



## MALTA (MAT)

Population: 378 518 (end 1998)

Area: 316 km<sup>2</sup>



*The designations and the presentation of material on this map of the Member States of the WHO European Region (as at 31 July 1997) do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines represent approximate border lines for which there may not yet be full agreement.*

### 1. General information

The Maltese Islands are an archipelago with a total surface area of 316 km<sup>2</sup>. Two main islands - Malta and Gozo - are inhabited by about 375 000 permanent residents. The country has one of the highest population densities worldwide (over 1000/km<sup>2</sup>). Additionally, a significant number of tourists (up to a million yearly in recent years) visit the country, drawn by the sub-tropical Mediterranean climate and typical southern European way of life, making the tourist industry vital to the national economy. Air and sea travel are both important means of international travel.

Maltese citizens are entitled to a comprehensive system of free health services that are run on modern standards and criteria. Persons from countries with bilateral health care agreements with Malta also benefit from free treatment.

Within Maltese Law, the Prevention of Disease Ordinance provides for compulsory, confidential notification of communicable disease of public health significance. Reporting of food poisoning is notifiable in terms of Medical and Kindred Professions Ordinance. Doctors notify by completing the appropriate Infectious Disease Certificate which is posted to the Disease Surveillance Branch at the Department of Health.

Information on the occurrence of communicable disease is supplemented by results from the public service diagnostic laboratories. Regular reports about in-patients treated at the single isolation ward are also useful in detecting cases of gastroenteritis. Informal notifications to the Division - at times from non-medical sources - have also proved useful in early management of outbreaks.

During 1996, the role of collection and analysis of data at the Department of Health Information was taken over by Disease Surveillance Branch of the Department of Public Health. Investigation of notified cases of disease (sporadic and epidemic) is the responsibility of the Department of Public Health (Disease Surveillance Branch).

## 2. Statutory notification

### 2.1 Notified foodborne diseases

Tables MT 1 and MT 2 present the official notifications of foodborne disease received by the Health division during 1993 - 1998

Table MT1

**Notified cases of foodborne diseases**  
**Individual occurrences (in residents) in single cases**  
MALTA 1993 - 1998

| Disease                         | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---------------------------------|------|------|------|------|------|------|
| <b>Salmonellosis</b>            | 57   | 168  | 119  | 110  | 81   | 90   |
| <i>Incidence rate</i>           | 15.4 | 45.6 | 32.1 | 29.5 | 21.6 | 23.8 |
| <b>Typhoid Fever</b>            | -    | 1    | -    | 1    | 1    | -    |
| <i>Incidence rate</i>           | -    | 0.3  | -    | 0.3  | 0.3  | -    |
| <b><i>Campylobacter</i> f/p</b> | 49   | 16   | 8    | 28   | 21   | 21   |
| <i>Incidence rate</i>           | 13.2 | 4.3  | 2.2  | 7.5  | 5.6  | 5.6  |
| <b><i>E.coli</i> f/p</b>        | -    | 13   | 2    | 13   | 4    | 1    |
| <i>Incidence rate</i>           | -    | 3.5  | 0.5  | 3.5  | 1.1  | 0.3  |
| <b>Unspecified f/p</b>          | 14   | 28   | 30   | 50   | 72   | 95   |
| <i>Incidence rate</i>           | 3.8  | 7.6  | 8.1  | 13.4 | 19.2 | 25.2 |
| <b>Hepatitis A</b>              | 2    | 2    | 2    | 8    | 2    | 7    |
| <i>Incidence rate</i>           | 0.5  | 0.5  | 0.5  | 2.1  | 0.5  | 1.8  |
| <b>Shigellosis</b>              | 15   | 4    | -    | 3    | -    | -    |
| <i>Incidence rate</i>           | 4    | 1.1  | -    | 0.8  | -    | -    |
| <b>Giardiasis</b>               | -    | -    | -    | -    | 2    | -    |

f/p = food poisoning

Table MT 2

**Notified cases of foodborne diseases**  
**Individual occurrences in outbreak events (including non-residents)**  
 MALTA 1993 – 1998

| <b>Disease</b>             | <b>1993</b> | <b>1994</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Salmonellosis              | 92          | 177         | 225         | 744         | 181         | 378         |
| Bacillary dysentery        | 48          | -           | -           | 2           | 13          | 4           |
| <i>Campylobacter f/p</i>   | -           | -           | -           | 2           | 13          | 4           |
| <i>E. coli f/p</i>         | -           | -           | -           | 3           | -           | 2           |
| Toxic f/p                  | -           | 13          | 1           | 1           | 7           | 2           |
| <i>Bacillus cereus f/p</i> | -           | -           | -           | 92          | -           | -           |
| Hepatitis A                | -           | -           | -           | 6           | -           | 8           |
| Giardiasis                 | -           | -           | -           | 3           | -           | -           |

f/p = food poisoning

## 2.2 Laboratory confirmed detection of enteropathogenic organisms

Table MT 3

**Laboratory confirmed detection of enteropathogenic organisms**  
 MALTA 1993 -1998

| <b>Organism</b>              | <b>1993</b> | <b>1994</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <i>Salmonella</i>            | 271         | 317         | 197         | 170         | 148         | 187         |
| <i>Salmonella paratyphi</i>  | -           | -           | -           | -           | 1           | -           |
| <i>Salmonella typhi</i>      | -           | 2           | -           | -           | -           | -           |
| <i>Shigella</i>              | 69          | 5           | 2           | 4           | -           | 1           |
| <i>Campylobacter</i>         | 43          | 31          | 23          | 30          | 44          | 35          |
| <i>E. coli</i>               | 17          | 28          | 5           | 18          | 9           | 4           |
| <i>Clostridium difficile</i> | -           | -           | -           | 8           | 18          | -           |
| <i>Staphylococcus aureus</i> | -           | -           | -           | -           | 1           | -           |
| <i>Vibrio cholerae</i>       | -           | 1           | -           | -           | -           | -           |
| Hepatitis A                  | 12          | 3           | 2           | 5           | 2           | 21          |
| Rotavirus                    | 85          | 127         | 80          | N/A         | N/A         | N/A         |

