



MEETING OF THE WHO
INFORMAL WORKING
GROUP ON
ECHINOCOCCOSIS
(WHO-IWGE)

WHO Headquarters
Geneva, Switzerland
15–16 December 2016

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EXECUTIVE SUMMARY

The WHO Department for Control of Neglected Tropical Diseases and the newly appointed co-chairs of the WHO Informal Working Group on Echinococcosis (WHO-IWGE) convened a meeting at WHO headquarters in Geneva on 15–16 December 2016 to define the structure, participation, objectives, timelines and deliverables of the WHO-IWGE for the following two years and to renew WHO-IWGE activities.

The meeting was attended by representatives of endemic regions, with a wide range of areas of expertise and networks, who constitute the WHO-IWGE Steering Group (see Annex 1). Participants recommended that the WHO-IWGE take a problem-oriented, pragmatic approach to updating clinical and control procedures within the constraint of a tight budget and move cystic echinococcosis (CE) and alveolar echinococcosis (AE) into mainstream clinical medicine and public health, where appropriate with a One Health approach. The Steering Group will initiate, coordinate and facilitate the activities of the wider group of CE and AE experts and seek additional advice from outside the field. The Group initiated thematic working groups on clinical CE, CE control, clinical AE and AE control. Experts in these fields will be invited to participate in the working groups to prepare as a first step concise technical manuals with immediate practical application to improve the quality of patient care and infection control.

The agenda of the meeting is shown in Annex 2 and the life cycle of echinococcosis and the points at which intervention is possible in Annex 3.

KEY MESSAGES

- CE and AE differ in their transmission cycles and disease manifestations. For practical purposes, such as the production of technical manuals, clinical and control issues for the two diseases will be addressed separately.
- CE and AE should be moved into mainstream clinical medicine and public health, where appropriate with a One Health approach. Input from a broad range of disciplines in clinical medicine and public health will be instrumental in development and innovation in neglected tropical diseases.
- Tools and recommendations elaborated by the WHO-IWGE will be disseminated through national and international health policy channels and major medical and public health conferences to improve access to updated and innovative clinical and control strategies.
- The main deliverables of the coming two years are clinical and control technical manuals with immediate practical impact.

DECLARATIONS OF INTEREST

All participants completed WHO declaration of interest forms before the meeting. The forms were submitted to and reviewed by the WHO Secretariat. No conflict of interest was identified.

1. BACKGROUND AND OBJECTIVES

1.1 Vision of WHO

Cystic echinococcosis (CE) has been recognized since 1950 as a public health problem (World Health Assembly resolutions WHA3.23 and WHA66.12). Echinococcosis is included in the list of 17 neglected tropical diseases (NTD) (WHO, 2013) and in the list of priority neglected zoonotic diseases for which WHO advocates concerted control efforts (WHO, 2005). The vision of controlling, eliminating and eradicating neglected tropical diseases has gathered momentum in recent years, and there is now consensus internationally that the available knowledge and tools may allow control of most neglected zoonotic diseases (WHO, 2011a; WHO, 2015). Possible approaches to integrated control of CE are outlined in a joint document by WHO, the World Organisation for Animal Health (OIE) and the Food and Agricultural Organization of the United Nations (FAO) (WHO, 2010). The WHO roadmap to overcome

the global impact of neglected tropical diseases (WHO, 2012) states that pilot projects to validate the effectiveness of echinococcosis control strategies should have been implemented by 2015, and interventions in selected countries in Central Asia, North Africa and Latin America for the control and elimination of echinococcosis as a public health problem will have to be in place and scaled up by 2020. Although progress has been made in some regions, substantial effort is still required to move CE and AE forward on this roadmap, to relieve the burden of these diseases.

Interventions should be tailored to each target area or region and take advantage of new tools for diagnosis and control, such as portable ultrasound for early diagnosis and surveillance in humans and vaccination of sheep (see Box 1; WHO, 2011b). Tools and recommendations should be disseminated through national and international health policy channels and major medical and public health conferences to improve access to updated and innovative strategies.

