

## 9. *Echinococcus*

### 9.1. *Echinococcus* in animals

#### Eradication / surveillance system

Surveillance and control of *Echinococcus* through meat inspection is provided for in Council Directive 64/433/EEC. Mandatory meat inspection covers all known potential intermediate host species. All carcasses intended for human consumption are inspected for evidence of hydatid cysts. Identification of the cyst at meat inspection in animal tissues leads to condemnation of that part of the carcass.

In Denmark and Belgium, *Echinococcus granulosus* infections in all animals are notifiable. In Finland, Italy, Sweden and Norway, echinococcosis is notifiable. In The Netherlands, rules for notification of echinococcosis in domesticated farm animals are in force since 1996.

In Greece, a control programme is run since 1985. Emphasis is placed on registration and collection of stray dogs. Preventive treatment of all owned (pet) dogs with antiparasitic drugs is routinely done. In addition to the inspection of all carcasses in the slaughterhouses the examination of some sheep-herd dogs (Arecoline test) and the treatment of infected dogs with praziquantel are part of the controls and surveillance in place.

In some regions of Portugal (Alentejo, Beira Interior and Algarve), where based on Veterinary Health data the incidence of this zoonosis is greater, a control program was implemented. This program is linked with the rabies vaccination programme. All dogs present at rabies vaccination in a clinical practice are dewormed. Additionally, dogs belonging to farms where sheep and goats with hidatidosis lesions were observed (the information of lesions in farm animals comes through the abattoir) are treated with an antiparasitic drug. Furthermore educational actions have taken place among dog owners and farmers.

In Finland, Sweden and Norway, specific measures are implemented to prevent that *E. multilocularis* is introduced into the country. In Sweden imported dogs must be treated with praziquantel. To control *E. granulosus* reindeer owners have been advised to deworm their dogs. In Finland, dogs older than 3 months, must be treated with an anthelmintic drug during the last 30 days before entering Finland since June 15<sup>th</sup> 2002. This treatment is not required from dogs entering Finland from Sweden, United Kingdom, Ireland, Norway (except the Spitzbergen area), USA, Canada or Switzerland. In Norway, dogs imported to Norway, except those imported from Sweden and Finland, must be treated with an anti-helmintic drug the last ten days before entering Norway and also one week after arrival. Due to recent findings of *E. multilocularis* in the archipelago of Svalbard, the Norwegian Animal Health Authority require that dogs and cats that are introduced into mainland Norway from Svalbard must be treated with an anti-helmintic drug approved for treatment of *E. multilocularis*. Treatment with an anti-helmintic drug is also advocated on a general basis, especially for herd dogs in areas with reindeer.

In Finland, to support meat inspection surveillance in 2003, 670 adult moose were sampled from different locations, mostly from locations where echinococcosis is considered endemic because of earlier findings in reindeer or because of the abundance of wolves and parasite findings in them. In addition, faecal samples of wolves were investigated for detecting *Echinococcus*-specific antigens using the coproantigen ELISA. In addition, small rodents are checked regularly for gross parasitological conditions.

In the Netherlands, a survey in 2002 to 2003 was carried out in the most southern province, Limburg, to estimate the prevalence of *E. multilocularis* in foxes in this area.

## Recent situation

Results available on *Echinococcus* findings are summarised in Table AN – 9.1.1 to AN – 9.1.3 in the Annex. Usually Member States provided data on *Echinococcus* on the genus level. Some countries have reported for the two species *E. granulosus* and *E. multilocularis* separately.

## Countries where *E. granulosus* is known to be prevalent

In the Mediterranean region of the European Union, *E. granulosus* is known to be prevalent (Table EH 1). Data available from Greece, Italy, Portugal and Spain in sheep, goat, cattle, pigs and wildlife confirm this. Figure EH 1 shows the development of prevalence rates over the years in sheep and goats.