N/A = not available

Table MT 4

**Enteropathogenic bacterial isolates**  
**SLH Microbiology Labs**  
 Malta 1993 – 1998

| Organism                             | 1993            | 1994 | 1995 | 1996 | 1997 | 1998 | Total      |
|--------------------------------------|-----------------|------|------|------|------|------|------------|
|                                      | No. of isolates |      |      |      |      |      |            |
| <i>Salmonella</i> Berta s.g.*        | 178             | 191  | 128  | 128  | 105  | 165  | <b>895</b> |
| <i>Salmonella</i> Typhimurium s.g.   | 59              | 84   | 56   | 21   | 24   | 11   | <b>255</b> |
| <i>Salmonella</i> Virchow s.g.       | 14              | 15   | 4    | 12   | 14   | 4    | <b>63</b>  |
| <i>Salmonella</i> Derby s.g.         | 1               | 4    | -    | -    | 1    | -    | <b>6</b>   |
| <i>Salmonella</i> Dubrovnik sub      | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Bovis morbificans  | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Cape               | 1               | 6    | -    | -    | -    | -    | <b>7</b>   |
| <i>Salmonella</i> Zerifin            | 2               | 7    | 3    | 5    | 2    | -    | <b>19</b>  |
| <i>Salmonella</i> Vichanga           | 1               | -    | -    | -    | -    | 1    | <b>2</b>   |
| <i>Salmonella</i> Drypool            | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> menden             | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Litchfield         | 4               | 4    | -    | -    | 1    | -    | <b>9</b>   |
| <i>Salmonella</i> Newport            | 2               | 1    | 3    | -    | -    | -    | <b>6</b>   |
| <i>Salmonella</i> Shikmonah          | -               | 1    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Vejle              | -               | 1    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Larochelle         | -               | 1    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Heidelberg         | -               | -    | -    | -    | -    | 1    | <b>1</b>   |
| <i>Salmonella</i> Rissen             | -               | -    | 1    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Ndolo              | -               | -    | 1    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Enterica           | -               | -    | -    | 1    | -    | 1    | <b>2</b>   |
| <i>Salmonella</i> Bardo              | -               | -    | -    | 1    | -    | 2    | <b>3</b>   |
| <i>Salmonella</i> Galiema            | -               | -    | -    | 1    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Gallinarum         | -               | -    | -    | -    | -    | 1    | <b>1</b>   |
| Grp A <i>Salmonella</i> sp           | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| Grp B <i>Salmonella</i> sp           | 3               | -    | -    | -    | -    | -    | <b>3</b>   |
| <i>Salmonella</i> Idikan             | -               | -    | -    | -    | 1    | -    | <b>1</b>   |
| Grp C <i>Salmonella</i> spp          | -               | -    | 1    | 1    | -    | 1    | <b>3</b>   |
| <i>Salmonella</i> spp                | -               | 2    | -    | -    | -    | -    | <b>2</b>   |
| <i>Salmonella</i> Grp 09 (not typhi) | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| <i>Salmonella</i> Typhi              | -               | 2    | -    | -    | -    | -    | <b>2</b>   |
| <i>Salmonella</i> Paratyphi B        | -               | -    | -    | -    | 1    | -    | <b>1</b>   |
| <i>Campylobacter jejuni</i>          | 25              | 17   | 9    | 23   | 36   | 26   | <b>136</b> |
| <i>Campylobacter</i> labecter        | 1               | -    | -    | -    | -    | -    | <b>1</b>   |
| <i>Campylobacter upsaliensis</i>     | -               | 2    | -    | -    | -    | -    | <b>2</b>   |
| <i>Campylobacter coli</i>            | 2               | 7    | 5    | 1    | 6    | 4    | <b>25</b>  |
| <i>Campylobacter cryaerophila</i>    | -               | 1    | -    | 2    | 1    | 1    | <b>5</b>   |
| <i>Campylobacter fetus fetus</i>     | -               | -    | -    | -    | 1    | -    | <b>1</b>   |
| <i>Campylobacter</i> var doylei      | -               | -    | -    | -    | -    | 1    | <b>1</b>   |
| <i>Campylobacter</i> spp             | 15              | 4    | 9    | 4    | -    | 3    | <b>35</b>  |
| Enteropathogenic (Ent.) E. coli      | 5               | -    | -    | -    | -    | 1    | <b>6</b>   |
| Ent. E. coli 0157                    | -               | -    | -    | 2    | -    | 1    | <b>3</b>   |
| Ent. E. coli 0126/K67                | -               | -    | -    | -    | 1    | -    | <b>1</b>   |
| Ent. E. coli 0128/K67 (B12)          | 4               | 1    | -    | 5    | -    | -    | <b>10</b>  |