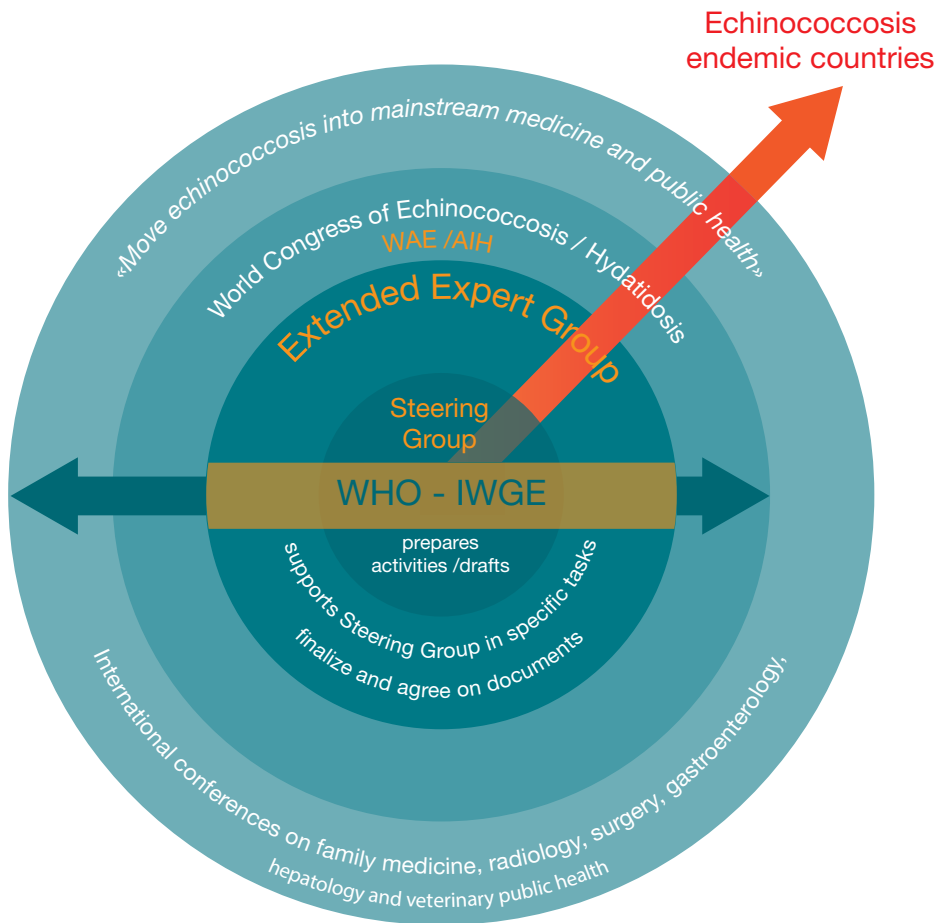


Figure 1. Cooperation between the WHO-IWGE and other echinococcosis networks and mainstream medical and public health venues for improving the quality of patient care and infection control in endemic areas

1.2 Meeting objectives

The objectives of the meeting were to:

- Define the structure of the WHO-IWGE to ensure that it is as functional and inclusive as possible within its budgetary constraints;
- Define the urgent clinical and control issues for CE and AE to be addressed by the WHO-IWGE Steering Group and thematic working groups;
- Define the deliverables and deadlines of the products of the WHO-IWGE (see section 4.4);
- Explore new means for ensuring that the products reach the relevant public and affected communities;
- Intensify cooperation between the WHO-IWGE and the World Association for Echinococcosis / International Association of Hydatidology and Echinococcosis networks; and
- Explore new funding sources for activities during the two-year term of the current IWGE.

2. OUTSTANDING PROBLEMS IN THE FIELDS OF CE AND AE

2.1 Updating current knowledge and practices

Some progress has been made in the clinical management of CE and AE since the last revision of the expert consensus document, published in 2010 (Brunetti et al., 2010), with new tools for the control of these infections (WHO, 2011b). These developments should be incorporated into updated documents, as more stringent methods for evidence grading are essential. Exploration and mapping of infection transmission, disease burden and clinical management options should be updated. This would help to improve clinical and control activities and cost-benefit analyses of interventions and to make a strong case for control and clinical management (see Boxes 2–4 and Donadeu et al., 2016; Oksanen et al., 2016; Possenti et al., 2016).

BOX 1. EG95 VACCINE

The first publication describing the EG95 vaccine was published in 1996 (Lightowlers et al., 1996). The authors reported a high level of protection against egg challenge with *E. granulosus* in sheep; subsequently, numerous independent experimental vaccine trials demonstrated similarly high levels of protection, in Argentina, Australia, Chile, China, the Islamic Republic of Iran and Romania (Lightowlers et al., 1999; Heath et al., 2003; Paykari et al., 2008; Morariu et al., 2010). Protection has also been demonstrated against experimental challenge infections in cattle (Heath et al., 2012). Field trials of the vaccine in Argentina and China showed that it can raise useful levels of protection against natural exposure to *E. granulosus* in sheep (Heath et al., 2012; Larrieu et al., 2013; Larrieu et al., 2015). The EG95 vaccine is registered for use in sheep in China, where it is manufactured by Chongqing Aolong Biological Products Co., Ltd (Aolong Biological). The vaccine is also manufactured in Argentina, by Tecnovax (<http://www.tecnovax.com.ar/productos/providean-hidatil-eg95/>), and registered for use in sheep, goats and camelids.

BOX 2. CLINICAL MANAGEMENT OF CE

Most clinicians agree in principle on the four options for treating CE: drugs, percutaneous methods, surgery and “watch and wait” (Brunetti et al., 2010; WHO-IWGE, 2003; Figs 2 and 3). The preferences of experts are based on cyst stage, cyst localization, resources and training. Few algorithms have been tested systematically in comparative trials, and the preferred treatments have been based mainly on small studies. Long-term prospective follow-up of patients with WHO cyst stages CE 4 and 5 has generated confidence that these cysts can remain untreated. “Watch and wait” obviates major interventions and saves unnecessary costs for the health system (Piccoli et al., 2014; Stojkovic et al., 2016). Percutaneous large-bore methods for WHO cyst stages CE 2 and CE 3a also appear promising (Akhan et al., 2017), and puncture, aspiration, injection and re-aspiration (PAIR) is an established, successful technique for the treatment of CE 1 and CE 3a (Akhan et al., 1996; Brunetti et al., 2010) though cysto-biliary fistulas need to be reliably excluded to prevent irreversible complications. There is also somewhat more confidence in selecting patients for albendazole therapy on the basis of cyst stage and size (Stojkovic et al., 2009). Overall, however, much remains to be tested and defined. With the scarce funding for CE, systematically collected observational data should be better exploited (see Boxes 7-9). With the concerted action of WHO-IWGE to publish pragmatic technical manuals, substantial progress can be made to the benefit of patients. The manuals should define specific issues in the risks and benefits of current treatment options, given the infrastructure, access to treatment (Box 6), experience and quality of the health care institutions where patients are treated.

