



GERMANY (DEU)

Population: 81.3 million (1994)

Area: 357 021 km²



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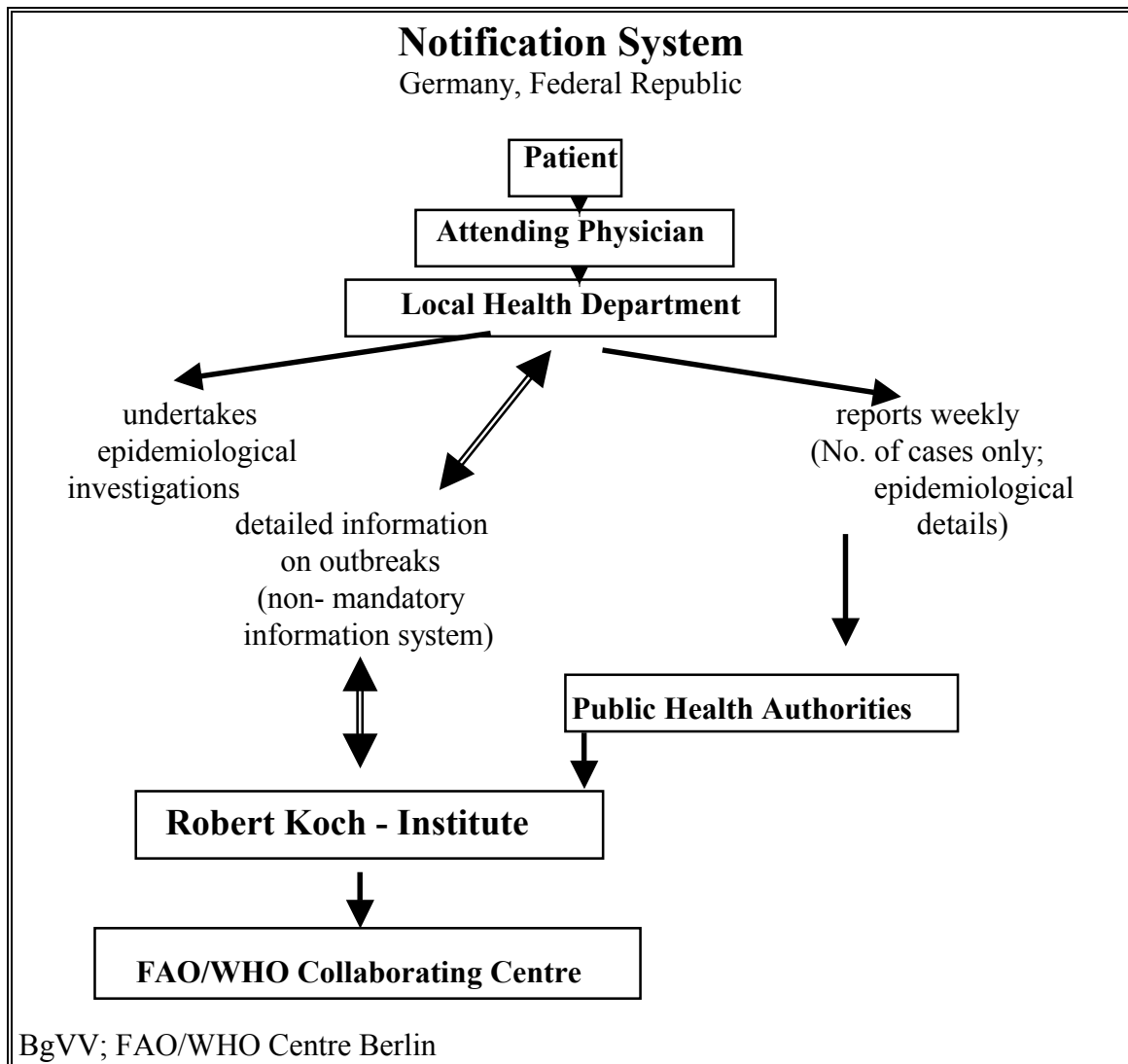
1. General Information

Under the Federal Communicable Diseases Act no specific notification of foodborne diseases by pathogen was required. Since 1998 enteric infections caused by EHEC are notifiable as well. However, all cases of infectious enteritis caused by *Salmonella* species other than *S. typhi* and *S. paratyphi* or by other micro-organisms are notifiable and are considered to be foodborne. A new laboratory based notification system ('Infektionsschutzgesetz') will be implemented the 1 January 2001. Although even suspect cases should be reported, this is quite often not done unless the etiology has been clarified by identification of the causal agent. This applies in particular also to cases of diseases in which the etiological agents are difficult to identify or in which the identification of the pathogens requires specific methods which are not commonly used during routine examinations of samples.

