



REPUBLIC OF MOLDOVA (MDA)

Population: 4.420 million

Number of administrative units (towns, judets): 12

Area: 33 700 km²



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1. General information

In the Republic of Moldova there is a uniform system of recording communicable diseases as part of epidemiological surveillance.

For each single case of infectious disease, information from hospitals and clinics on reported (suspected) illnesses is sent to the territorial Centres of Hygiene and Epidemiology within 24 hours. From there, monthly reports are sent to the National Centre for Preventive Medicine (NCPM) of the Ministry of Health of the Republic of Moldova.

Except for botulism, no separated register of foodborne communicable diseases is kept. All infections with a faecal-oral route of transmission are recorded when the transmission is suspected to be foodborne. There is a separate recording of group outbreaks (involving 5 and more patients) of foodborne origin.

Laboratory examinations are performed at 43 bacteriological laboratories at the territorial Centres for Preventive Medicine. The NCPM receives data for confirmation of all isolated cultures of *Salmonella*, *Shigella*, *Vibrio cholerae* and other *Vibrio* spp. from the environment, all cholera and other *Vibrio* spp. cultures from humans, and frequently, also of cultures from humans of *Shigella* and *Salmonella*.

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2. Statutory notification

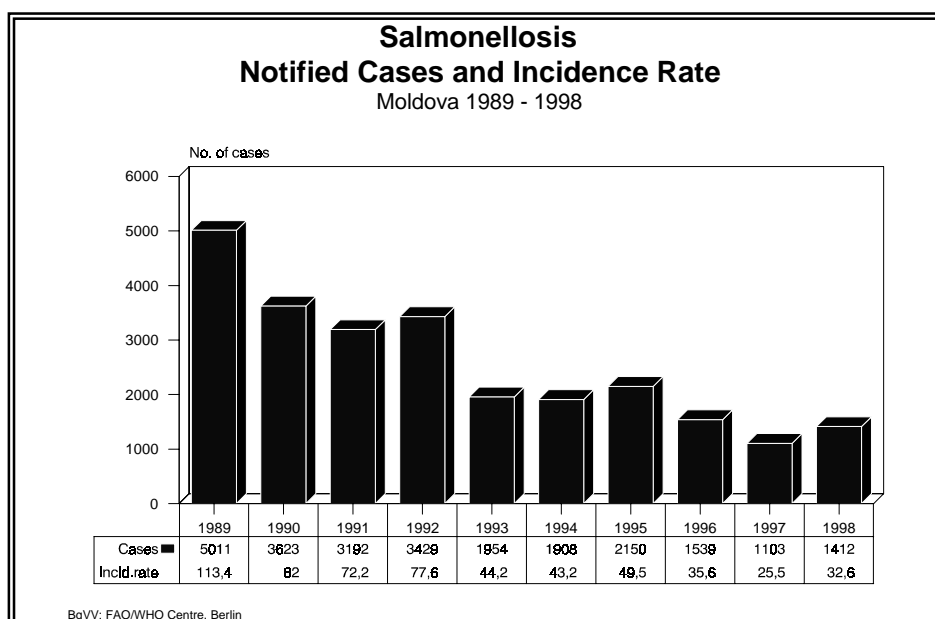
After an epidemic rise from 1988 - 1992, the incidence of salmonellosis has dropped during 1993 - 1995 (Table MD 1). All years the vehicle of transmission most frequent was food (80 - 90 % of cases). Essentially, adults (55 % and more of the total number of cases) and urban populations were affected. This is associated with a centralized food supply for the urban populations. The reduced incidence may be partially explained by a reduced volume of the production of meat, poultry, eggs and the drop in the purchasing power of the population.