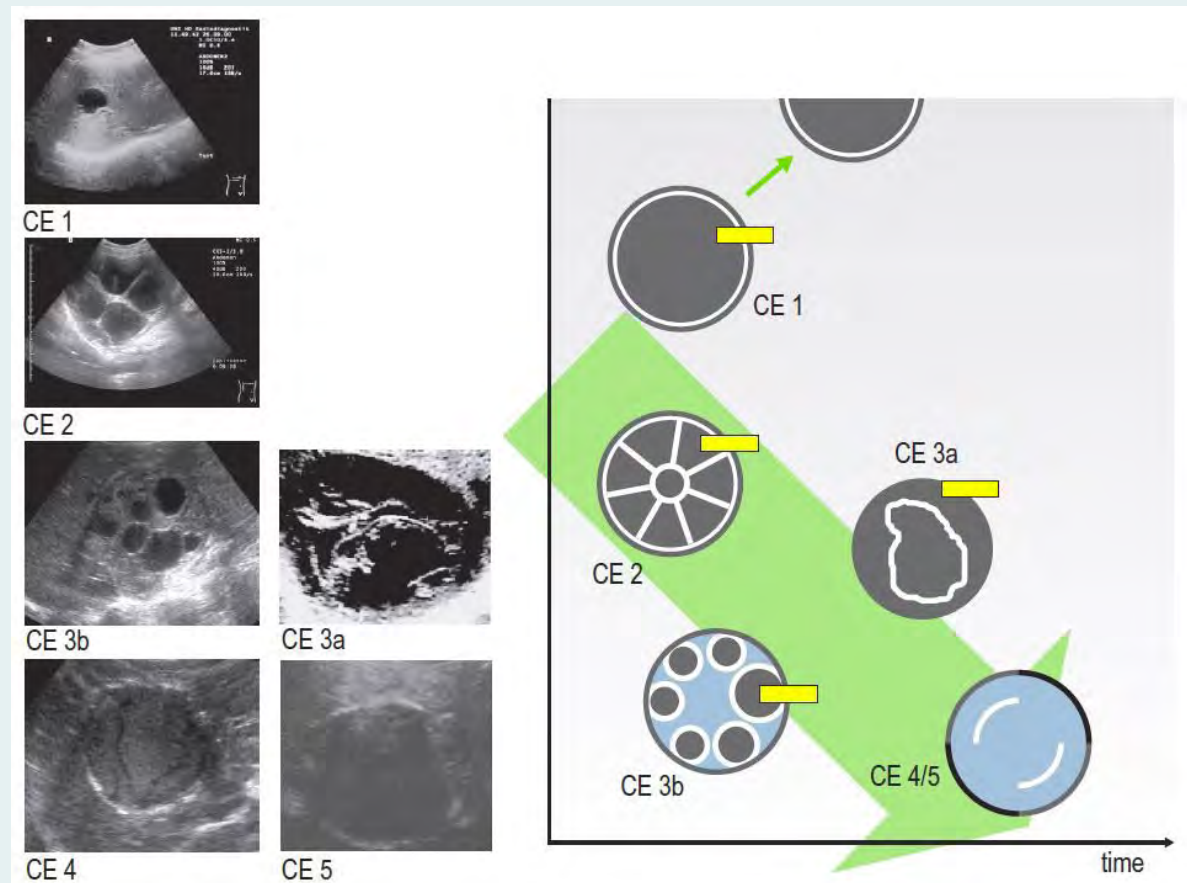


Figure 2¹ . CE cyst growth (small arrow) and involution from active to inactive, dead cysts (large arrow). The involution process is accelerated by treatment (benzimidazoles and percutaneous methods). WHO cyst classification CE 1–5; yellow bars, cysto-biliary fistulas.

¹ Figure 2 and 3 from Stojkovic M, Gottstein B, Junghans T (2014) Section 10, Chapter 56: Echinococcosis. In: Jeremy Farrar, Peter Hotez, Thomas Junghans, Gagandeep Kang, David Lalloo & Nicholas J. White. Manson’s Tropical Diseases, 23rd Edition, Expert Consult - Online and Print, Saunders (W.B.) Co Ltd, 978-0-7020-5101-2 (ISBN). Copyright © 2014, Elsevier Limited. All rights reserved.

BOX 2. CLINICAL MANAGEMENT OF CE (CONTINUED)


Active cysts	Early Rx	Late Rx	Very late Rx	No Rx	Inactive cysts
	Risk of complications				
	5–6 cm	>5-6 cm <10 cm	10 cm		
CE1					
CE3a					
CE2					
CE3b					
	<ul style="list-style-type: none"> ■ Benzimidazoles (possibly higher efficacy) ■ Benzimidazoles (possibly lower efficacy) ■ PAIR ■ Surgery/(continuous catheter drainage [CE1, CE3a], large-bore catheter [CE3a, CE3b, CE2]) ■ Watch & wait 			 	CE4 CE5

Figure 3¹. Assignment of treatment modalities to individual CE cyst stages and risks for complications by cyst stage and size

BOX 3. MAPPING OF CE AND AE

A proposal was made to undertake global mapping of echinococcosis; it now has been completed and is published in an issue of *Advances in Parasitology* in early 2017 (Deplazes et al., 2017). A number of high-resolution images from the manuscript were presented to the group. In most regions of the world, the incidence of CE and AE has been mapped to sub-national level, which is particularly useful for large countries such as China, where there may be substantial variations in disease incidence among districts. It was agreed that the authors of the manuscript would be approached to look into the possibility of transfer of the data onto WHO-approved maps as a rapid, effective means of mapping the global distribution of echinococcosis.

BOX 4. SCREENING ETHICS

Screening in cystic and alveolar echinococcosis is conducted to: assess the scale of a health problem in a community and to plan and implement control and individual patient care measures; detect affected patients early and treat them before complications arise; and recruit cases for research (e.g. diagnostic studies, clinical trials).

In all three instances, the 10 classical ethical criteria for screening laid down by Wilson and Jungner (1968) should be fulfilled. The following criteria are of particular importance and should be fulfilled to justify screening.

There should be an accepted treatment for patients with recognized disease (criterion 2). Facilities for diagnosis and treatment should be available (criterion 3). There should be a suitable test or examination (criterion 5). There should be an agreed policy on whom to treat as patients (criterion 8). Case-finding should be a continuing process and not a "once and for all" project (criterion 10).

