24% of the outbreaks in 1999 and 2000. *Campylobacter jejuni* accounted for 17% of the outbreaks in 1999 and *Cl. botulinum* for 24% of the outbreaks in 2000 (Table PT 5). An overview of the causative agents of foodborne disease outbreaks investigated between 1993 and 2000 is given in Figure PT 4.

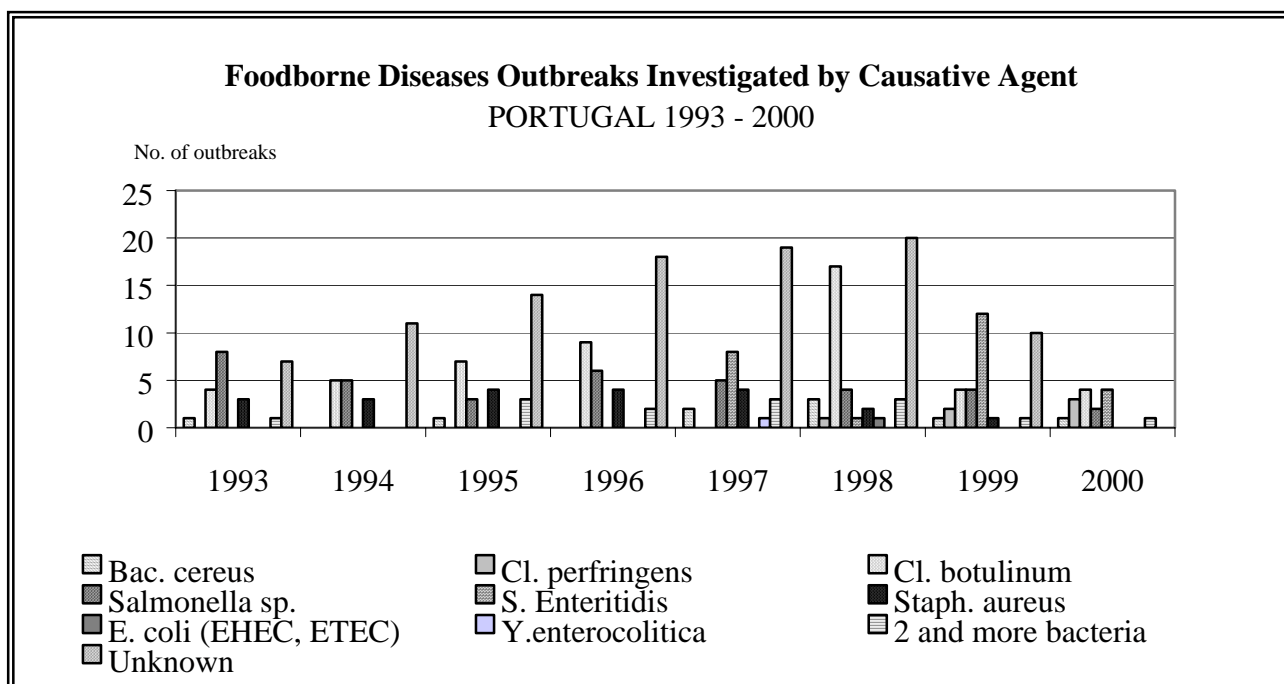
Table PT 5

**Foodborne disease outbreaks investigated by causative agent**

PORTUGAL 1999-2000

Causative Agent	1999		2000	
	No. of outbreaks	No. of cases in outbreaks	No. of outbreaks	No. of cases in outbreaks
<i>Bac. cereus</i>	1	7	1	6
<i>Camp. jejuni</i>	7	183	2	32
<i>Cl. botulinum</i>	4	11	4	33
<i>Cl. perfringens</i>	2	44	3	6
<i>Salmonella</i> sp.	4	130	2	2
<i>S. Enteritidis</i>	12	140	4	46
<i>Staphylococcus</i> sp.	1	0	0	0
2 and more bacteria	1	53	1	15
Unknown agent	10	98	0	0
<b>Total</b>	<b>42</b>	<b>666</b>	<b>17</b>	<b>140</b>