Table MD 1

Cases of salmonellosis and incidence rate
REPUBLIC OF MOLDOVA 1991 - 1998

Year	Urban population			Rural population		
	Cases	Incidence rate	%	Cases	Incidence rate	%
1991	1933	93.6	60.6	1259	54.9	39.4
1992	1928	94.0	56.2	1501	65.1	43.8
1993	1261	61.9	64.5	693	29.6	35.5
1994	1146	56.3	60.2	759	32.5	39.8
1995	1388	68.7	64.6	762	32.9	35.4
1996	985	49.3	64.0	554	23.8	36.0
1997	685	34.3	62.1	418	18.0	37.9
1998	784	39.6	55.5	628	36.5	44.5
Total	10110	-	-	6574	-	-

Figure MD 1



3. Epidemiologically investigated incidents

3.1 Salmonellosis

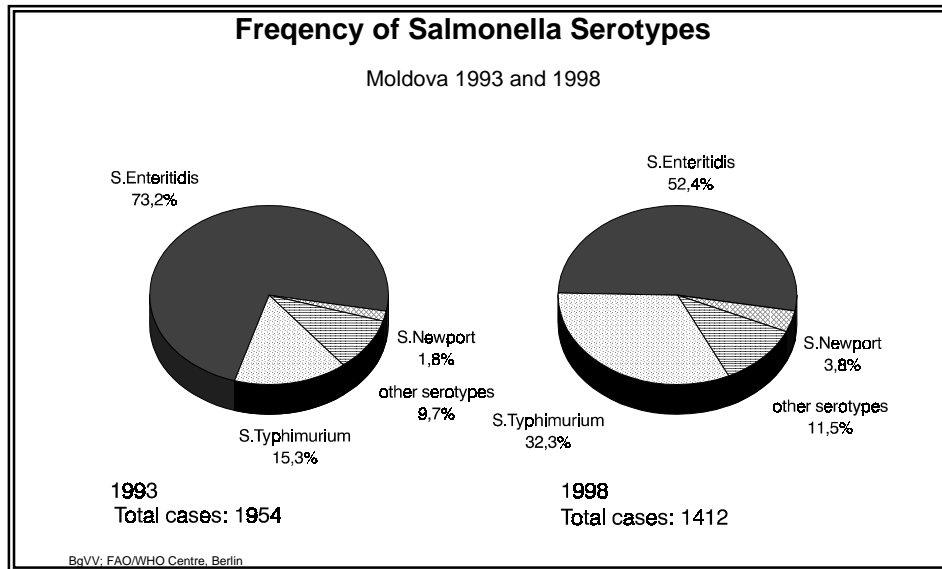
Table MD 2

Frequency of Salmonella serotypes
REPUBLIC OF MOLDOVA 1991 - 1998

S. serotype	1991		1992		1993		1994		1995		1996		1997		1998	
	C.*	%	C.*	%	C.*	%	C.*	%	C.*	%	C.*	%	C.*	%	C.*	%
S. Enteritidis	2272	69.7	2621	76.4	1431	73.7	980	51.4	1293	60.1	739	48.0	410	37.2	740	52.4
S. Typhimurium	287	9.0	307	8.9	298	15.4	575	30.1	611	28.4	592	38.5	444	40.3	456	32.3
S. Java	52	1.6	25	0.7	20	1.0	50	2.6	34	1.6	-	-	11	1.0	-	-
S. Newport	77	2.4	62	1.8	35	1.8	59	3.1	77	3.6	28	1.8	34	3.1	54	3.8
S. Tshiongwe	97	3.0	59	1.7	32	1.6	50	2.6	20	0.9	9	0.6	41	3.7	18	1.3
S. London	2	0.1	2	0.05	4	0.2	34	1.8	-	-	3	0.2	6	0.5	7	0.5
S. Morbificans	43	1.3	20	0.6	2	0.1	13	0.7	9	0.4	6	0.4	35	3.2	22	1.6
S. Virchow	62	1.9	53	1.5	26	1.3	11	0.6	10	0.5	20	1.3	8	0.7	4	0.3
S. Virginia	2	0.1	1	0.02	-	-	11	0.6	-	-	-	-	1	0.1	-	-
Other serotypes	298	10.9	279	8.3	106	4.9	125	6.5	96	4.5	142	9.2	113	10.2	111	7.9
Total	3192		3429		1954		1908		2150		1539		1103		1412	