**Table EH 1. Countries where *E. granulosus* is prevalent (Mediterranean region of the European Union)**

	2000		2001		2002		2003	
	Invest.	% <i>Echino-coccus</i>	Invest.	% <i>Echino-coccus</i>	Invest.	% <i>Echino-coccus</i>	Invest.	% <i>Echino-coccus</i>
<b>Sheep and goats</b>								
Greece <sup>1</sup>	1621269	2,9	1627489	3,2	1296402	3,2	1122990	2,8
Greece <sup>2</sup>	613970	0,8	729581	0,8	517305	0,6	465346	0,5
Italy <sup>1</sup>	870134	6,9	856776	6,1	1465393	2,0	960670	6,3
Italy <sup>2</sup>	193523	1,0	45566	6,3	34904	2,9	40657	1,6
Portugal	-	23 isolates	-	-	-	1 isolate	-	-
Spain	16615776	1,0	15934720	1,2	16451841	1,0	16964323	0,7
<b>Cattle</b>								
Greece	94366	3,3	156281	1,9	130319	1,4	116244	1,0
Italy	1384512	1,0	1030055	1,4	909838	0,9	841180	1,4
Portugal	-	-	-	-	-	0	-	-
Spain	2567505	1,0	2391884	0,8	2723948	0,7	2881177	0,6
<b>Pigs</b>								
Greece	436608	0,01	601402	0,00	510294	1,0	440658	0,0
Italy	5416214	0,02	5161319	0,03	5020064	0,02	4424079	0,01
Portugal	-	2 isolates	-	-	-	-	-	-
Spain <sup>3</sup>	30981008	0,20	31190138	0,04	33320691	0,03	34568215	0,03
Spain <sup>4</sup>	156898	0,33	151848	0,36	156266	0,6	50980	1,8
<b>Solipeds</b>								
Spain	34503	0,24	45606	0,09	31003	0,08	26145	0,03
Italy	56290	1,64	57411	0,09	71706	0,05	131767	0,1
<b>Wild boars</b>								
Italy	211	3,8	3501	1,51	9224	1,7	8293	0,0
Spain	71240 <sup>3</sup>	0,07	128053	0,15	75813	13,5	33946	0,2

<sup>1</sup> Sheep

<sup>2</sup> Goat

<sup>3</sup> Slaughter at slaughterhouse

<sup>4</sup> Slaughter at home

- No information available

In Greece situation in sheep decreased to the same level seen in 2000, in goats situation remained at the level observed in the previous year. Infection rate in cattle has continued to decrease in 2003. In pigs, the prevalence was similar to the situation reported 2000 and 2001, in 2003 no findings were reported. In 2002, 1% of the animals were found positive.

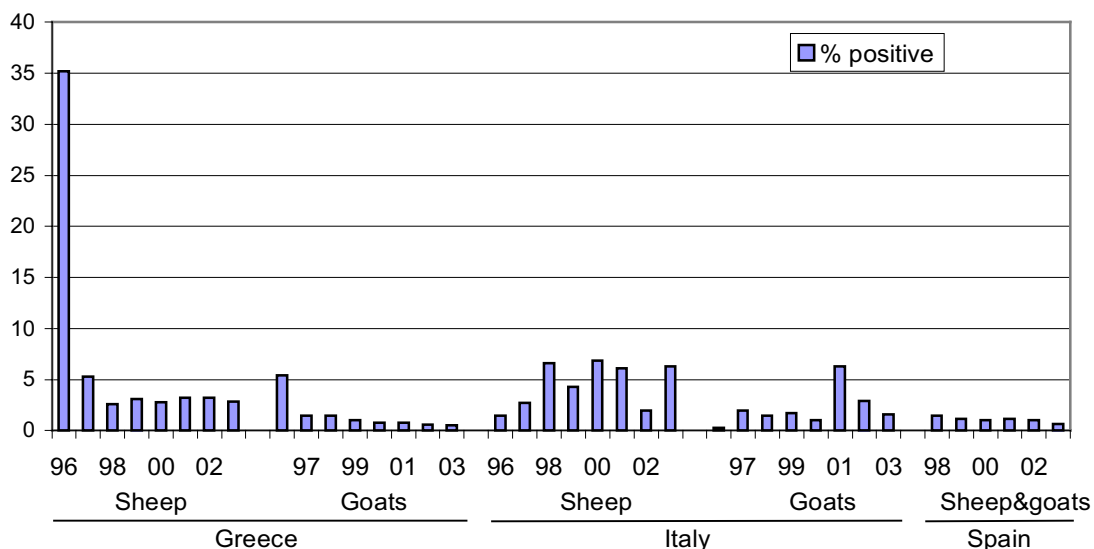
In Italy, the infection rate increased in sheep to the level observed in 2000 and 2001. In goats the prevalence observed in 2003 was similar to the level before the major increase in 2001. In cattle, pigs and solipeds situation remained comparable to the previous year. In wild

boars, no *Echinococcus* findings were reported in 2003, where as in 2002 1,7 % of the animals were positive.