Yersinia enterocolitica, *Campylobacter* spp., and *Vibrio parahaemolyticus* are examples of such microorganisms.

The same holds true for cases in which toxins are involved, such as those produced by *Staphylococcus aureus* and *Clostridium perfringens*. But the main problem is still that only a small amount of cases are diagnosed microbiologically because of the lack of individual therapeutical consequences.

Figure DE 1



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7th Report

Country Reports: *GERMANY 1993 – 1998*

Other communicable diseases which are notifiable and which are or may be foodborne are currently botulism, brucellosis, trichinellosis and hepatitis A. Toxoplasmosis and listeriosis are notifiable in congenital cases only. Thus they are not included in the tables of foodborne diseases.

In addition to the statutory reporting of notifiable diseases according to the Communicable Diseases Act, a "Surveillance Programme of Foodborne Infections and Microbial Intoxications" exists since 1983. Through this programme, considerable information on the epidemiology of foodborne disease outbreaks can be gained. This programme has replaced a salmonellosis surveillance programme in order to obtain epidemiological information on foodborne diseases other than those caused by *Salmonella* as well.

The present system uses formats and procedures compatible with the WHO Surveillance Programme. It is operated on a voluntary basis.

In the case of an outbreak, the respective local public health administration sends or is requested to send all epidemiological details to the Federal Contact Point where the information is collated and evaluated.

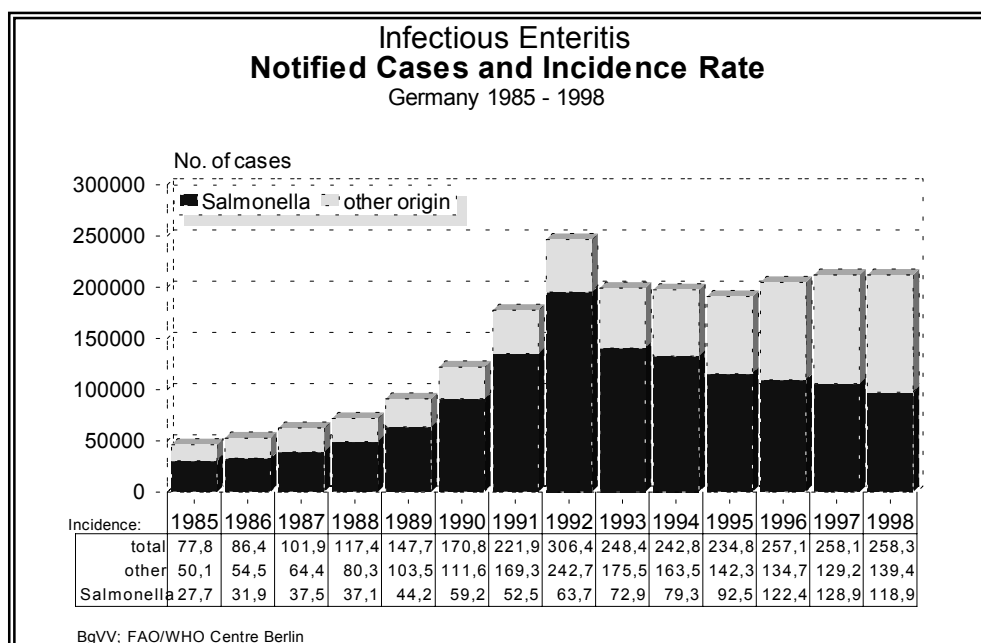
The operation of the German reporting system is demonstrated in Figure DE 1. This graph also shows the voluntary surveillance system of foodborne outbreaks which, apart from the statutory case reporting, is run by the Robert Koch-Institute (Federal Institute for Infectious and Non-communicable Diseases).