Figure PT 4



### 3.3 Incriminated food

The food responsible for the disease outbreaks was identified in 66% and 70% of the foodborne disease outbreaks investigated in 1999 and 2000. In 12% and 29% of the outbreaks investigated in those years, the incriminated food was confirmed by laboratory diagnosis. Meat and meat products were the most frequently incriminated food, noted in 14% and 29% of the outbreaks in 1999 and 2000 (Table PT 6). An overview of the food incriminated in

foodborne disease outbreaks investigated between 1993 and 2000 is given in Figure PT 5. Most of the incriminated food was marketed non-packaged. More information on the methods of marketing, processing and serving of the food incriminated in foodborne disease outbreaks investigated in 1999 and 2000 is given in Table PT 7.

Table PT 6

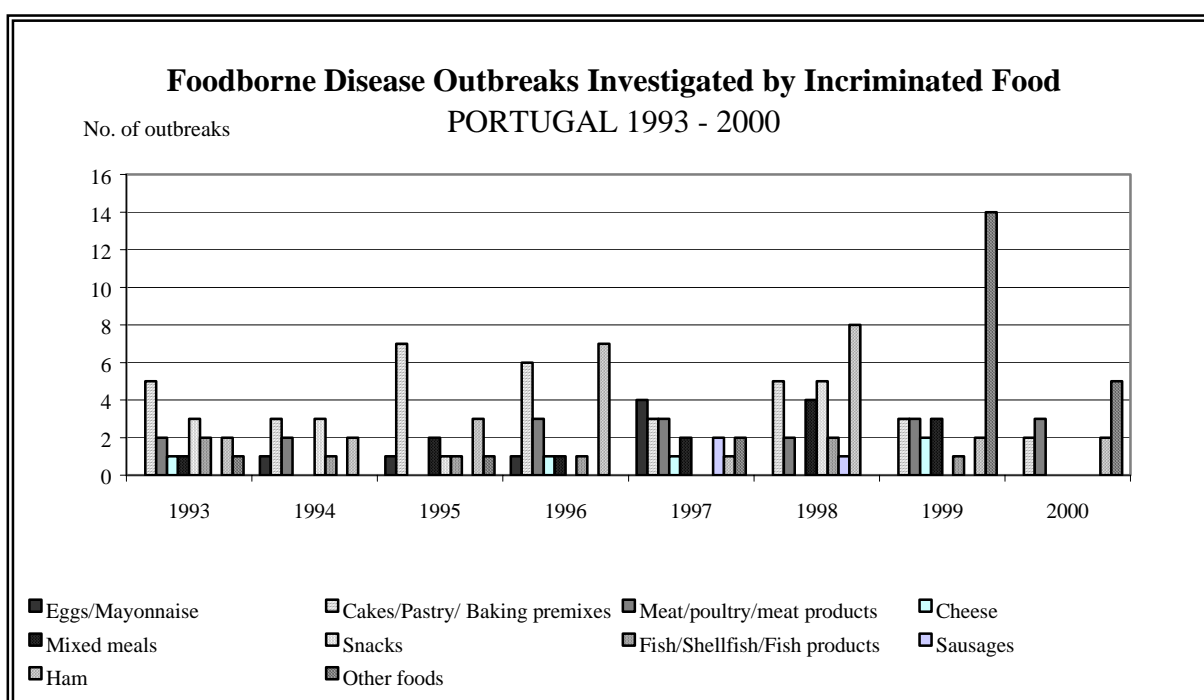
**Foodborne disease outbreaks investigated by incriminated food**