* Cases

Figure MD 2



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4. Epidemiologically investigated outbreaks

4.1 Causative agents

Table MD 3

Foodborne disease outbreaks by causative agents
MOLDOVA 1993 - 1997

Causative Agents	1993			1994			1995			1996			1997			1993-1997		
	outbreaks	cases in outbreaks	single cases	outbreaks	cases in outbreaks	single cases	outbreaks	cases in outbreaks	single cases	outbreaks	cases in outbreaks	single cases	outbreaks	cases in outbreaks	single cases	outbreaks	cases in outbreaks	single cases
<i>1. Bacterial</i>																		
<i>Campylobacter</i>	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2	-	-	4
<i>Cl. botulinum</i>	-	-	16	-	-	10	-	-	21	-	-	27	-	-	27	-	-	101
<i>Klebsiella</i>	-	-	-	-	-	-	-	-	874	-	-	957	-	-	835	-	-	2666
<i>Pseudomonas</i>	-	-	-	-	-	-	-	-	42	-	-	8	-	-	13	-	-	63
<i>Salmonella</i> (other than <i>S. typhi</i> and <i>S. paratyphi</i>)	14	308	1646	16	352	1556	12	271	1879	2	35	1504	7	127	976	51	1093	7561
<i>Shigella sonnei</i>	1	5	-	5	285	-	1	14	-	-	-	281	-	-	1355	7	304	1636
<i>Staph. aureus</i>	1	7	-	-	-	-	-	-	471	-	-	433	-	-	444	1	7	1348
Bacterial Total	16	320	1662	21	637	1566	13	285	3287	2	35	3212	7	127	3652	59	1404	13379
<i>2. Other agents</i>																		
Toxic mushrooms	-	-	38	-	-	17	-	-	432	-	-	120	-	-	58	-	-	665
Toxic plants	-	-	-	1	24	-	-	-	-	-	-	-	-	-	-	1	24	-
Toxic chemicals	1	15	-	2	14	-	-	-	-	-	-	-	-	-	-	3	29	-
Other Agents Total	1	15	38	3	38	17	-	-	432	-	-	120	-	-	58	4	53	665
<i>3. Unknown</i>																		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OVERALL TOTAL	17	335	1700	24	675	1583	13	285	3719	2	35	3332	7	127	3710	63	1457	14044

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Table MD 4

Outbreaks of Salmonella infection
REPUBLIC OF MOLDOVA 1991 - 1998

Year	Family outbreak		General outbreak		Total	
	Outbreaks	Cases in outbreaks	Outbreaks	Cases in outbreaks	Outbreaks	Cases in outbreaks
1991	20	365	3	175	23	540
1992	24	467	5	336	29	803
1993	11	236	3	72	14	308
1994	12	219	4	133	16	352
1995	11	251	1	20	12	271
1996	2	35	-	-	2	35
1997	6	117	1	10	7	127
1998	10	242	1	29	11	271
Total	96	1932	18	775	114	2707