2. Statutory notification

Table DE 1

Foodborne disease cases GERMANY 1993 - 1998						
Causative agent/disease	1993	1994	1995	1996	1997	1998
Brucella	18	27	35	20	25	18
Clostridium botulinum	17	13	12	15	7	21
Infectious enteritis	198763	197309	190833	193039	211732	211841
<i>Salmonellosis</i>						
(excl. <i>S.typhi</i> and <i>S.paratyphi</i>)	140435	132858	115649	104306	105757	97505
other forms of inf. enteritis	58328	64451	75184	88733	105975	114336
Shigella	1959	2320	1859	1416	1747	1607
Trichinella	2	0	10	1	8	51
Hepatitis A	5095	5488	6544	4489	4614	3856

Figure DE 2



3. Epidemiologically investigated incidents

Table DE 2

Foodborne disease outbreaks and cases in outbreaks
GERMANY 1995 - 1998

Year	outbreaks	cases in outbreaks
1995	160	4637
1996	151	4512
1997	159	3629
1998	145	2505

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7th Report

Country Reports: *GERMANY 1993 – 1998*

3.1 Causative agents

Table DE 3

Foodborne disease outbreaks by causative agents
GERMANY 1993 - 1998

Causative agent	Year						1993-1998	
	1993	1994	1995	1996	1997	1998	No.	%
<i>Bacillus cereus</i>	4	2	-	3	1	-	10	1.1
<i>Campylobacter</i> spp.	1	1	9	5	1	2	19	2.1
<i>Campylobacter jejuni</i>	-	-	-	-	-	2	2	0.2
<i>Cl. botulinum</i>	2	-	-	-	-	-	2	0.2
<i>Cl. perfringens</i>	2	4	2	1	3	1	13	1.4
<i>Clostridium</i> spp.	-	-	-	-	-	1	1	0.1
<i>Staph. aureus</i>	8	5	5	4	2	2	26	2.8
<i>E. coli</i>	1	-	1	2	-	-	4	0.4
<i>Shigella sonnei</i>	-	2	-	1	-	-	3	0.3
<i>S. Enteritidis</i>	130	85	105	84	100	92	596	63.9
<i>S. Typhimurium</i>	8	5	4	4	10	11	42	4.5
<i>S. Infantis</i>	-	-	-	-	-	1	1	0.1
<i>S. Thompson</i>	-	-	-	-	-	2	2	0.2
Other <i>S. spp</i> /not spec.	12	5	8	8	7	2	42	4.5
Rotavirus	1	1	1	2	-	2	7	0.8
'Virus'	-	1	-	-	-	-	1	0.1
Other agents	5	1	7	5	2	-	20	2.1
2 and more agents	-	-	-	-	-	1	1	0.1
Not known/not lab.confirmed*	20	12	18	32	33	26*	141	15.1
TOTAL	194	124	160	151	159	145	933	100.0

* 1998: includes only outbreaks in which the food was microbiologically confirmed