Portugal provided no information on their echinococcosis situation in animals in 2003. In previous years very limited data on some findings of *E. granulosus* in sheep, goats and pigs were reported.

In Spain *E. granulosus* was detected in domestic food producing animals at a level comparable to previous years. In pigs, the share positive animals increased to 1,8 % compared to 0,6 % in 2002 and 0,4 % in 2001. This is due to an increase observed in domestic pigs slaughtered at home. A slightly increasing tendency had been observed already in 2002. During 2002, 13,5% of the wild boars were infected with *Echinococcus spp.*, which was considerably higher compared to the reports from previous years. In 2003, the rate infected wild boars was comparable to the situation before 2002.

Figure EH 1. *Echinococcus* infections in sheep and goats in countries where *E. granulosus* is prevalent (Mediterranean region of the European Union) (1996 – 2003)



### Investigations in other countries

In other Member States, no positive findings were reported in livestock in 2003. In Belgium, a few partial rejections were noted. This was similar to the situation in previous years.

In Finland, *E. granulosus* was detected in reindeer (0,03%) during meat inspection, but not in any cattle, sheep, goat, pig or horse carcasses inspected in the framework of official meat inspection. *E. granulosus* was not detected in the intestine of ten wolves tested, but in the faecal samples of 15 % of 91 wolves by the coproantigen ELISA test. No *Echinococcus* positive dogs were found by autopsy or by the coproantigen ELISA test.

In Norway, in one reindeer pathological examination revealed changes compatible with *E. granulosus* infestation.

### *E. multilocularis*

Some countries reported on investigations on *E. multilocularis* in foxes (Table EH 2) or other wildlife.

*E. multilocularis* has never been reported in Finland. As in previous years, in several surveys run in 2003, small mammals, voles and foxes were tested, all with negative results.

*E. multilocularis* has neither ever been reported in Sweden. In the annual survey conducted in order to investigate the presence of *E. multilocularis* in the Swedish fox population, all 394 foxes tested were negative.

In Denmark, *E. multilocularis* had been detected in foxes in 2000. Since 2001, none of the foxes tested were positive.

In Austria, again foxes tested were positive for *E. multilocularis*. In 2003, 5,6 % of the 807 foxes were positive. The animals were from upper and lower Austria.

In France *E. multilocularis* was reported in previous years. No information is available from this country for 2002 or 2003.

In Germany, as in previous years, *E. multilocularis* was frequently detected in foxes. In 2003, 33,4 % of 4483 samples tested were positive.

In Luxembourg, again *E. multilocularis* was frequently detected in foxes.

In the Netherlands, in previous years, foxes in the province of Groningen and in the southern part of Zuid-Limburg were detected positive for *E. multilocularis*. In 2002, 25 foxes were tested for *E. multilocularis* by intestinal scraping technique and by PCR of the colon contents. Of these, 3 foxes were positive for *E. multilocularis*. In 2003, 22 (12,9 %) of 171 foxes tested were positive.

In mainland Norway, *E. multilocularis* has never been detected in any animal species although no systematic investigation has ever been undertaken in wild animals. In the archipelago of Svalbard, *E. multilocularis* was reported in previous years in sibling voles, polar foxes, and in dogs. During 2003, *E. multilocularis* was identified in 12 (30 %) out of 40 sibling voles tested. All positive animals were wintered voles. All 24 sibling voles from another area in the archipelago of Svalbard tested negative for *E. multilocularis*.

**Table EH 2. Countries reporting on *E. multilocularis* findings in foxes**

Country	2000		2001		2002		2003	
	Invest.	% <i>E. multilocularis</i>	Invest.	% <i>E. multilocularis</i>	Invest.	% <i>E. multilocularis</i>	Invest.	% <i>E. multilocularis</i>
Austria	-	-	-	-	592	6,8	807	5,6
Finland	-	-	-	-	-	-	463	0
Germany	-	-	2412	16,2	7860	28,4	4483	33,4
Luxembourg	-	-	100	20,0	58	37,9	29	27,6
Netherlands	19	15,8	-	-	25	12,0	171	12,9
Sweden	-	-	300	0	394	0	394	0
Norway (Svalbard)	0	0	0	0	0	0	0	0
Denmark	580	0,5	145	0	62	0	34	0

- No information available

### New Member States

Four New Member States provided some information on Echinococcus findings in animals. Some findings in livestock animals were reported in all four countries, usually at a low rate. In Lithuania, 2,6 % of the pigs tested were positive for Echinococcus. No Echinococcus were detected in wildlife animals tested in Cyprus.