PORTUGAL 1999-2000

Incriminated Food	1999		2000	
	No. of outbreaks	No. of cases in outbreaks	No. of outbreaks	No. of cases in outbreaks
Cheese	2	40	0	0
Meat products	3	20	3	5
Cured ham	2	4	2	10
Poultry and cereals	1	43	0	0
Fish products	1	6	0	0
Pasta	1	44	0	0
Fancy cakes	3	41	2	9
Ice cream	1	26	0	0
Sweets	3	37	0	0
Ready-to-serve-meals	8	142	5	53
Several foodstuffs	3	60	0	0
Unknown	14	203	5	63
<b>Total</b>	<b>42</b>	<b>666</b>	<b>17</b>	<b>140</b>

Figure PT 5

Table PT 7





### Methods of marketing, processing and serving identified in foodborne disease outbreaks investigated

PORTUGAL 1999-2000

Marketing, processing, serving	1999		2000	
	No. of outbreaks	No. of cases in outbreaks	No. of outbreaks	No. of cases in outbreaks
<i>Marketing of Food</i>				
Non-packaged	25	376	10	54
Packaged	1	17	0	0
Unknown	16	273	7	86
Total	42	666	17	140
<i>Treatment before final preparation</i>				
Sterilised	4	35	0	0
Unknown	38	631	17	140
Total	42	666	17	140
<i>Served and Eaten</i>				
Heated	7	99	6	41
Kept warm	2	90	0	0
Raw	5	70	2	4
Unknown	28	407	9	95
Total	42	666	17	140

#### 3.4 Place of contamination of food

The place where the incriminated food had been contaminated was identified in 50% and 53% of the outbreaks investigated in 1999 and 2000 respectively. The most frequently reported places of contamination were restaurants and hotels, noted in 26% of outbreaks in 1999 and 12% of outbreaks in 2000 (Table PT 8).

Table PT 8

**Foodborne disease outbreaks investigated by place of contamination**  
PORTUGAL 1999-2000

Place of Contamination	1999		2000	
	No. of outbreaks	No. of cases in outbreaks	No. of outbreaks	No. of cases in outbreaks
Canteen	2	55	1	20
Food processing establishment	2	61	1	0
Medical care facility			1	0
Private home	2	7	3	7
Restaurant/Hotel	11	220	2	18
School/Kindergarten	4	63		
Other			1	3
Unknown	21	260	8	92
Total	42	666	17	140

### 3.5 Place of acquisition/consumption of food

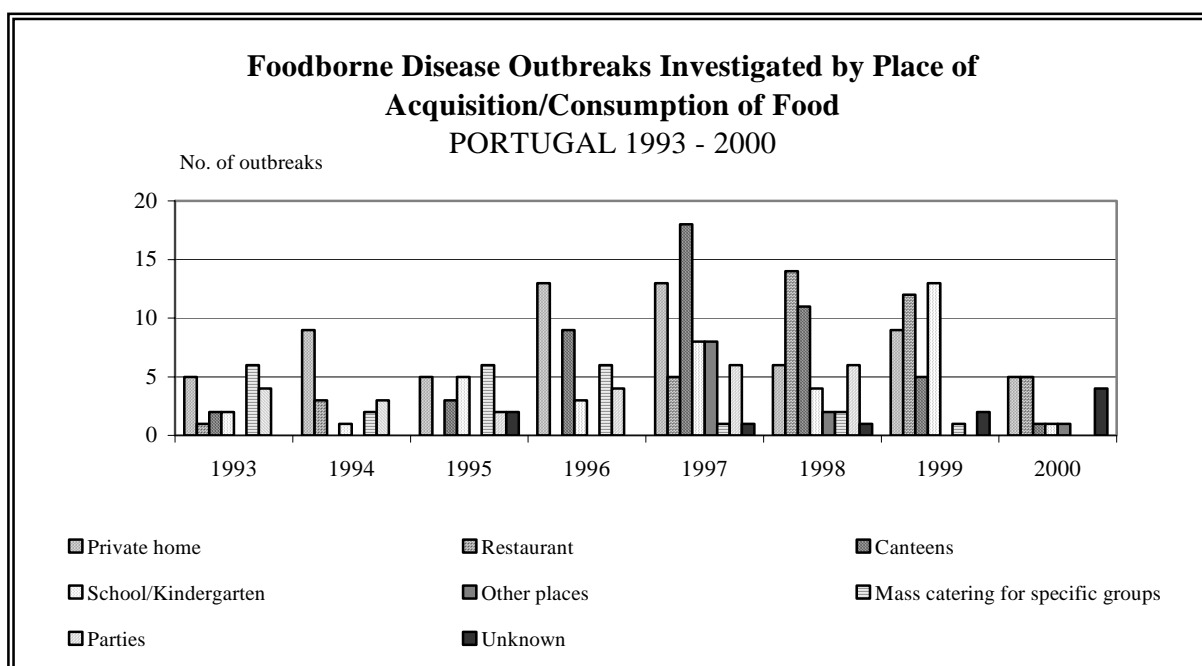
The place of acquisition and/or consumption of food was identified in 95% and 76% of the foodborne disease outbreaks investigated in 1999 and 2000. The most frequently reported place of consumption in 1999 was schools and kindergartens (31% of outbreaks); in 2000, 30% of the outbreaks were linked to restaurants and hotels and 30% with private homes (Table PT 9). Figure PT 6 gives an overview of the places of acquisition/consumption identified in outbreaks investigated between 1993 and 2000.