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| <b>Organism</b>                   | <b>1993</b>            | <b>1994</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> | <b>Total</b> |
|-----------------------------------|------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
|                                   | <b>No. of isolates</b> |             |             |             |             |             |              |
| Ent. E. coli 0111/K58             | -                      | 1           | -           | 1           | -           | -           | <b>2</b>     |
| Ent. E. coli 0111/K58 (B4)        | 2                      | 2           | -           | -           | -           | -           | <b>4</b>     |
| Ent. E. coli 0114/K90 (B)         | 2                      | 3           | 1           | -           | -           | -           | <b>6</b>     |
| Ent. E. coli 0125/K70 (B15)       | 1                      | -           | -           | 2           | 1           | -           | <b>4</b>     |
| Ent. E. coli 026/K60 (B6)         | 1                      | 1           | -           | 1           | 1           | 1           | <b>5</b>     |
| Ent. E. coli 018C/K77             | -                      | 3           | -           | -           | -           | 1           | <b>4</b>     |
| Ent. E. coli 018C/K77 (B21)       | 2                      | 4           | 2           | 3           | -           | -           | <b>11</b>    |
| Ent. E. coli 0126/K71 (B16)       | -                      | 2           | -           | 1           | 5           | -           | <b>8</b>     |
| Ent. E. coli 055/K59 (B5)         | -                      | 4           | 2           | -           | -           | -           | <b>6</b>     |
| Ent. E. coli 086/K61              | -                      | -           | -           | -           | 1           | -           | <b>1</b>     |
| Ent. E. coli 086/K61 (B7)         | -                      | 5           | -           | -           | -           | -           | <b>5</b>     |
| Ent. E. coli 0127/K63 (B8)        | -                      | 1           | -           | -           | -           | -           | <b>1</b>     |
| Ent. E. coli 0128/K69 (B12)       | -                      | -           | -           | 1           | -           | -           | <b>1</b>     |
| Ent. E. coli 044/K74 (L)          | -                      | -           | -           | 1           | -           | -           | <b>1</b>     |
| Ent. E. coli 0112/K66 (B11)       | -                      | 1           | -           | -           | -           | -           | <b>1</b>     |
| Ent. E. coli 0119/K69             | -                      | -           | -           | 1           | -           | -           | <b>1</b>     |
| <i>Shigella sonnei</i>            | 68                     | 3           | -           | 1           | -           | -           | <b>72</b>    |
| <i>Shigella flexneri</i> 2        | -                      | -           | -           | 3           | -           | -           | <b>3</b>     |
| <i>Shigella flexneri</i> 4        | -                      | -           | 1           | -           | -           | -           | <b>1</b>     |
| <i>Shigella flexneri</i> 6        | 1                      | -           | 1           | -           | -           | -           | <b>2</b>     |
| <i>Shigella boydii</i> serotype 4 | -                      | 1           | -           | -           | -           | -           | <b>1</b>     |
| <i>Shigella boydii</i> 15         | -                      | 1           | -           | -           | -           | -           | <b>1</b>     |
| <i>Shigella dysenteriae</i> 2     | -                      | -           | -           | -           | -           | 1           | <b>1</b>     |
| <i>Vibrio cholerae</i>            | -                      | 1           | -           | -           | -           | -           | <b>1</b>     |
| <i>Clostridium difficile</i>      | -                      | -           | -           | 8           | 18          | -           | <b>26</b>    |
| <i>Staphylococcus aureus</i>      | -                      | -           | -           | -           | 1           | -           | <b>1</b>     |

\* Note: *Salmonella berta* subgroup(s.g). From 1993-1998 it was not possible to identify the exact serovar of this subgroup because the necessary commercial antisera were not available until 2000. However random samples of these isolates sent to reference laboratories abroad showed that in all instances they were *Salmonella* Enteritidis phage type 4. Since it is not possible to confirm that all these isolates were *S. Enteritidis* they have been reported as belonging to *Salmonella berta* subgroup.