## 9.2. Echinococcosis in humans

### Surveillance system

Echinococcosis is reportable in some Member States only. In Norway, human echinococcosis became a notifiable disease as of July 1, 2003. Information is mainly based on notification of laboratory reports or reports by physicians. In The Netherlands only hospitalised cases are notified. In Germany, reporting has been adjusted in 2003. Only those cases are registered, which are diagnosed for the first time or first diagnosis was made within the previous 24 month. Furthermore only persons being registered as living in Germany are included. In other countries the source of data is not specified. In their reports the Member States usually do not distinguish between cases caused by either *E. granulosus* or *E. multilocularis*.

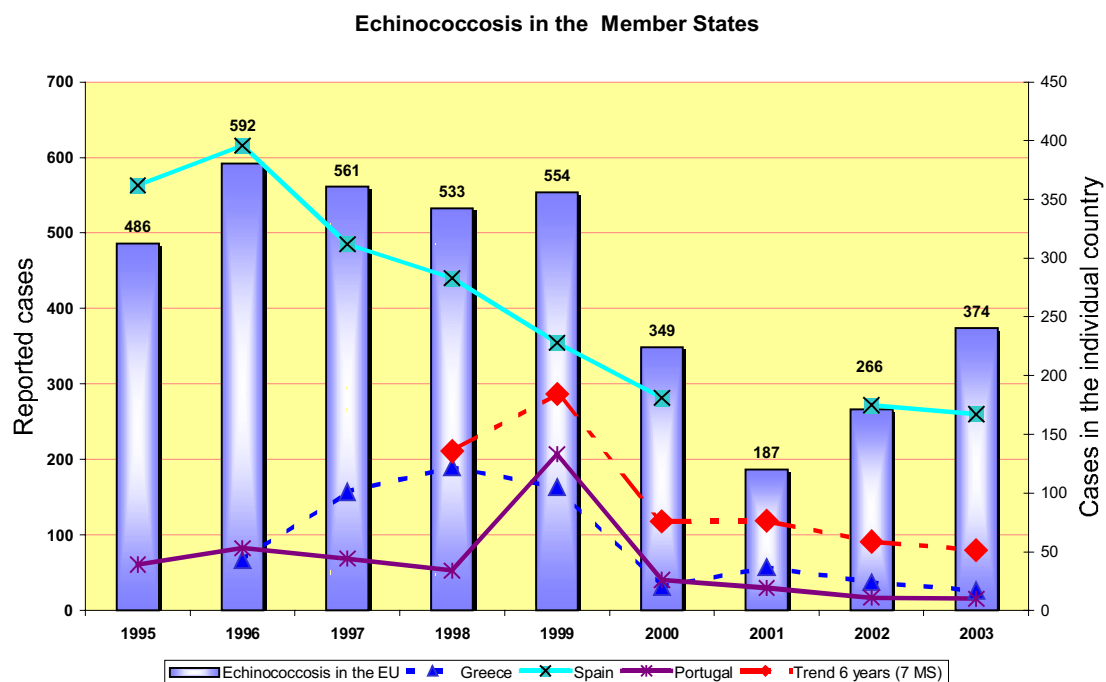
In Denmark and Sweden the disease is not notifiable. Figures provided from Sweden are based on voluntary reports by laboratories. In contrast, in Germany, Finland and Greece the disease is notifiable.

In several countries, the reported cases are restricted to domestic cases.

### Recent situation

In total, 374 human cases of echinococcosis were registered in the European Union and Norway in 2003 (figures from 14 countries) (Table EH 3). Compared to the previous year, there was an overall decrease in the number of reported cases (8 MS and Norway where figures are available for both years).

Figure EH 2. Trend in human echinococcosis



In countries where *E. granulosus* is prevalent in livestock higher numbers of human infections were registered compared to countries where the parasite is only rarely detected.

The trend in some countries is shown in Figure EH 2 in comparison to the overall number of reported cases. Altogether, 307 cases of cystic echinococcosis were notified in 2003. In Austria, Finland, Germany, and The Netherlands, all or most of these cases were imported.