Figure DE 3

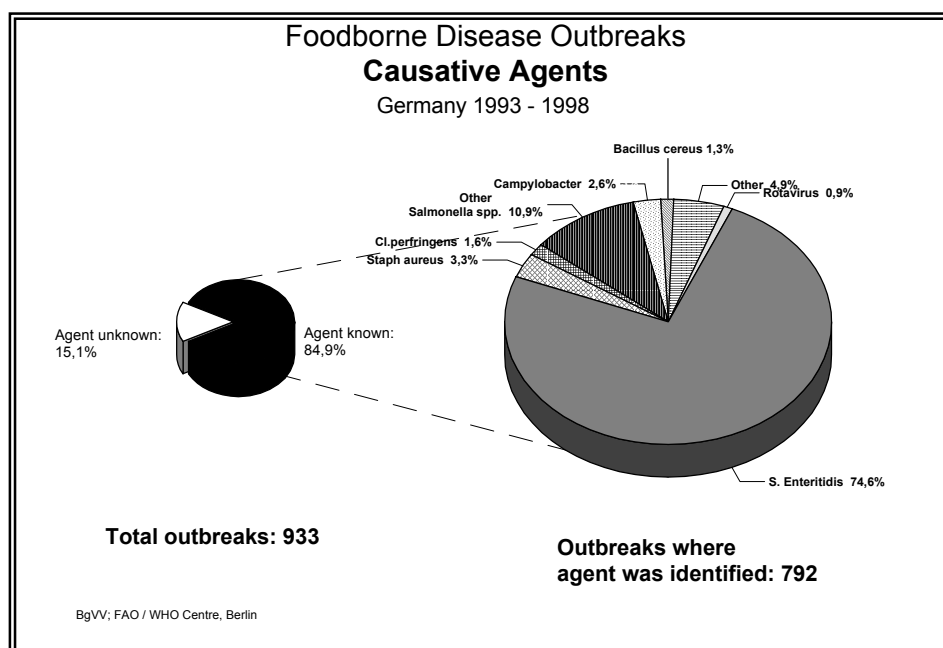


Table DE 4

**Salmonella serotypes identified in foodborne disease outbreaks
GERMANY 1993 - 1998**

Salmonella spp.	1993	1994	1995	1996	1997	1998
S. Enteritidis	130	85	105	84	100	92
S. Typhimurium	8	5	4	4	10	11
S. Infantis	-	-	-	-	1	1
S. Thompson	-	-	-	-	2	2
Others/not specified	12	5	8	8	7	2
TOTAL	150	95	117	96	117	108

3.2 Incriminated foods

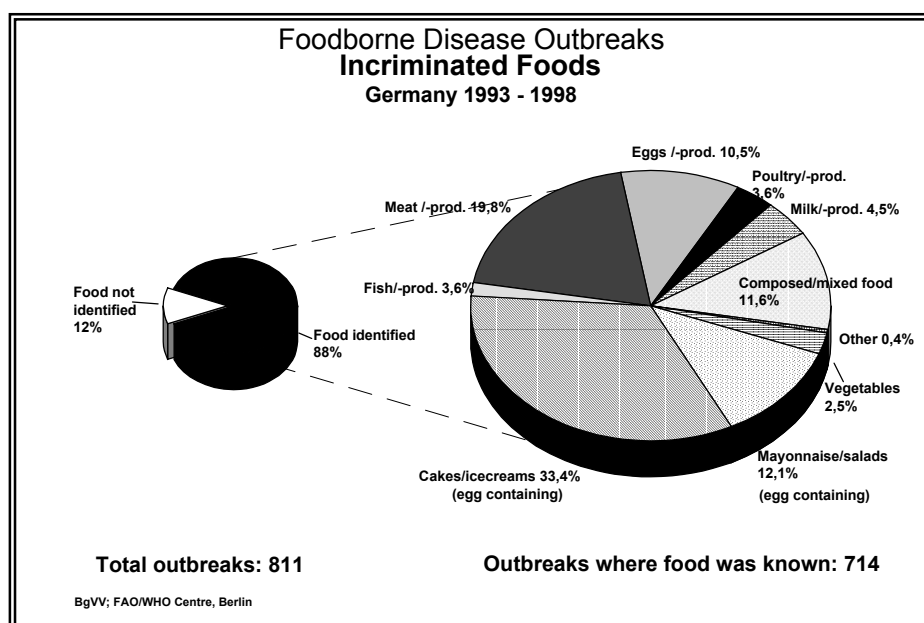
Table DE 5

Foodborne disease outbreaks by incriminated foods
GERMANY 1993 - 1998

Food	1993	1994	1995	1996	1997	1998*	1993 - 1998	
	No.						No.	%
Milk, milk products	9	2	12	7	2	-	32	3.9
Cheese	1	-	-	-	-	-	1	0.1
Meat and meat products	41	22	28	16	25	9	141	17.4
Poultry and poultry products	5	5	7	4	5	-	26	3.2
Fish and fish products, molluscs	5	1	3	1	1	-	11	1.4
Cakes, pudding, ice-cream (containing eggs)	55	34	36	44	50	19	238	29.3
Mayonnaise, sauces, salads (containing eggs)	24	21	16	12	13	-	86	10.6
Other products containing eggs	22	21	8	9	15	-	75	9.2
Vegetable products	5	3	5	3	2	-	18	2.2
Composed food	1	-	27	32	23	1	83	10.2
Other	-	1	1	1	0	-	3	0.4
Unknown	26	14	18	22	17	-	97	12.0
TOTAL	194	124	160	151	153	29	811	100.0

