



**Meeting of the WHO Informal Working Group on Echinococcosis
on the occasion of the XXV World Congress of Echinococcosis
Khartoum, Sudan, 25 November 2013**

Summary report

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Introduction to the meeting

Peter Kern (IWGE Coordinator, Ulm, Germany) opened the meeting and welcomed the participants. He was assisted by Malika Kachani (Western University of Health Sciences, Pomona, CA, USA, representing the Working Group on Neglected Zoonotic Diseases of the World Health Organization's Strategic and Technical Advisory Group for Neglected Tropical Diseases (STAG-NTD).

Peter Kern introduced the WHO Informal Working Group on Echinococcosis (IWGE), constituted in 1985. Historically, the group was proposed by Professor J. Eckert (University of Zurich, Zurich, Switzerland) as a network of professionals working on different aspects of echinococcosis, and was linked to WHO (Dr Meslin). The previous 10 working subgroups were reduced to 3 (human disease; control in animals; and biology) during the IWGE meeting held in Colonia (Uruguay) on the occasion of the XXIII World Congress. WHO does not provide funding for the activities of the IWGE.

During the previous IWGE meeting in Urumqi (China), the need for a group "communication platform" was raised. The website "EchinoWorld", hosting also IWGE activities, will be launched by Hao Wen (Xinjiang Medical University, Urumqi, China) during this meeting.

Peter Kern informed the meeting that Dr François Meslin had retired from WHO this year. His work was continued by Dr Simone Magnino, who left WHO in November 2013. Dr Bernadette Abela-Ridder assumed her position at WHO recently.

Finally, Peter Kern gave a brief overview of the meeting agenda. No further topics for discussion were proposed by the participants.

Agenda

Topic 1: WHO roadmap for cystic echinococcosis (CE)

Topic 2: Launch of EchinoWorld website

Topic 3: CE register in Italy

Topic 4: Research links with IWGE

Topic 5: Upcoming conferences on CE and AE

Topic 6: Future structure of the IWGE: suggested subgroups

Topic 7: Other topics

Malika Kachani

Hao Wen

Francesca Tamarozzi

Adriano Casulli

Marshall Lightowlers

Cecilia Mbae

Peter Kern

Peter Kern

Topic 1: WHO roadmap for cystic echinococcosis (CE) (Malika Kachani)

Professor Kachani (Western University of Health Sciences, Pomona, CA, USA) introduced the STAG-NTD Working Group on Neglected Zoonotic Diseases, which she currently chairs. Dr Peter Holmes is the current Chair of the STAG-NTD. The working group focuses on NTDs with zoonotic aspects and “One Health” approaches. Echinococcosis was recently introduced in the list of neglected tropical diseases and is one of the six priority neglected zoonotic diseases (rabies, echinococcosis, leishmaniasis, cysticercosis, human African trypanosomiasis, and foodborne trematodiasis). The targets for echinococcosis include two with control strategies piloted in selected countries by 2015; these should include implementation and evaluation of possible control strategies, assembly and assessment of data on epidemiology and economic impact, and showcasing of lessons learnt from intersectoral collaborations. By 2020, validated control strategies should be available and control interventions scaled up. WHO would like to have the guidelines on management and control of echinococcosis updated and disseminated. Guidelines on control should be available also in a shortened version. WHO is willing to: (i) provide advice and support to IWGE; (ii) assist pilot control studies; (iii) promote training on foodborne zoonoses in both human and veterinary settings, and strengthen veterinary–medical collaboration; (iv) establish proof of concept of integrated control and surveillance strategies; and (v) support funding proposals. Examples of projects supported by WHO are: (i) Mongolia: assessment of prevalence of CE and evaluation of possible control measures; (ii) Italy: pilot study of sheep vaccination with EG95 + 6-monthly dosing of dogs with praziquantel; (iii) Morocco (in collaboration with Italy): ultrasound survey in two highly endemic provinces and medical training with allocation of CE patients to treatment according to IWGE guidelines.

Dr Kachani announced that Dr Bernadette Abela-Ridder is the senior officer replacing Dr Francois Meslin. Dr Abela-Ridder’s background is in the field of zoonoses and foodborne diseases and she is committed to supporting the work on echinococcosis, especially that towards reaching the set targets of the WHO roadmap on NTDs.

Topic 2: Launch of EchinoWorld website (Hao Wen)

Professor Wen (Xinjiang Medical University, Urumqi, China) introduced the EchinoWorld website (www.echinoworld.org), the implementation of which was started immediately after the proposal of a common platform on echinococcosis during the IWGE meeting in Urumqi, China, in 2011. This website is deemed to be the official website of the IAH (International Association of Hydatidology) and was pre-launched in July 2013 during a teleconference attended by the IAH President Antonio Menezes da Silva (Lisbon, Portugal), Dominique Vuitton (Besançon, France), Hao Wen (Urumqi, China) and Peter Kern (Ulm, Germany). The website has an editorial staff with a dedicated secretary (Ms Haiyan Song; songhaiyan1986@yahoo.cn) and an academic committee chaired by Dominique Vuitton. Professor Wen encouraged all participants in the meeting to visit the website and contribute to its development and content. The editorial staff plans to add Chinese as a second language of the website and information on technical aspects of CE and AE, ongoing projects and upcoming meetings. The website could be translated also into other languages to facilitate communication. Another possibility is to expand the platform to other zoonoses or other diseases. Finally, Professor Wen pointed out that the Chinese government is keen on funding programmes concerning echinococcosis, and supports the recently implemented Telemedicine programmes connecting central and peripheral hospitals in China. He also proposed to create a telemedicine IWGE subgroup.