3. Epidemiologically investigated outbreaks

Table MT 5

**Epidemiologically investigated foodborne outbreaks (including non-residents)**  
MALTA 1993 - 1998

| Year              | Causative agent        | No. of Cases      | Incriminated food  | Place of contamination       | Place of consumption      |             |
|-------------------|------------------------|-------------------|--------------------|------------------------------|---------------------------|-------------|
| 1993              | <i>Salm. berta</i> *   | 18                | Unknown            | kitchen (utensils)           | hotel                     |             |
|                   | <i>Salm. berta</i>     | 26                | Lasagne            | kitchen                      | hotel                     |             |
|                   | <i>Salm. berta</i>     | 3                 | Unknown            | unknown                      | family meal               |             |
|                   | <i>Salm. berta</i>     | 3                 | Unknown            | unknown                      | family meal               |             |
|                   | <i>Salm. berta</i>     | 16                | Ham (?)            | confectioner                 | party                     |             |
|                   | <i>Salm. berta</i>     | 26                | Various food items | kitchen                      | hotel                     |             |
|                   | <i>Shigella</i>        | 9                 | Water              | kitchen water supply         | sports club               |             |
|                   | <i>Shigella sonnei</i> | 39                | Unknown            | kitchen                      | residence for the elderly |             |
|                   | <i>Shigella sonnei</i> | 21                | Barbecue food      | insufficient (?) thawing     | civil prisons             |             |
|                   | <i>C. jejuni</i>       | 350               | roast chicken      | kitchen                      | hotel                     |             |
|                   | Unspecified            | 38                | Unknown            | unknown                      | hotel                     |             |
|                   | Unspecified            | 5                 | fish (lampuka)     | "                            | family meal               |             |
|                   | 1994                   | <i>Salmonella</i> | 3                  | Unknown                      | "                         | family meal |
|                   |                        | <i>Salmonella</i> | 49                 | "                            | "                         | Mellieha    |
| <i>Salmonella</i> |                        | 3                 | "                  | "                            | family meal               |             |
| <i>Salmonella</i> |                        | 4                 | "                  | "                            | restaurant                |             |
| <i>Salmonella</i> |                        | 4                 | "                  | "                            | family meal               |             |
| <i>Salmonella</i> |                        | 70                | "                  | "                            | flight caterers           |             |
| <i>Salmonella</i> |                        | 13                | "                  | "                            | hotel                     |             |
| <i>Salmonella</i> |                        | 2                 | "                  | "                            | family meal               |             |
| <i>Salmonella</i> |                        | 22                | "                  | "                            | hospital                  |             |
| <i>Salmonella</i> |                        | 2                 | "                  | "                            | family meal               |             |
| <i>Salmonella</i> |                        | 3                 | "                  | "                            | family meal               |             |
| Scombrototoxic    |                        | 13                | fish               | "                            | "                         |             |
| Unspecified       |                        | 85                | Salad              | "                            | canteen                   |             |
| Unspecified       |                        | 2                 | unknown            | "                            | family meal               |             |
| Unspecified       |                        | 2                 | "                  | "                            | hotel                     |             |
| Unspecified       |                        | 26                | "                  | "                            | Tarxien                   |             |
| Unspecified       |                        | 2                 | "                  | "                            | family meal               |             |
| Unspecified       |                        | 2                 | "                  | "                            | family meal               |             |
| Unspecified       |                        | 2                 | "                  | "                            | family meal               |             |
| Unspecified       |                        | 3                 | "                  | "                            | family meal               |             |
| Unspecified       |                        | 50                | "                  | "                            | M.I. Airport              |             |
| Unspecified       |                        | 24                | "                  | "                            | hospital                  |             |
| Unspecified       |                        | 5                 | "                  | "                            | family meal               |             |
| Unspecified       |                        | 3                 | "                  | "                            | home f. elderly           |             |
| Unspecified       |                        | 15                | "                  | "                            | restaurant                |             |
| Unspecified       |                        | 3                 | "                  | "                            | hotel                     |             |
| Unspecified       |                        | 8                 | "                  | "                            | hospital                  |             |
| Unspecified       |                        | 7                 | "                  | "                            | hospital                  |             |
| 1995              | <i>Salmonella</i>      | 86                | unknown            | Deficient hygiene in kitchen | hospital                  |             |

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| <b>Year</b>            | <b>Causative agent</b> | <b>No. of Cases</b> | <b>Incriminated food</b> | <b>Place of contamination</b>            | <b>Place of consumption</b> |                 |
|------------------------|------------------------|---------------------|--------------------------|--|-----------------------------|-----------------|
| <b>1995</b><br>(cont.) | <i>Salm. berta</i>     | 5                   | "                        | improper food handling                   | home for the elderly        |                 |
|                        | <i>Salm. berta</i>     | 68                  | "                        | Kitchen                                  | hotel                       |                 |
|                        | <i>Salm. berta</i>     | 2                   | "                        | unknown                                  | hospital                    |                 |
|                        | <i>Salm. berta</i>     | 4                   | "                        | "  | family meal                 |                 |
|                        | <i>Salm. berta</i>     | 17                  | "                        | kitchen                                  | hotel                       |                 |
|                        | <i>Salm. berta</i>     | 4                   | "                        | Unknown                                  | family meal                 |                 |
|                        | <i>Salm. berta</i>     | 2                   | "                        | "  | family meal                 |                 |
|                        | <i>Salm. berta</i>     | 36                  | "                        | kitchen                                  | school canteen              |                 |
|                        | Unspecified            | 2                   | "                        | unknown                                  | family meal                 |                 |
|                        | Unspecified            | 4                   | "                        | "  | hospital                    |                 |
|                        | Unspecified            | 5                   | "                        | "  | hospital                    |                 |
|                        | Unspecified            | 8                   | "                        | "  | hospital                    |                 |
|                        | Unspecified            | 2                   | "                        | "  | family meal                 |                 |
|                        | Unspecified            | 9                   | "                        | Deficient hygiene in kitchen             | hospital                    |                 |
|                        | Unspecified            | 45                  | "                        | unknown                                  | hospital                    |                 |
|                        | Unspecified            | 7                   | "                        | "  | hospital                    |                 |
|                        | Unspecified            | 5                   | "                        | "  | family meal                 |                 |
|                        | Unspecified            | 16                  | "                        | "  | guest house                 |                 |
|                        | Unspecified            | 4                   | "                        | "  | family meal                 |                 |
|                        | Unspecified            | 3                   | "                        | "  | restaurant                  |                 |
|                        | Unspecified            | 2                   | "                        | "  | family meal                 |                 |
|                        | Unspecified            | 3                   | "                        | "  | family meal                 |                 |
|                        | Unspecified            | 2                   | "                        | "  | family                      |                 |
|                        | Unspecified            | 7                   | "                        | "  | snack bar                   |                 |
|                        | Unspecified            | 6                   | "                        | "  | restaurant                  |                 |
|                        | Unspecified            | 12                  | "                        | "  | confectionary               |                 |
|                        | Unspecified            | 3                   | "                        | "  | restaurant                  |                 |
|                        | Unspecified            | 53                  | "                        | "  | improper food handling      | hotel           |
|                        | Unspecified            | 8                   | "                        | "  | unknown                     | factory canteen |
|                        | Unspecified            | 7                   | "                        | "  | "                           | hotel           |
|                        | Unspecified            | 3                   | "                        | "  | "                           | family meal     |
|                        | Unspecified            | 8                   | "                        | "  | "                           | rest home       |
| <b>1996</b>            | <i>Salmonella</i>      | 5                   | "                        | unknown                                  | holiday complex             |                 |
|                        | <i>Salm. berta</i>     | 50                  | "                        | kitchen                                  | party                       |                 |
|                        | <i>Salm. berta</i>     | 2                   | "                        | unknown                                  | school                      |                 |
|                        | <i>Salm. berta</i>     | 203                 | "                        | "  | "                           |                 |
|                        | <i>Salm. berta</i>     | (15 O/Bs)           | party items              | improper storage due to overload of work | confectionary               |                 |
|                        | <i>Salm. berta</i>     | 8                   | unknown                  | unknown                                  | caterer                     |                 |
|                        | <i>Salm. berta</i>     | 37                  | "                        | kitchen                                  | outside caterers            |                 |
|                        | <i>Salm. berta</i>     | 28                  | "                        | kitchen                                  | outside caterers            |                 |
|                        | <i>Salm. berta</i>     | 3                   | "                        | "  | family meal                 |                 |
|                        | <i>Salm. berta</i>     | 2                   | unknown                  | unknown                                  | confectionary               |                 |
|                        | <i>Salm. berta</i>     | 2                   | "                        | "  | family meal                 |                 |
|                        | <i>Salm. berta</i>     | 187                 | "                        | improper food handling                   | hotel                       |                 |
|                        | <i>Salm. berta</i>     | 16                  | "                        | kitchen                                  | outside caterers            |                 |
|                        | <i>Salm. berta</i>     | 92                  | "                        | Foodhandling                             | outside caterers            |                 |
|                        | <i>Salm. berta</i>     | 12                  | "                        | improper foodhandling                    | confectionary               |                 |
|                        | <i>Salm. berta</i>     | 16                  | "                        | food handling                            | outside caterers            |                 |
|                        | <i>S. Typhimurium</i>  | 6                   | "                        | unknown                                  | confectionary               |                 |
|                        | <i>S. Typhimurium</i>  | 3                   | "                        | "  | restaurant                  |                 |