In regions where *E. multilocularis* is prevalent, there is a risk for the human population in acquiring the disease. Information of the inhabitants and increased awareness is considered necessary in these regions.

Cases of alveolar echinococcosis had been reported in Austria, France, Germany, and Scotland in previous years. 30 cases of alveolar echinococcosis were reported in Austria, France and Germany in 2003.

### New Member States

Four New Member States provided on a voluntary basis data on human echinococcosis. Altogether, 9 cases were registered, 2 in Cyprus, 4 in Latvia, 2 in Lithuania and 1 case in Slovenia. 6 of these cases were cystic echinococcosis and 2 alveolar echinococcosis, one in Latvia and one in Lithuania.

**Table EH 3. Human echinococcosis**

Country	Echinococcosis cases					
	1998	1999	2000	2001	2002	2003
<b>Countries, where echinococcosis is notifiable</b>						
Finland	1 (1)	0	0	0	0	2 (2)
Germany	-	-	-	51 <sup>5</sup>	31	86
Spain <sup>1</sup>	283	228	181	-	175	167
Norway <sup>6</sup>	-	0	0	0	0	0
<b>Countries, where reports are based on hospitalised cases</b>						
Netherlands	36	31	52	44	32 (30)	36
<b>Countries, where reports are based on laboratory isolates or reports</b>						
Ireland	0	-	0	0	0	0
Portugal	34	133	26	19	11	10
Sweden <sup>2</sup>	7	5	3	8	14	4
Spain <sup>3</sup>	16	29	44	17	-	-
Scotland	0	0	0	0	0	0
Northern Ireland	0	0	0	1	0	0
England and Wales	11	13	17	10	10	11
<b>Countries, where the source of the data is not specified</b>						
Austria	-	-	-	-	-	34
Denmark <sup>4</sup>	0	0	0	0	0	0
France	-	10	6	-	-	6
Greece	122	105	20	37	24	17
Italy	-	-	-	-	-	1

- No information available; Figures in brackets represent imported cases

<sup>1</sup> Data based on Epidemiological Notifiable Diseases Surveillance System

<sup>2</sup> Laboratory based reports; no known domestic cases

<sup>3</sup> Data based on Microbiological Information System

<sup>4</sup> Few imported cases

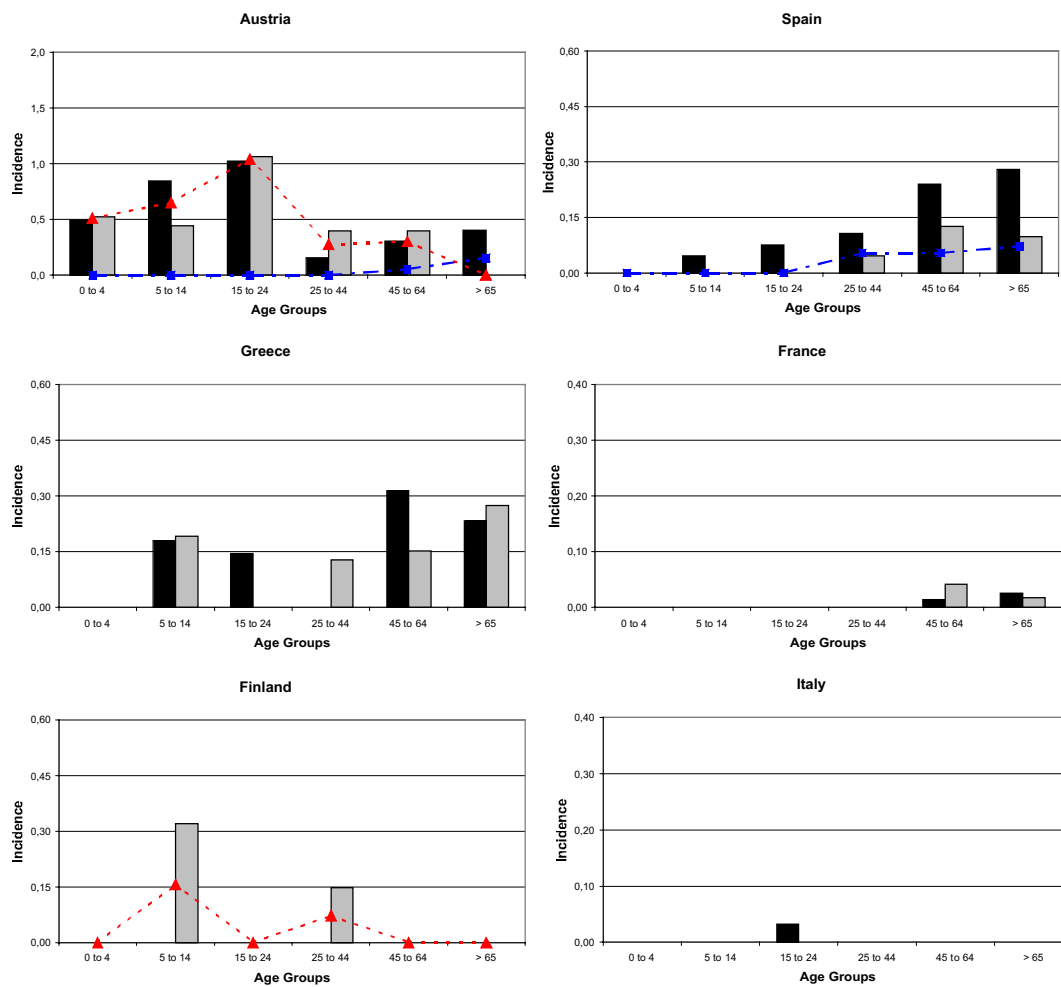
<sup>5</sup> New act (Infektionsschutzgesetz (IfSG)) since 1.1.2001, cases from all 16 Federal Länder