Professor Ahmed (Khartoum, Sudan) and Professor Lightowlers (Melbourne, Australia) stimulated a debate concerning the objectives of the website and its editorial policy, which are not clear at the moment. Professor Menezes da Silva pointed out that, although the website is now showing the IAH logo on its homepage, there are subsections dedicated to other related associations, such as CESSARi, which can advertise their activities through the website. Professor Kern suggested that the website should mainly convey information on different aspects of the diseases (for example, disseminating current expert opinion on diagnosis and treatment) and on the activities of the groups working on CE and AE. The possibility of publishing scientific papers in the website may be too difficult a task to implement, at least in the short or medium term, as it involves the creation of an editorial board. However, more discussion should take place during the meeting in Besançon, France, in March 2014; by then, people would have familiarized themselves with the website and different aspects concerning its structure and content, and the role of different associations can be discussed also with the scientific director, Professor Vuitton.

Topic 3: CE register in Italy (Francesca Tamarozzi)

Dr Tamarozzi (University of Pavia, Italy) presented the Italian Register of Cystic Echinococcosis (RIEC), hosted in the Istituto Superiore di Sanita’ (ISS - Italian National Institute of Health, Rome, Italy) website. The RIEC was implemented in 2012; its creation was stimulated by the lack of official reporting system of CE cases

in Italy, resulting in a lack of data to estimate the real burden of the disease on the national territory, and the absence of data concerning CE in Italy in official European reports. So far, 19 health structures have adhered to the registry, on a volunteer basis. The main aim of the register is to report the number of cases, hospitalized and managed in an outpatient setting, in Italy. Each patient is assigned a unique RIEC number to avoid duplication of data should he or she move between centres. Epidemiological and clinical data are also collected. The enrolment of patients prospectively from 2012 will allow the collection of precise and complete data in a consistent format. Future activities include translating the website into English and possibly French, and its inclusion as part of the CE Register of Central and Eastern Europe (including Romania, Bulgaria and Turkey), which will be implemented within the HERACLES project (ref Topic 4 by Adriano Casulli, ISS, Rome, Italy). Dr Tamarozzi addressed the question posed by Professor Deplazes (Zurich, Switzerland) regarding privacy and treatment of sensitive data, explaining that these latter and patients names are uncoupled, and that the data are treated according to the Italian legislation on privacy. Further inquiries regarding the technical aspects of this issue can be addressed by the technical manager of the database in ISS.

Topic 4: Research links with IWGE

4.1 European projects (Adriano Casulli)

Dr Adriano Casulli (Istituto Superiore di Sanita', Rome, Italy) presented two projects on echinococcosis funded by European authorities. The first project, "*Echinococcus multilocularis* infection in animals", is funded by EFSA (European Food Safety Authority). It started in January 2013 and will end in June 2015. The aim of the project is to obtain current knowledge on *E. multilocularis* using a systematic review approach. The project is implemented by a consortium of six partners from France (ANSES – French Agency for Food, Environmental and Occupational Health and Safety); the Netherlands (RIVM – National Institute for Public Health and the Environment); Germany (FLI – Federal Research Institute for Animal Health); Finland (EVIRA – Finnish Food and Safety Authority); and Poland (NVRI – National Veterinary Research Institute), coordinated by Dr Casulli in Rome, and supported by a panel of six international external experts and by systematic reviews advisors of the "Sapienza" University (Rome). The project encompasses work packages on epidemiology, risk factors, diagnosis and treatment, and monitoring, surveillance and control of *E. multilocularis* infection.

The second project, "HERACLES" (Human cystic Echinococcosis ReseArch in CentraL Eastern Societies), is funded by the European Commission through the Seventh Framework Programme (FP7) on neglected infectious diseases of Central and Eastern Europe, addressing helminth infections for the first time. It started officially in October 2013 and will end in October 2017. The project is implemented by a consortium of nine partners including the three most endemic countries for CE in Europe (Romania, Bulgaria and Turkey): University of Pavia (UNIPV), Italy; Agencia Estatal Consejo Superior de Investigaciones Cientificas, Salamanca (CSIC), Spain; Colentina Clinical Hospital, UMF Carol Davila, Bucharest (CCHUMFCD), Romania; Hacettepe University, School of Medicine Department of Radiology, Ankara (HUSM), Turkey; Hospital for Active Treatment of Infectious and Parasitic Diseases "Professor I. Kirov" (EAD), Medical University, Sofia (SHATIPD), Bulgaria; Pendik Veterinary Control Institute, Department of Parasitology, Pendik, Istanbul (PVCI), Turkey; ALTA Ricerca e Sviluppo in Biotecnologie S.r.l.u., Siena (ALTA), Italy; and Vircell S.L., Granada (VIRCELL), Spain. The project is coordinated by Dr Casulli and encompasses six work packages: ultrasound screening and implementation of CE registries; creation of a biological samples' repository; point-of-Care lab-on-a-chip development; investigation of host-parasite interplay; enantiomeric drug synthesis; and test in an animal model. Specific work packages address training and data dissemination, and management and intellectual property. The consortium encompasses also a steering committee comprising the referees for each work package, and an external advisory board of six experts.