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|------------------------|----------------------------------|---------------------|--------------------------|-------------------------------|-----------------------------|-------------|
| <b>1996</b><br>(cont.) | <i>S. Virchow</i>                | 45                  | "                        | kitchen                       | confectionary               |             |
|                        | <i>Salmonella</i><br>Virchow     | 2                   | "                        | unknown                       | family meal                 |             |
|                        | <i>Salmonella</i>                | 21                  | rice balls               | kitchen                       | confectionary               |             |
|                        | <i>Salmonella</i>                | 6                   | unknown                  | unknown                       | restaurant                  |             |
|                        | <i>Salmonella</i>                | 2                   | "                        | "                             | family meal                 |             |
|                        | Hepatitis A                      | 3                   | "                        | "                             | unknown                     |             |
|                        | <i>E. coli</i> 0119/K69<br>(B14) | 3                   | "                        | "                             | family meal                 |             |
|                        | Giardiasis                       | 3                   | "                        | "                             | unknown                     |             |
|                        | B.cereus                         | 92                  | rice                     | "                             | hotel                       |             |
|                        | <i>C. jejuni</i>                 | 2                   | unknown                  | "                             | family meal                 |             |
|                        | Hepatitis A                      | 3                   | "                        | "                             | unknown                     |             |
|                        | Unspecified                      | 3                   | "                        | "                             | family meal                 |             |
|                        | Unspecified                      | 3                   | "                        | "                             | family meal                 |             |
|                        | Unspecified                      | 10                  | "                        | imported                      | Tunisia                     |             |
|                        | Unspecified                      | 6                   | "                        | unknown                       | restaurant                  |             |
|                        | Unspecified                      | 2                   | "                        | "                             | snack bar                   |             |
|                        | Unspecified                      | 3                   | "                        | unknown                       | restaurant                  |             |
|                        | Unspecified                      | 2                   | "                        | chicken nuggets               | restaurant                  |             |
|                        | Unspecified                      | 2                   | "                        | imported                      | Egypt                       |             |
|                        | Unspecified                      | 2                   | "                        | imported                      | Libja                       |             |
|                        | Unspecified                      | 3                   | "                        | unknown                       | restaurant                  |             |
|                        | Unspecified                      | 2                   | "                        | "                             | restaurant                  |             |
|                        | Unspecified                      | 2                   | "                        | imported                      | Egypt                       |             |
|                        | Unspecified                      | 3                   | "                        | unknown                       | family meal                 |             |
|                        | Unspecified                      | 2                   | "                        | "                             | family meal                 |             |
|                        | Unspecified                      | 2                   | "                        | "                             | family meal                 |             |
|                        | Unspecified                      | 4                   | "                        | "                             | family meal                 |             |
|                        | Unspecified                      | 22                  | "                        | improper food- handling       | canteen                     |             |
|                        | <b>1997</b>                      | <i>Salm. berta</i>  | 2                        | unknown                       | unknown                     | family meal |
|                        |                                  | <i>Salm. berta</i>  | 2                        | "                             | "                           | family meal |
| <i>Salm. berta</i>     |                                  | 2                   | "                        | "                             | restaurant                  |             |
| <i>Salm. berta</i>     |                                  | 3                   | "                        | "                             | family meal                 |             |
| <i>Salm. berta</i>     |                                  | 3                   | "                        | "                             | family meal                 |             |
| <i>Salm. berta</i>     |                                  | 2                   | "                        | "                             | family meal                 |             |
| <i>Salm. berta</i>     |                                  | 143                 | "                        | kitchen                       | hospital                    |             |
| <i>Salm. berta</i>     |                                  | 3                   | "                        | unknown                       | family meal                 |             |
| <i>Salm. berta</i>     |                                  | 3                   | "                        | "                             | family meal                 |             |
| <i>S. Virchow</i>      |                                  | 2                   | "                        | "                             | family meal                 |             |
| <i>S. Typhimurium</i>  |                                  | 2                   | "                        | "                             | family meal                 |             |
| <i>S. Zerifin</i>      |                                  | 2                   | "                        | kitchen                       | restaurant                  |             |
| <i>Salmonella</i>      |                                  | 6                   | "                        | unknown                       | family meal                 |             |
| <i>Salmonella</i>      |                                  | 2                   | "                        | "                             | family meal                 |             |
| <i>Salmonella</i>      |                                  | 2                   | "                        | kitchen                       | restaurant                  |             |
| <i>Salmonella</i>      |                                  | 2                   | "                        | unknown                       | family meal                 |             |
| <i>C. jejuni</i>       |                                  | 2                   | "                        | "                             | family meal                 |             |
| <i>Campylobacter</i>   |                                  | 3                   | "                        | unknown                       | family meal                 |             |
| <i>C. jejuni</i>       |                                  | 8                   | "                        | imported                      | Tunisia                     |             |
| Scombrotoxic           |                                  | 3                   | fish                     | unknown                       | family meal                 |             |
| Scombrotoxic           |                                  | 2                   | unknown                  | "                             | hotel                       |             |
| Toxic                  |                                  | 2                   | "                        | unknown                       | restaurant                  |             |
| Unspecified            |                                  | 2                   | "                        | kitchen                       | restaurant                  |             |
| Unspecified            |                                  | 17                  | "                        | improper food-handling        | restaurant                  |             |