* 1998: includes only outbreaks in which the food was microbiologically confirmed

Figure DE 4



3.3 Place of contamination or consumption

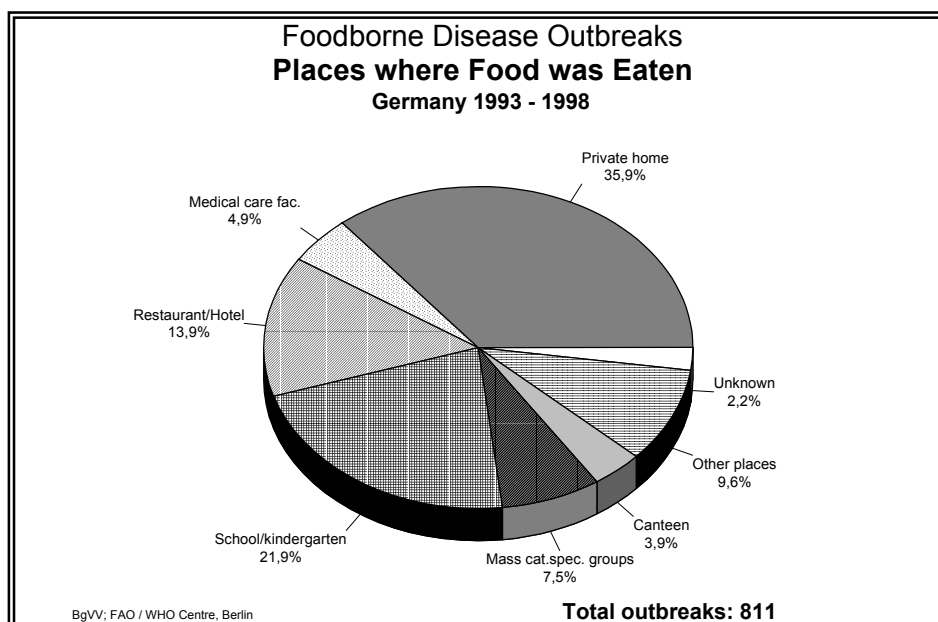
Table DE 6

**Foodborne disease outbreaks by place where food was eaten
GERMANY 1993 - 1998**

Place	1993	1994	1995	1996	1997	1998*	1993-1998	
							No.	No. %
Private home	60	52	56	44	64	15	291	35.9
Medical care fac.	16	16	5	1	2	-	40	4.9
Restaurant/Hotel	35	15	21	20	17	5	113	13.9
School/kindergarten	52	15	41	41	25	4	178	22.0
Mass catering for specific groups	2	4	21	22	11	1	61	7.5
Canteen	14	3	3	6	6	0	32	3.9
Ambulant service	0	1	1	0	2	0	4	0.5
Retail store	2	0	0	1	0	0	3	0.4
Picnic	0	0	1	0	1	0	2	0.3
Camping	0	0	1	0	1	0	2	0.3
Various places	0	0	2	3	1	0	6	0.7
Other	10	12	8	11	20	0	61	7.5
Unknown	3	6	0	2	3	4	18	2.2
Total	194	124	160	151	153	29	811	100

* 1998: includes only outbreaks in which the food was microbiologically confirmed