4.2 CESSARi (Cecilia Mbae)

Dr Cecilia Mbae (Kenya Medical Research Institute, Nairobi, Kenya) gave an overview of the ongoing activities of CESSARi (Cystic Echinococcosis in Sub-Saharan Africa Research *initiative*), a consortium of institutions from seven countries (Sudan, Kenya, Uganda, South Africa, Zambia, Namibia and Germany) funded by DFG – German Research Foundation. CESSARi holds annual meetings. It aims to investigate several aspects of echinococcosis in sub-Saharan countries, such as genotype studies, geodistribution and host preferences, wildlife aspects, clinical manifestations and coinfections, impact on public health and economics. Moreover, it promotes training, networking and capacity building. Some of the results of previous work, including ultrasound screening and livestock and wildlife surveys, show that both animal and human prevalences are higher than expected. As far as training is concerned, 10 researchers trained in Germany on genotyping, research laboratories have been established in some countries, >40 students attended the International Summer School of Epidemiology in Ulm University (Germany), >20 people were trained in ultrasonography, also attending the Short Course on Abdominal Ultrasound in Infectious Diseases and Tropical Medicine in Pavia University (Italy), and attendance to conferences was supported by DFG. Dr Mbae noted that the presence of the Vice

President of Sudan during the opening ceremony of this 25th World Congress of Echinococcosis is an encouraging sign of increased political and governmental interest in NTDs and their control, which will be further strengthened by the inclusion of NTDs in the WHO agenda.

4.3 Ongoing trials (Marshall Lightowlers)

Professor Lightowlers (University of Melbourne, Australia) summarized ongoing projects on vaccination with EG95 vaccine and albendazole treatment in livestock. Vaccination trials are ongoing in Argentina, and a pilot study on the combined use of sheep vaccination + 6 monthly treatment of dogs with praziquantel over 5 years is due to start in an area of the island of Sardinia (Italy), with the aim of extending this approach to the entire island should the pilot intervention be effective. A further project in Argentina aims to investigate the efficacy of EG95 vaccine, developed from the G1 *E. granulosus* strain, in case of G6 strain infection. Two experiments on the use of albendazole treatment in livestock are ongoing. One experiment is based on the use of albendazole, praziquantel or oxfendazole in lambs before vaccination to eliminate immature CE cysts acquired at very young age. The second experiment, carried out in collaboration with Dr David Jenkins (Charles Sturt University, Australia), investigates the correlation between the reduction in size and infectivity of CE cysts in sheep and albendazole given for routine deworming (low dose albendazole every 2 months for 2 years). Finally, a paper in press in the International Journal of Parasitology will present the results of an extensive review of reports of *E. granulosus* genotypes in human infections (the vast majority being G1/G3).

4.4 Online survey on treatment of CE by the Hospital for Tropical Diseases in London (Peter Kern)

Professor Peter Kern (University of Ulm, Germany) presented an online survey launched by the Hospital for Tropical Diseases in London. This initiative by Professor Peter Chiodini aims to investigate the treatment habits of CE in different stages. The results will be presented in the Besançon meeting in March 2014. Professor Kern anticipated that the results will likely show a wide variation of treatment habits, which could be a starting point for work on harmonizing treatments, possibly supported by the WHO. To receive clinical cases on the survey, Kern invites e-mail requests, which he will forward to London or directly to <https://www.surveymonkey.com/s/WCDD99R>.

Topic 5: Upcoming conferences on CE and AE (Peter Kern)

The upcoming events of interest are:

- International Symposium on Echinococcosis, Besançon, France, 27–29 March 2014 “Innovation on the Management of Echinococcosis”. Professor Kern noted that on that occasion IWGE work will have to focus on clinical management recommendations, which are 10 years old and require updating.
- 13th International Congress of Parasitology (ICOPA), Mexico City, Mexico, 10–15 August 2014. The congress will have a session of echinococcosis. Please contact Professor Ana Flisser: flisser@unam.mx Facultad de Medicina Universidad Nacional Autónoma de México Faculty of Medicine National University of Mexico.

Topic 6: Future structure of the IWGE: suggested subgroups (Peter Kern)

The members of the three IWGE subgroups (human disease; control in animals; and biology) need to be identified. There is a need to implement a system for application for membership. A fourth subgroup on “networking” may be added. Due to lack of time these issues have to be tackled during the Besançon meeting.

Topic 7: Other topics

Dr Thomas Romig (University of Hohenheim, Germany) informed the meeting that the company producing

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