Table PT 9

**Foodborne disease outbreaks investigated by place of acquisition/consumption**  
PORTUGAL 1999-2000

Place of Acquisition/Consumption	1999		2000	
	No. of outbreaks	No. of cases in outbreaks	No. of outbreaks	No. of cases in outbreaks
Canteen	5	128	1	20
Mass catering for specific groups	1	43	0	0
Medical care facility	0	0	1	0
Private home	9	51	5	18
Restaurant/hotel	12	235	5	39
School/kindergarten	13	193	1	8
Unknown	2	16	4	55
Total	42	666	17	140

Figure PT 6



### 3.6 Contributing factors

Factors contributing to outbreaks of foodborne diseases were identified in 43% and 41% of the outbreaks investigated in 1999 and 2000. The most frequently identified factors were inadequate cooking and inadequate refrigeration (Table PT 10).

Table PT 10

#### Foodborne disease outbreaks investigated by contributing factors

PORTUGAL 1999-2000

Contributing Factors	1999		2000	
	No. of outbreaks	No. of cases in outbreaks	No. of outbreaks	No. of cases in outbreaks
<i>Most important contributing factor</i>				
Contamination by infected person	5	110	0	0
Use of contaminated ingredients	1	17	0	0
Food obtained from unsafe source	2	40	0	0
Inadequate cooking	7	92	2	20
Inadequate hot holding	1	46	0	0
Inadequate refrigeration	1	24	3	9
Preparation of food in advance	1	44	2	15
Unknown	24	293	10	96
Total	42	666	17	140
<i>Other contributing factors</i>				
Improper storage	1	24	0	0
Preparation of food in advance	1	43	0	0
Unknown	40	599	17	140

Total	42	666	17	140
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#### **4. Additional information**

Epidemiological data for the years 1993-1996 from the National Institute of Health in Lisbon is not complete due to an environmental problem occurring in 1998 in which the building was closed for renovations and some information was lost.

Portugal participates in the international network for the surveillance of human salmonellosis, antimicrobial resistance in isolates from humans, and of human infections by verocytotoxin producing *E. coli* O157 (ENTER-NET). Portugal is also part of the Rapid Alert System for Food Stuffs of the European Commission (Directorate General XXIV - Consumer Policy and Consumer Health Protection).

Information on the activities of the General Directorate of Health and its publications can be found at <http://www.dgsaude.pt>. Information on the National Institute of Health is available at <http://www.insarj.pt>.

For further reference on national and international data on foodborne diseases, please visit the web page [http://www.euro.who.int/foodsafety/Surveillance/20020904\\_1](http://www.euro.who.int/foodsafety/Surveillance/20020904_1)