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|------------------------|------------------------|---------------------|--------------------------|-------------------------------|-----------------------------|
| <b>1997</b><br>(cont.) | Unspecified            | 4                   | "                        | improper food-handling        | snack bar                   |
|                        | Unspecified            | 3                   | "                        | kitchen                       | hotel                       |
|                        | Unspecified            | 2                   | "                        | kitchen                       | restaurant                  |
|                        | Unspecified            | 2                   | "                        | kitchen surfaces              | restaurant                  |
|                        | Unspecified            | 13                  | "                        | kitchen                       | hotel                       |
|                        | Unspecified            | 3                   | "                        | kitchen                       | hospital                    |
|                        | Unspecified            | 52                  | "                        | unknown                       | flight caterers             |
|                        | Unspecified            | 3                   | "                        | unknown                       | hotel                       |
|                        | Unspecified            | 28                  | "                        | kitchen                       | hospital                    |
|                        | Unspecified            | 4                   | "                        | kitchen                       | restaurant                  |
|                        | Unspecified            | 5                   | "                        | unknown                       | caterer                     |
|                        | Unspecified            | 2                   | "                        | kitchen                       | restaurant                  |
|                        | Unspecified            | 69                  | "                        | kitchen                       | hotel                       |
|                        | Unspecified            | 2                   | "                        | unknown                       | family meal                 |
|                        | Unspecified            | 13                  | "                        | kitchen                       | caterers                    |
|                        | Unspecified            | 4                   | "                        | imported                      | Tunisia                     |
|                        | Unspecified            | 22                  | "                        | kitchen                       | caterer                     |
|                        | Unspecified            | 2                   | "                        | kitchen                       | home for the elderly        |
|                        | Unspecified            | 10                  | "                        | kitchen                       | hotel                       |
|                        | Unspecified            | 2                   | "                        | unknown                       | family meal                 |
|                        | Unspecified            | 2                   | "                        | unknown                       | snack bar                   |
|                        | Unspecified            | 2                   | "                        | imported                      | Tunisia                     |
|                        | Unspecified            | 2                   | "                        | imported                      | Tunisia                     |
|                        | Unspecified            | 2                   | unknown                  | imported                      | Tunisia                     |
|                        | Unspecified            | 38                  | "                        | kitchen                       | hotel                       |
|                        | Unspecified            | 3                   | "                        | kitchen surfaces              | confectionary               |
|                        | Unspecified            | 2                   | "                        | kitchen                       | restaurant                  |
|                        | Unspecified            | 2                   | "                        | unknown                       | family meal                 |
|                        | Unspecified            | 8                   | "                        | unknown                       | school canteen              |
|                        | Unspecified            | 3                   | "                        | imported                      | Tunisia                     |
|                        | Unspecified            | 12                  | "                        | unknown                       | institution                 |
|                        | Unspecified            | 3                   | "                        | kitchen                       | canteen                     |
| Unspecified            | 2                      | "                   | unknown                  | caterer                       |                             |
| <b>1998</b>            | <i>Salm. berta</i>     | 2                   | chicken                  | kitchen                       | family meal                 |
|                        | <i>Salm. berta</i>     | 4                   | chicken                  | unknown                       | restaurant/take away        |
|                        | <i>Salm. berta</i>     | 3                   | unknown                  | "                             | family meal                 |
|                        | <i>Salm. berta</i>     | 2                   | Chicken                  | kitchen                       | family meal                 |
|                        | <i>Salm. berta</i>     | 8                   | "                        | "                             | hotel                       |
|                        | <i>Salm. berta</i>     | 26                  | Mayonaise                | "                             | hotel                       |
|                        | <i>Salm. berta</i>     | 77                  | stuffed eggs             | unknown                       | caterers                    |
|                        | <i>Salm. berta</i>     | 5                   | cake                     | storage                       | confectionary               |
|                        | <i>Salm. berta</i>     | 4                   | cake                     | storage                       | confectionary               |
|                        | <i>Salm. berta</i>     | 3                   | unknown                  | unknown                       | family meal                 |
|                        | <i>Salm. berta</i>     | 3                   | "                        | "                             | family meal                 |
|                        | <i>Salm. berta</i>     | 2                   | "                        | "                             | family meal                 |
|                        | <i>Salm. berta</i>     | 3                   | left overs from party    | "                             | family meal                 |
|                        | <i>Salm. berta</i>     | 3                   | pasta with cream and ham | "                             | family meal                 |
|                        | <i>Salm. berta</i>     | 18                  | unknown                  | "                             | caterers                    |
|                        | <i>Salm. berta</i>     | 3                   | unknown                  | unknown                       | restaurant                  |
|                        | <i>Salm. berta</i>     | 4                   | baked maccaroni          | "                             | family meal                 |