In 2008 the Wilson and Jungner have been revisited in the light of the genomic age (Andermann et al., 2008).

The care of patients with incidental or secondary findings – a general problem in screening programmes – can create unresolvable ethical dilemmas in countries with limited resources (Andermann et al., 2008). The types and outcomes of screening are shown in Fig. 4.

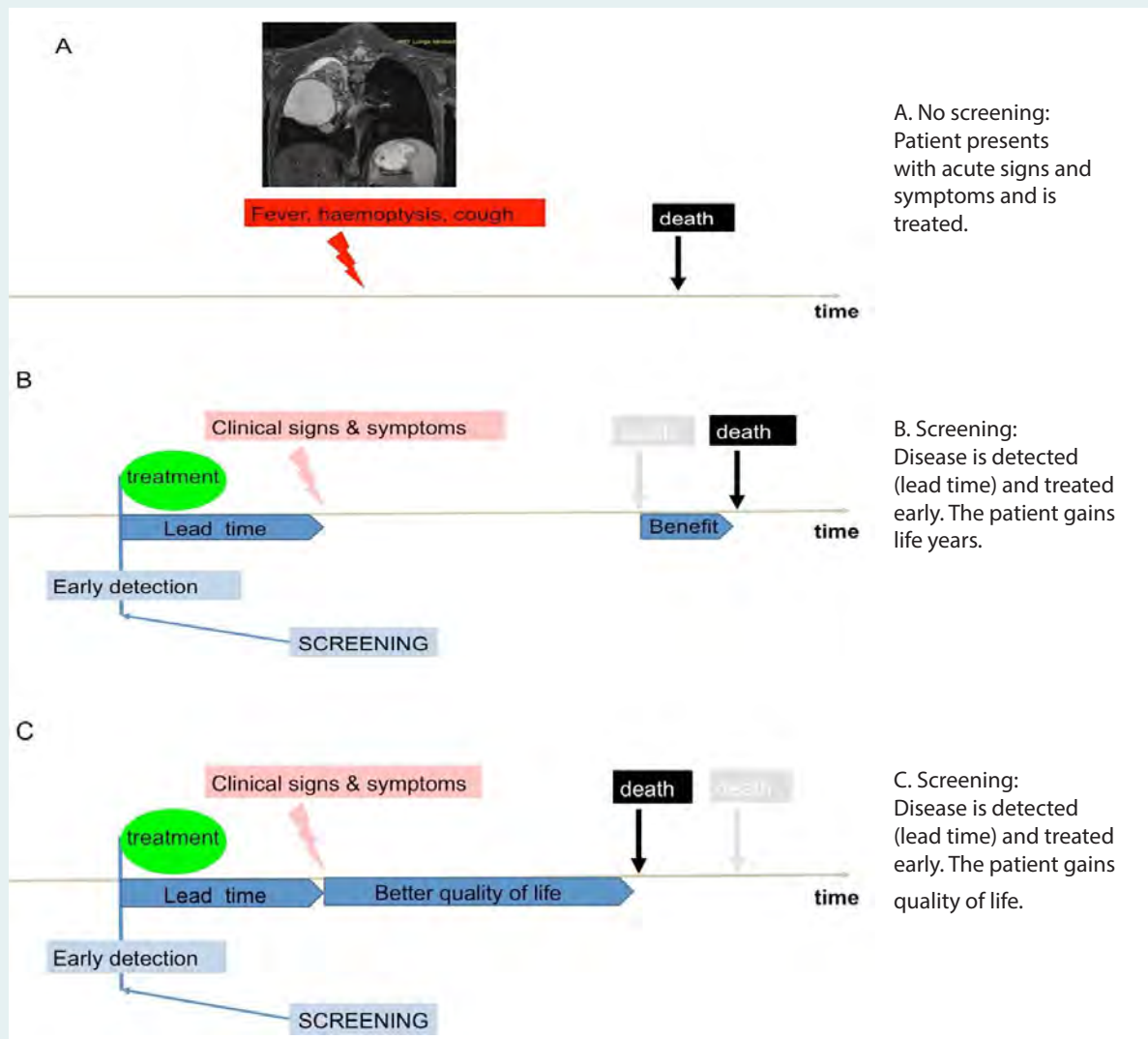


Figure 4. Screening scenarios and outcomes

2.2 Dissemination of best clinical and control practices

Despite major efforts during past decades, clinical management and control of CE and AE based on best practice standards have not reached the affected communities to a satisfactory degree. The WHO classification of cysts, which is the cornerstone for diagnosing and staging CE, for treatment decisions and for follow-up, is still not used in many parts of the world (Tamarozzi et al., 2014). The reasons are manifold but include lack of access to ultrasound (although this will be resolved by the availability of cheap portable ultrasound machines; Box 5), managing complex diseases in settings with limited resources and, importantly, limited attention to CE and AE in the mainstream international medical and public health community.

BOX 5. ULTRASOUND SCREENING AND TRAINING FOR CE: THE ARGENTINIAN EXPERIENCE

Ultrasound is the best method for abdominal screening for CE: it is highly sensitive and specific, noninvasive and fast (with an immediate result), and the portable equipment is affordable (Del Carpio et al., 2000). Other advantages include the possibility for wide geographical coverage, thus reaching populations with difficult access to health care, early diagnosis at primary health care level, appropriate clinical management and timely treatment if required, local follow-up, saving of time, travel and other costs and avoidance of unnecessary referrals. Ultrasound screening for CE is a valuable monitoring tool for control programmes when it is used in schoolchildren, as cases in children indicate recent infection.

Focused assessment of specific conditions with ultrasound can be taught to non-specialists in short courses, such as the focused assessment with sonography for echinococcosis (FASE) training course implemented in Argentina since 2000 (Del Carpio et al., 2012). Investment in equipment and FASE training courses should be part of public health policies for CE.