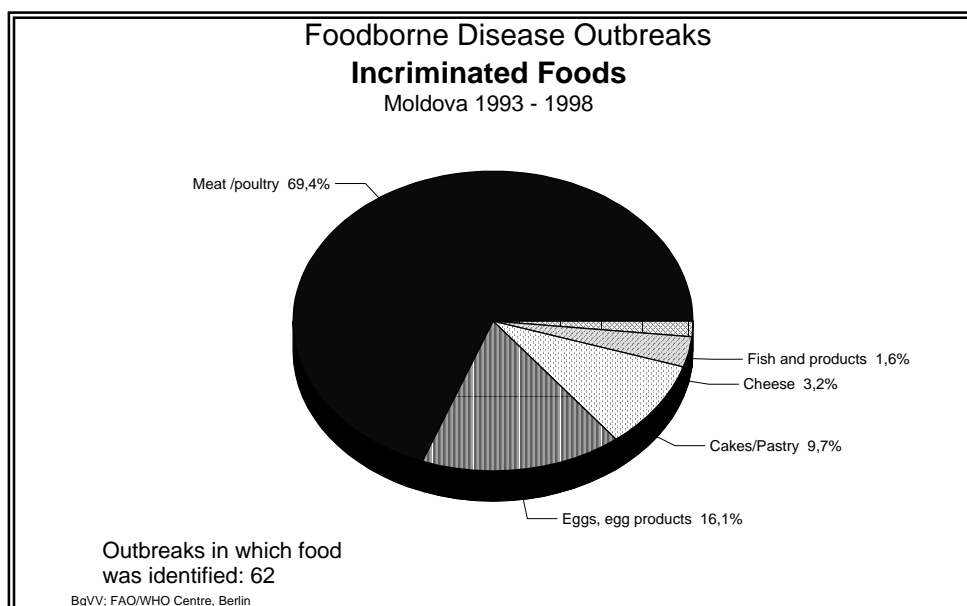
4.2 Incriminated foods

Table MD 5

Foodborne disease outbreaks - Incriminated foods
MOLDOVA 1993 - 1998

Food	Year						Total	
	1993	1994	1995	1996	1997	1998	1993 - 1998	
	No.						No.	%
Egg/Mayonnaise	1	3	2	1	1	2	10	16.1
Cakes/Pastry/Cream								
Baking premixes	2	1	1	-	1	1	6	9.7
Meat/poultry	11	10	9	1	5	7	43	69.4
Cheese	-	1	-	-	-	1	2	3.2
Fish/Shellfish	-	1	-	-	-	-	1	1.6
Total	14	16	12	2	7	11	62	100.0

Figure MD 3



4.3 Places where food was eaten or acquired

Table MD 6

**Foodborne disease outbreaks by place where food was eaten or acquired
MOLDOVA 1993 - 1998**

Place	Year						Total	
	1993	1994	1995	1996	1997	1998	1993 - 1998	
	No.						No.	%
Private home	13	14	11	2	5	9	54	87.1
Canteens	1		1			1	3	4.8
School/kinder-garten		2			2	1	5	8.1
TOTAL	14	16	12	2	7	11	62	100