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|-----------------|------------------------|----------------------------|---|-------------------------------|-----------------------------|
| 1998<br>(cont.) | <i>Salm. berta</i>     | 2                          | chicken                                 | "                             | restaurant                  |
|                 | <i>Salm. berta</i>     | 6                          | unknown                                 | "                             | hotel                       |
|                 | <i>Salm. berta</i>     | 4                          | uncooked macaroni<br>with egg and sauce | "                             | family meal                 |
|                 | <i>Salm. berta</i>     | 3                          | unknown                                 | "                             | family meal                 |
|                 | <i>Salm. berta</i>     | 4                          | Pizza                                   | "                             | restaurant                  |
|                 | <i>Salm. berta</i>     | 20                         | unknown                                 | "                             | camping                     |
|                 | <i>Salm. berta</i>     | 2                          | hamburger                               | "                             | mobile kiosk                |
|                 | <i>Salm. berta</i>     | 39                         | unknown                                 | "                             | hotel                       |
|                 | <i>Salm. berta</i>     | 117                        | Sea food items                          | "                             | caterers                    |
|                 | <i>Salm. berta</i>     | 2                          | hamburgers                              | "                             | take away                   |
|                 | <i>S. Gallinarum</i>   | 4                          | hamburger                               | "                             | restaurant                  |
|                 | <i>Salmonella</i>      | 5                          | eggs                                    | "                             | family meal                 |
|                 | <i>E. coli O18 K77</i> | 2                          | unknown                                 | "                             | family meal                 |
|                 | Hepatitis A            | 8                          | unknown                                 | "                             | family meal                 |
|                 | Scombrototoxic         | 2                          | Fish                                    | "                             | restaurant (non-residents)  |
|                 | <i>Campylobacter</i>   | 4                          | baked macaroni                          | "                             | take away                   |
|                 | Unspecified            | 4                          | unknown                                 | "                             | airline<br>(imported)       |
|                 | Unspecified            | 2                          | sweet pastry                            | storage                       | family meal                 |
|                 | Unspecified            | 4                          | fish                                    | storage                       | restaurant                  |
|                 | Unspecified            | 3                          | unknown                                 | unknown                       | hotel (imported)            |
|                 | Unspecified            | 2                          | kebabs                                  | "                             | mobile kiosk                |
|                 | Unspecified            | 2                          | pasta with salmon                       | "                             | family meal                 |
|                 | Unspecified            | 2                          | gammon                                  | "                             | family meal                 |
|                 | Unspecified            | 3                          | unknown                                 | "                             | family<br>(imported)        |
|                 | Unspecified            | 9                          | "                                       | "                             | hospital                    |
|                 | Unspecified            | 3                          | "                                       | "                             | family meal                 |
|                 | Unspecified            | 10                         | "                                       | "                             | canteen                     |
|                 | Unspecified            | 45                         | "                                       | "                             | hotel (imported)            |
|                 | Unspecified            | 2                          | eggs                                    | unknown                       | family meal                 |
|                 | Unspecified            | 3                          | eggs                                    | "                             | family meal                 |
|                 | Unspecified            | 67                         | Chicken                                 | kitchen                       | hospital                    |
|                 | Unspecified            | 2                          | Pasta with cream and<br>mushroom        | fridge                        | restaurant                  |
|                 | Unspecified            | 6                          | salad                                   | storage                       | restaurant                  |
| Unspecified     | 50                     | unknown                    | foodhandler                             | home for the<br>elderly       |                             |
| Unspecified     | 19                     | unknown                    | unknown                                 | home for the<br>elderly       |                             |
| Unspecified     | 18                     | "                          | "                                       | hospital                      |                             |
| Unspecified     | 11                     | Stew with liver<br>unknown | storage<br>unknown                      | hotel                         |                             |
| Unspecified     | 7                      | unknown                    | unknown                                 | hotel                         |                             |
| Unspecified     | 4                      | pasta with meat sauce      | "                                       | canteen                       |                             |
| Unspecified     | 4                      | unknown                    | "                                       | restaurant                    |                             |

\* See footnote of Table MT 4.