For more information on this subject please see online at http://www.who.int/echinococcosis/resources/IWGE_Report_2016_Extended_boxes/en/

2.3 Accessibility and use of best clinical and control practices

Dissemination of best practices is necessary but not sufficient to reach patients and communities. For example, one of the most pressing issues in CE and AE therapy is the lack of access and affordability of the one and only drug for peri-interventional and medical treatment of CE and AE – albendazole (see Box 6). Mebendazole, the alternative in the same group of benzimidazoles is much inferior because of the high doses required and the fat necessary for sufficient quantities to be absorbed. Bottlenecks in the management of complex diseases such as advanced CE and AE are further infrastructure and skills in major surgery and general anaesthesia (Figs 5 and 6). These require broad developments in health services; they cannot be achieved in a vertical, disease-specific approach.

BOX 6. PROBLEMS IN BENZIMIDAZOLE ANTIPARASITIC TREATMENT

- Inadequate knowledge on how to use benzimidazoles, despite the availability of guidelines;
- Off-label use, as prescribing information and the summary of product characteristics do not include CE or AE in most countries;
- Prescribing information recommends intermittent treatment, while current expert opinion is that continuous treatment is best;
- Variable quality of generic drugs, which may undermine treatment efficacy;
- Drug efficacy not optimized but could be improved by simple measures; and
- Variable access (affordability and availability) to benzimidazoles.

For more information on this subject please see online at http://www.who.int/echinococcosis/resources/IWGE_Report_2016_Extended_boxes/en/