<sup>6</sup> Notifiable disease since July 1, 2003

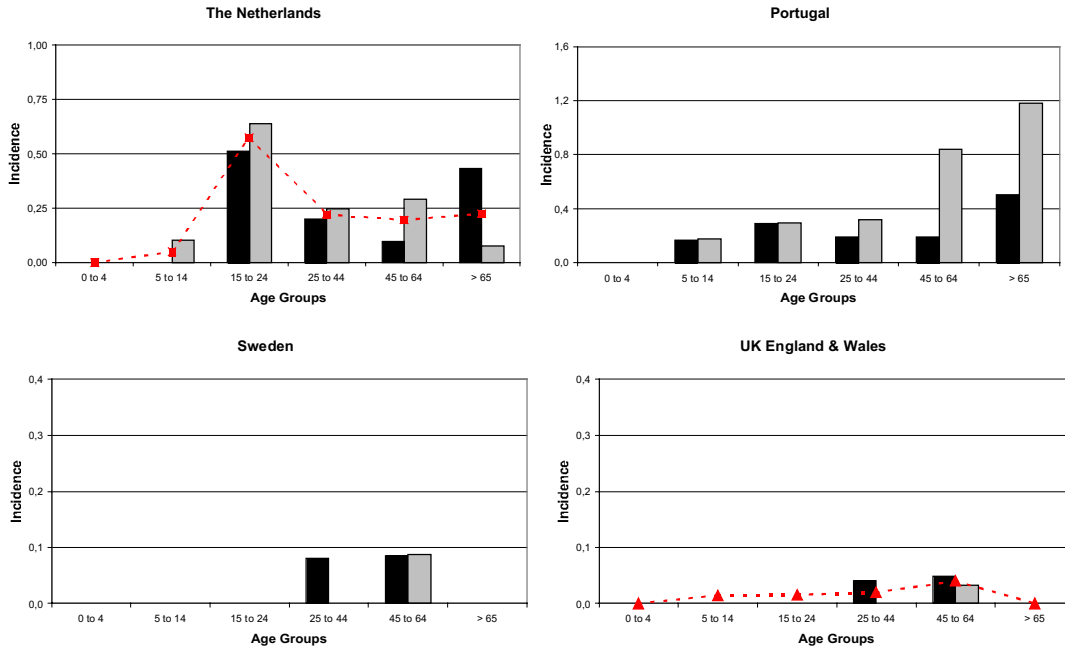
## Age distribution

10 countries provided information on the age distribution of echinococcosis, some in addition for the individual species. As can be taken from Figure EH3, there is no common pattern in the countries, but usually children up to 4 years are not affected by the disease.

**Figure EH 3. Incidence rate per 100 000 inhabitants of echinococcosis in different age groups**



**Figure EH 3. Incidence rate per 100 000 inhabitants of echinococcosis in different age groups - continued**



**New Member States**