Figure MT 1

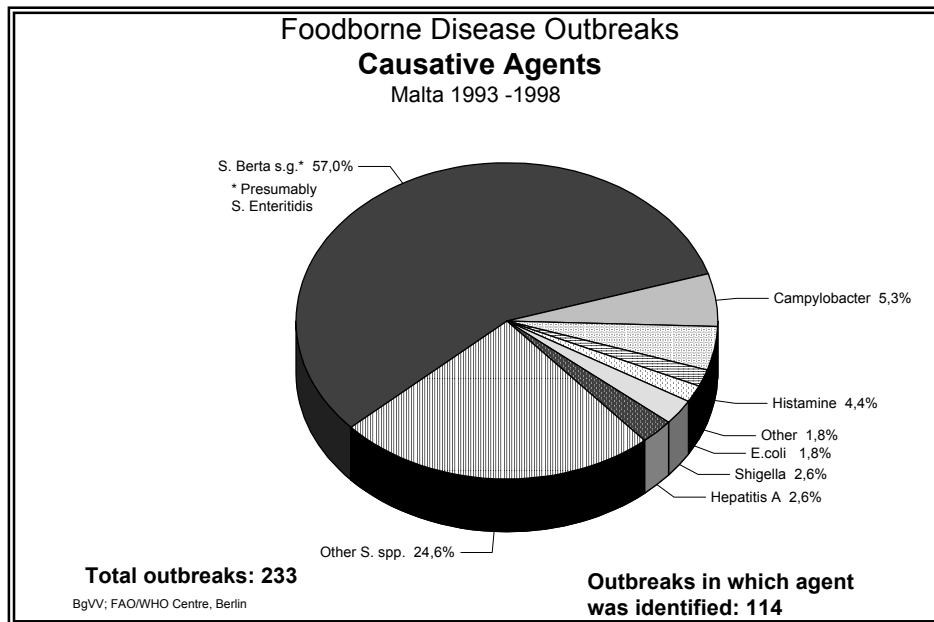


Figure MT 2

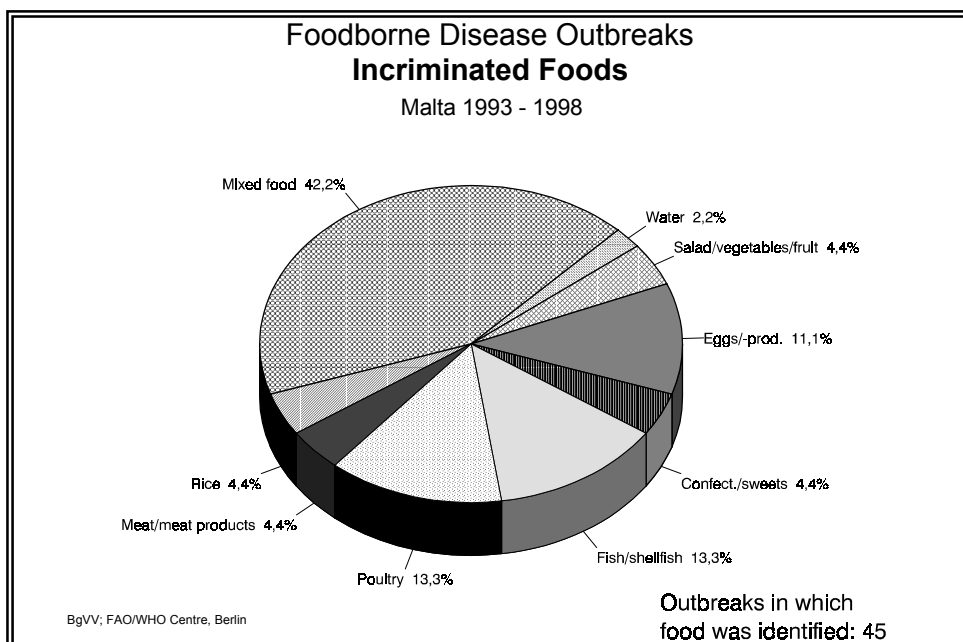
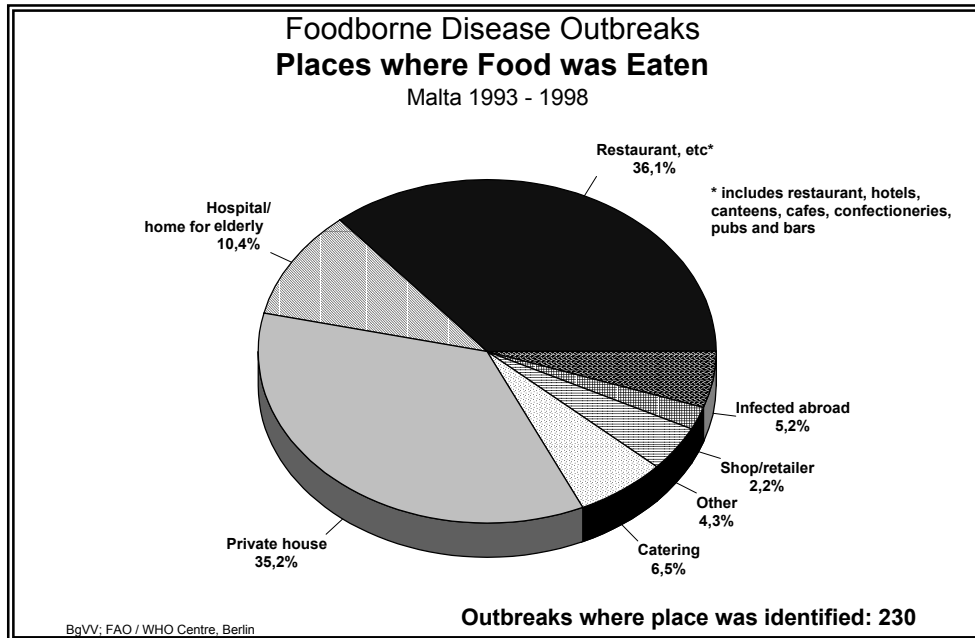


Figure MT 3



#### 4. Additional Information

#### **Brucellosis in Malta**

Figure MT 4