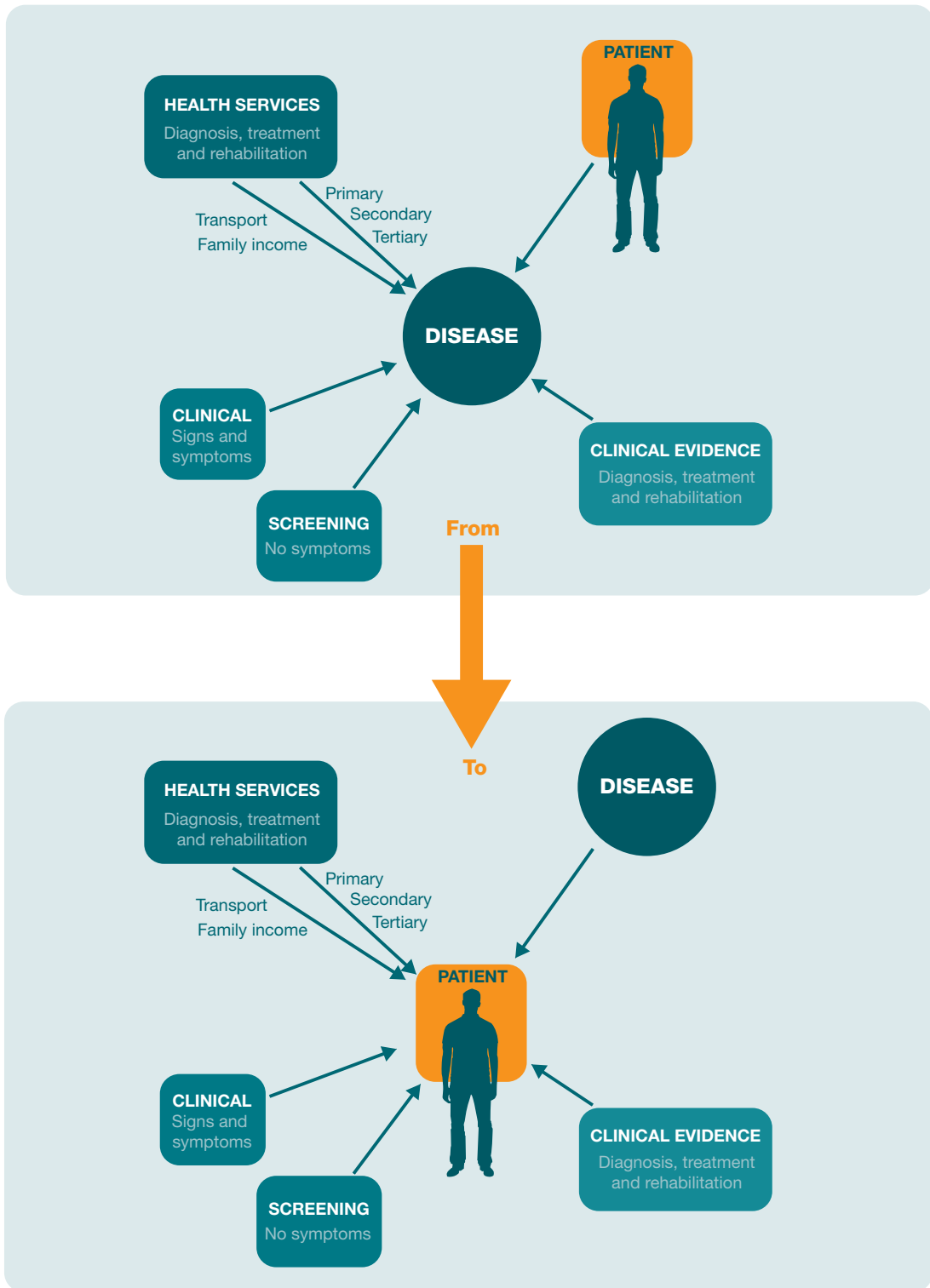


Figure 5. Moving from a disease-centred to a patient-centred approach for CE

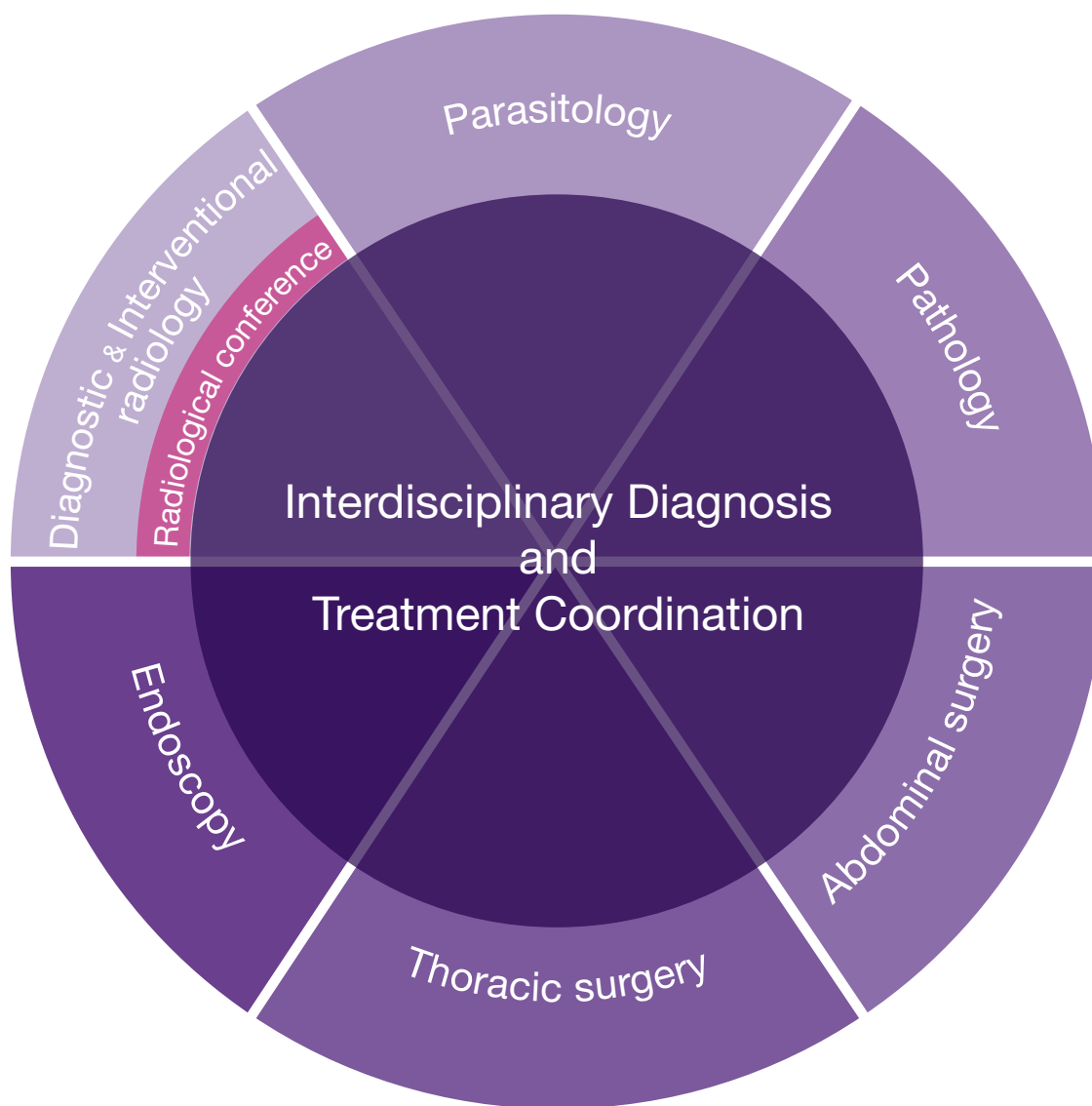


Figure 6. Multidisciplinary approach to the clinical management of patients with CE

3. FUTURE RESEARCH

The clinical management of CE and AE still relies mainly on expert opinion and the results of observational studies (Brunetti et al., 2010). In the current funding climate, it is highly unlikely that neglected tropical diseases such as CE and AE will be studied in the near future in large randomized controlled trials of currently available treatment modalities. Alternative means must be found to generate evidence that can be translated into practice (Box 7). The international CE and AE community should join shared data platforms to collect prospectively and analyse highly standardized clinical data (Rossi et al., 2016) (Boxes 8 and 9). Similarly, control should be based increasingly on innovative strategies, such as cooperation in zoonotic diseases (e.g. rabies, leishmaniasis, brucellosis) with an integrated One Health approach (Welburn et al., 2015).

BOX 7. IS EVIDENCE FROM CASE SERIES OF PATIENTS GIVEN DIFFERENT TREATMENTS ADMISSIBLE FOR TREATMENT RECOMMENDATIONS?

Ideally, the results of well-conducted randomized controlled trials on the comparative merits of treatment choices for a given disease should be available. In the absence of such results, treatment outcomes in case series are used (observational evidence) (Henán and Robins, 2006). Often, naive comparisons are biased; however, it is possible, but not easy, to obtain valid estimates of the comparative merits of different treatments from observational data, with two prerequisites: The prognostic factors for relevant outcomes must be known and correctly assessed for the different treatment groups (Danaei et al., 2013; Henán and Robins, 2016; Henán et al., 2006), and the outcome definitions must be harmonized across patient groups and the outcomes completely assessed (Sterne et al., 2009; Little et al., 2012; Henán and Robins, 2017).

For more information on this subject please see online at http://www.who.int/echinococcosis/resources/IWGE_Report_2016_Extended_boxes/en/

4. WHO-IWGE MEETING CONSENSUS

4.1 Structure of the WHO-IWGE

At the centre of the WHO-IWGE is the Steering Group, coordinated by the Chair and Co-Chair and composed of a limited number of highly active members representing major endemic regions and core areas of expertise (see Fig. 7). The WHO-IWGE Steering Group initiates, coordinates and facilitates the activities of the wider group of CE and AE experts and seeks additional advice from outside the field of echinococcosis. The Steering Group initiated thematic working groups on clinical CE, CE control, clinical AE and AE control, each of which is guided by one or two coordinators. The working groups will be further divided into subgroups for specific tasks, with experts in the fields being invited to work in the subgroups and to channel the results of their work into the thematic working groups. The final products will be concise technical manuals with immediate practical applicability and impact on the quality of patient care and infection control as a first step. Technical manuals are an intermediate step to formal guidelines, with the advantage that current knowledge can be swiftly translated into best practice. Setting- and resource-specific components can be incorporated into the technical manuals in pragmatic recognition of regional differences in access to various health care levels, infrastructure and skills.