4.4 Contributing factors

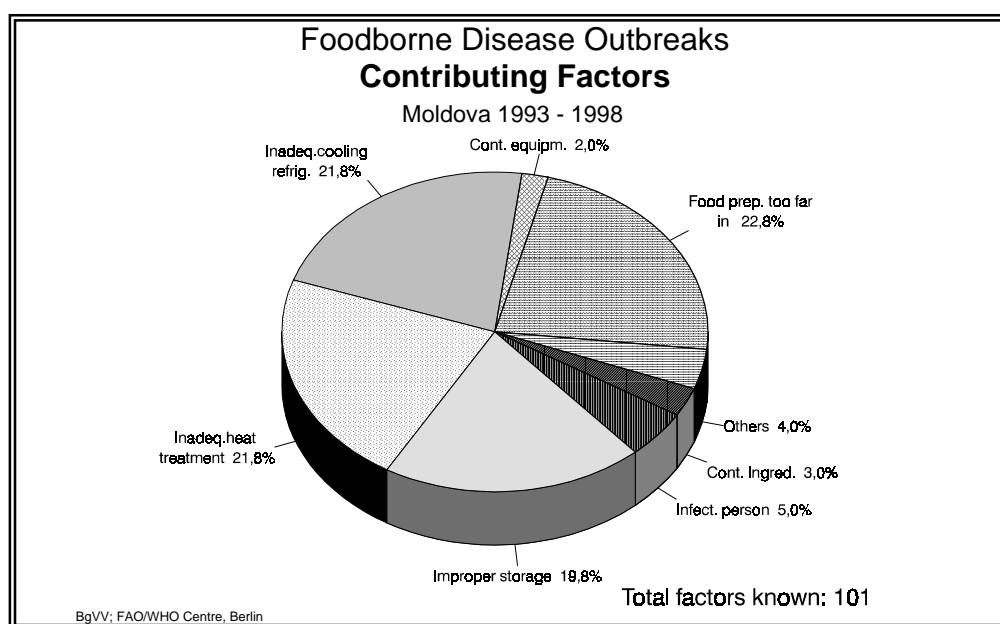
Table MD 7

Foodborne disease outbreaks Contributing factors
MOLDOVA 1993 - 1998

Factor	Year						Total	
	1993	1994	1995	1996	1997	1998	1993-1998	
	No.						No.	%
Food prepared too far in advance	3	6	5	1	2	6	23	22.8
Improper storage	4	2	4	1	3	6	20	19.8
Inadequate refrigeration	5	6	4	1	3	3	22	21.8
Inadequate cooking/reheating	3	6	5	1	2	5	22	21.8
Using of contaminated ingredients	1	-	1	-	-	1	3	2.9
Infected person	-	-	-	-	1	4	5	5.0
Contaminated equipment	-	-	-	-	-	2	2	1.9
Other factors	-	2	1	-	-	1	4	4.0
Total factors known *	16	22	20	4	11	28	101	100

* In some outbreaks there was more than one contributing factor

Figure MD 4



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5. Additional information

Table MD 8

Salmonella isolates from non-human sources
REPUBLIC OF MOLDOVA 1991 - 1998

Year	Meat	Milk	Fish	Egg	Surface water	Sewage	Other	Total
1991	70	4	2	2	76	32	179	365
1992	103	5	2	25	70	40	350	595
1993	40	5	1	7	27	10	103	193
1994	25	2	2	9	47	9	39	133
1995	52	4	1	6	23	10	55	151
1996	16	-	-	-	30	9	18	73
1997	21	1	-	-	35	14	78	149
1998	25	2	-	-	22	4	38	91
Total	352	23	8	49	330	128	860	1750

Table MD 9

Salmonella serotypes
REPUBLIC OF MOLDOVA 1993 - 1998

S. serotype	1993		1994		1995		1996		1997		1998	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
S. Enteritidis	102	52.8	56	42.1	102	67.5	26	35.6	82	55.0	50	54.9
S. Typhimurium	26	13.4	11	7.5	29	19.2	21	28.8	12	8.1	17	18.7
S. Java	4	2.1	10	7.5	3	2.0	-	-	-	-	-	-
S. Newport	10	5.2	3	2.3	5	3.3	-	-	-	-	5	5.5
S. Tshiongve	2	2.0	7	5.3	-	-	-	-	10	6.7	13	14.3
S. London	4	2.1	1	0.8	2	1.3	-	-	-	-	-	-
S. Morbificans	-	-	1	0.8	-	-	1	1.4	11	7.4	1	1.1
S. Virchow	6	3.1	10	7.5	-	-	-	-	4	27	-	-
S. Virginia	-	-	1	0.8	-	-	-	-	-	-	-	-
S. San-diego	-	-	9	7.8	-	-	-	-	-	-	-	-
S. Infantis	4	2.1	5	3.8	1	0.7	4	5.5	-	-	-	-
S. Upsala	-	-	2	1.5	-	-	-	-	-	-	-	-
S. Gallinarum	3	1.6	3	2.3	-	-	2	2.7	1	0.6	-	-
Other serotypes	32	15.6	14	10.2	9	6.0	19	26.0	29	19.5	5	5.5
Total	193		133		151		73		149		91	