Figure DE 5



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7th Report

Country Reports: *GERMANY 1993 – 1998*

Table DE 7

Place where food was contaminated
GERMANY 1993 - 1998

Place	1993	1994	1995	1996	1997	1998*	1993-1998	
	No.						No.	%
Farm	23	6	16	9	8	1	63	7.8
Private home	19	4	16	4	6	-	49	6.0
Restaurant/hotel	-	-	7	1	3	-	11	1.4
Medical care fac.	4	1	2	1	-	-	8	1.0
School/ kindergarten	4	-	10	-	1	-	15	1.8
Mass catering for specific groups	-	3	8	2	1	-	14	1.7
Canteen	2	-	1	2	1	-	6	0.7
Ambulant service	1	-	1	-	-	1	3	0.4
Retail store	5	1	-	2	2	2	12	1.5
Caterer	-	-	4	4	-	-	8	1.0
Camping	-	-	1	-	-	-	1	0.1
Food processing est.	68	49	43	56	54	-	270	33.3
Other	2	-	3	1	1	-	7	0.9
Unknown	68	60	48	69	76	25	346	42.7
Total	194	124	160	151	153	29	811	100.0

* 1998: includes only outbreaks in which the food was microbiologically confirmed

3.4 Contributory factors

Table DE 8

Foodborne disease outbreaks Contributing factors
GERMANY 1993 - 1997

Factor	Years					1993-97	
	1993	1994	1995	1996	1997	No.	%
Inadequate refrigeration	34	20	19	20	12	105	10.6
Inadequate hot holding	16	8	7	2	4	37	13.8
Prep. of food too far in advance	6	2	2	1	0	11	1.1
Inadequate cooling or heating	5	4	5	5	3	22	2.2
Inadequate reheating	4	4	10	6	7	31	3.1
Obtain. food from unsafe sources	6	0	1	5	2	14	1.4
Using of contaminated ingred.	36	41	33	40	30	180	18.2
Contamin./infected persons	30	19	18	17	14	98	9.9
Contamin./infected equipment	9	10	8	11	16	54	5.5
Inadequate cooking	1	1	13	4	8	27	2.7
Inadequate thawing	0	0	2	1	2	5	0.5
Improper storage	11	3	6	4	4	28	2.8
Toxic chemicals	0	0	1	0	0	1	0.1
Water inadequate treated	0	0	0	1	0	1	0.1
Other factors	0	0	3	3	2	8	0.8
Unknown	97	47	74	70	80	368	37.2
Total *	255	159	202	190	184	990	100.0

*The total of contributing factors exceeds the number of foodborne disease outbreaks since in some outbreaks more than one factor was identified.

WHO Surveillance Programme for Control of Foodborne Infections and Intoxications in Europe
7th Report

Country Reports: *GERMANY 1993 – 1998*

4. Additional information for 1998

Table DE 9

**Foodborne disease outbreaks by causative agents, cases in outbreaks,
hospitalization and mortality**
GERMANY 1998

Causative agent	Outbreaks		Cases in outbreaks		Hospitalization		Mortality	
	No.	%	No.	%	No	%	No	%
S. Enteritidis	92	77.3	1648	77.2	178	91.8	3	100.0
S. Infantis	1	0.8	10	0.5	3	1.5	-	-
S. Thompson	2	1.7	10	0.5	-	-	-	-
S. Typhimurium	11	9.2	161	7.5	10	5.2	-	-
Salmonella spp.	2	1.6	9	0.4	1	0.5	-	-
Staphylococcus aureus	2	1.7	94	4.4	-	-	-	-
Campylobacter ssp.	2	1.7	37	1.7	-	-	-	-
Campylobacter jejuni	2	1.7	23	1.1	-	-	-	-
Clostridium ssp.	1	0.8	82	3.8	1	0.5	-	-
Cl. perfringens	1	0.8	13	0.6	-	-	-	-
Rotavirus	2	1.7	29	1.4	1	0.5	-	-
2 and more bacteria	1	0.8	18	0.8	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
TOTAL								
/microbiological confirmed	119	100.0	2134	100.0	194	100.0	3	100.0
TOTAL	145		2505		215		3	

5. Additional Information

The Robert Koch Institute publishes The Epidemiological Bulletin which includes information on foodborne disease and can be found at <http://www.rki.de/INFEKT/EPIBULL/EPI.HTM>.

For further reference on national and international data on foodborne diseases please visit the web page <http://www.who.it/docs/fdsaf/fddata.htm>.