4.2 Working groups

CE clinical. Coordinators: T. Junghanss and O. Akhan

- Imaging: O. Akhan and F. Tamarozzi
- Laboratory diagnosis: M. Siles-Lucas and B. Gottstein
- Medical treatment: J. Horton and L. Uchiumi
- Percutaneous treatment: O. Akhan and E. Brunetti
- Surgery: A.M. da Silva and K. Achour

- Endoscopy: M. Benazzouz
- Watch and wait: M. Stojkovic and F. Tamarozzi
- Data platform: A. Casulli
- Screening: T. Junghanss
- Research gaps: T. Junghanss and H.H. Garcia

CE control. Coordinators: M. Lightowlers and E. Larrieu
Eight WHO-IWGE members attended the group on control of CE and discussed:

- frequency of dog dosing;
- mechanisms to limit stray dog populations;
- vaccination of sheep;
- culling of aged livestock and
- monitoring of the outcomes of control efforts: diagnostic tests for infections in dogs, sheep and humans.

It was agreed first to audit current programmes to control the transmission of *E. granulosus* worldwide and to use the results to identify a more inclusive group, which would have the opportunity to contribute to the WHO-IWGE on control of CE.

AE clinical. Coordinators: L. Millon and B. Mühlhaupt
under discussion

AE control. Coordinators: P. Torgerson and P. Deplazes
• Targeting fox populations for control of *E. multilocularis*: T. Romig

- Targeting dogs for control of *E. multilocularis*: P. Torgerson
- Ecology of populations of small mammals: P. Deplazes
- Transmission modelling: P. Torgerson
- Targeting humans for prevention and surveillance of AE and burden of disease: P. Torgerson and P. Deplazes

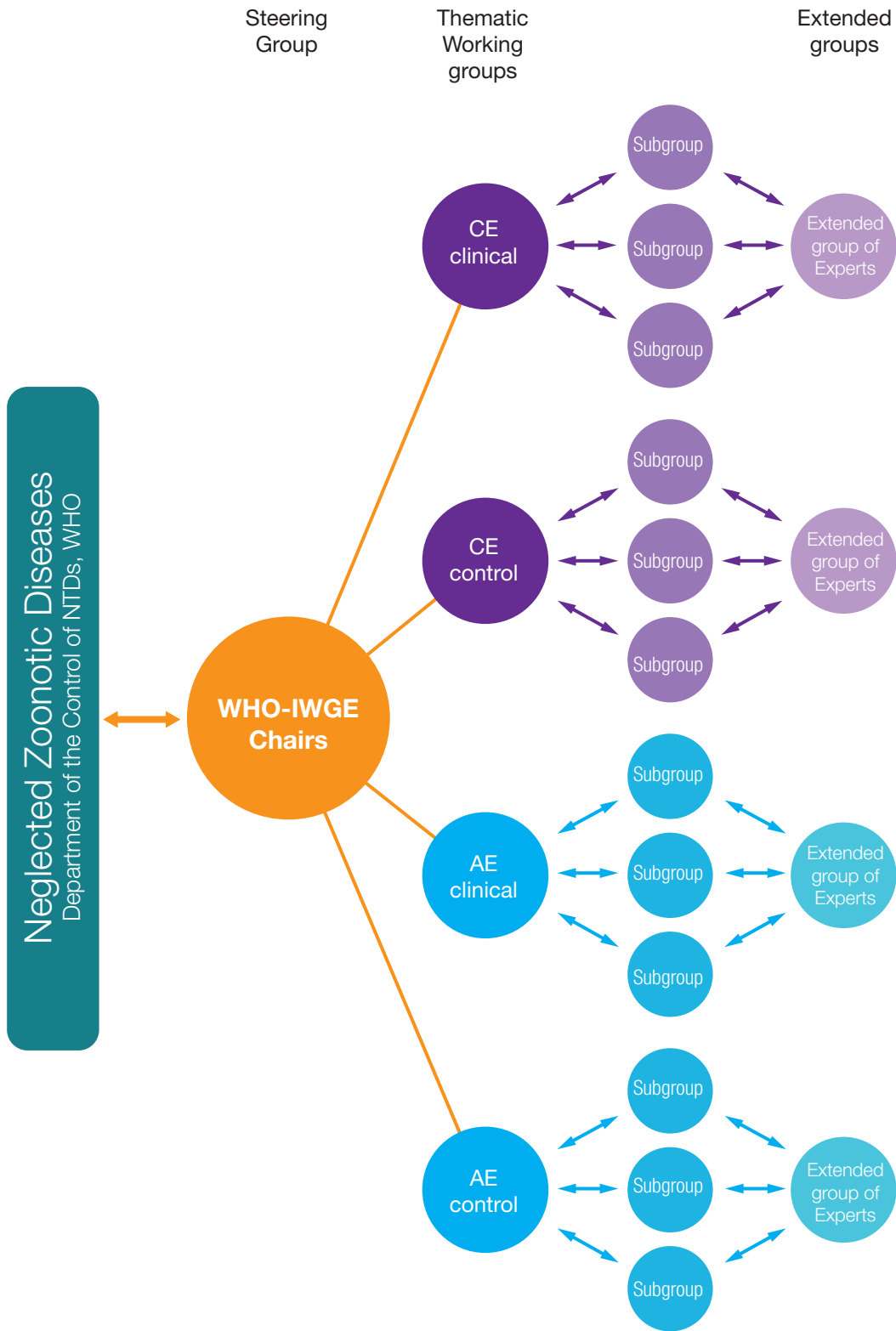


Figure 7. Structure of the WHO-IWGE

4.3 Aims and objectives of the WHO-IWGE: concepts of a renewed way forward

It was agreed that, as a first step, tools such as technical manuals will be elaborated and recommendations made with immediate practical applicability and impact on the quality of patient care and infection control. The tools and recommendations should be disseminated through national and international health policy channels and major medical and public health conferences to ensure access to updated, innovative clinical and control strategies.

The control of CE and AE should be moved into mainstream medicine, where patients first access health care, and into mainstream public health to be integrated with other control efforts (One Health approach). The products of the WHO-IWGE should be brought to the attention of health services, public health policy-makers and relevant stakeholders at all levels to facilitate their use and access to updated, innovative clinical and control strategies.

4.4 Deliverables

Deadline for all deliverables: Presentation at the World Congress on Echinococcosis, Algiers, Algeria, 5–7 October 2017

Technical manuals

- Technical manual for clinical management of CE
- Technical manual for the control of AE
- Audit of current CE control activities
- under discussion: clinical management of AE

Maps

Maps of the incidence of CE and AE at subnational level

Platform for prospective collection and analysis of standardized clinical data

Exploration of ongoing activities and models of clinical data platforms (e.g. the WHO Special Programme for Research and Training in Tropical Diseases (TDR) (Box 8), the European Register of Cystic Echinococcosis (ERCE; Box 9), networks of expert centres (Box 10) and further regional initiatives (Box 11)) to agree on a common strategy, including data collection, data sharing, planning analysis and outputs and to secure funding and sustainability.

Definition, scope and guidance for “screening” for CE and AE

Presentations, symposia and workshops

4.5 Conclusion

WHO-IWGE aims to make updated pragmatic guidance to clinical management and control of echinococcosis rapidly available and to disseminate this material more efficiently through general clinical medicine and public health channels. WHO-IWGE will step up advocacy and activities to improve care for patients and control of the infection in communities.

BOX 8. EXPERIENCE OF TDR WITH DATABASES

TDR has an open-access policy and promotes data-sharing. We are exploring different types of data-sharing to match the diversity of stakeholders. We launched the “tuberculosis platform for aggregation of clinical tuberculosis studies” (TB-PACTS) in April 2016, which gave scientists access to data from clinical trials on TB. By the end of 2016, all of the 21 requests for access to data had been approved within an average of 9 days. Two databases for trials on schistosomiasis and soil-transmitted helminths have also been established and the data analysed; we are working with stakeholders to make them sustainable and accessible. The guiding principles are: (i) the involvement of stakeholders (both data generators and users) throughout establishment of data-sharing platforms; (ii) clear, acceptable norms that are fair to stakeholders, by establishing and implementing criteria for governance, data contribution, access and use with partner organizations; and (iii) long-term sustainability.

BOX 9. THE EUROPEAN REGISTER OF CYSTIC ECHINOCOCCOSIS (ERCE)

The ERCE was launched in October 2014 in the context of the HERACLES project (Box 10). ERCE is a prospective, observational, multicentre register of patients with probable or confirmed CE, for which data are collected prospectively to address specific research questions (e.g. spontaneous or treatment-induced evolution of cysts over time) and help overcome the lack of prospective studies. It is linked to the Echino-Biobank sample repository established in the Instituto de Recursos Naturales y Agrobiología–Consejo Superior de Investigaciones Científicas (IRNASA–CSIC), Salamanca, Spain. The number of patients registered so far is much higher than the total number of national cases published by the European Centre for Disease Prevention and Control in 2015 (Rossi et al., 2016).

For more information on this subject please see online at http://www.who.int/echinococcosis/resources/IWGE_Report_2016_Extended_boxes/en/

BOX 10. HUMAN CYSTIC ECHINOCOCCOSIS RESEARCH IN CENTRAL AND EASTERN SOCIETIES (HERACLES)

HERACLES is a collaborative, translational public health project on cystic echinococcosis, funded by the European Commission (<http://www.heracles-fp7.eu/>). HERACLES in numbers (at December 2016): 9 partners in the Consortium; 23 nations involved; more than 45 centres in the “extended network” (Fig. 8); 24 696 people screened by ultrasound in 2014–2015; 248 CE patients identified by ultrasound screening; 969 people enrolled in the European Register (<http://www.heracles-fp7.eu/erce.html>); about 1500 samples in the Echino-BioBank; a patent taken out on soluble “salts of benzimidazoles”; 26 scientific papers in peer-reviewed journals; and period covered: 1 October 2013–30 September 2018 (<http://www.heracles-fp7.eu/publications.html>).



Figure 8. Map of institutes, centres and advisers that participate in HERACLES (http://www.heracles-fp7.eu/interactive_map.html)

BOX 11. SOUTH AMERICAN INITIATIVE FOR THE SURVEILLANCE, DIAGNOSIS AND CONTROL OF CE

Six countries (Argentina, Brazil, Chile, Paraguay, Peru and Uruguay) are involved in the initiative, which is coordinated by the zoonosis unit at the Pan American Foot-and-Mouth Disease Center PANAFTOSA within the Pan American Health Organization/WHO Regional Office for the Americas (PAHO/WHO). The objectives are to stimulate governance and formulate strategies and action plans for the control and elimination of CE as a public health problem in the Region. The initiative has delivered a number of results: (i) conducted two online courses for CE control; (ii) facilitated laboratory training; (iii) issued a guide on surveillance and control to standardize approaches; (iv) conducted proficiency testing in reference laboratories; and (v) conducted the first national evaluation, in Uruguay. Recently, the initiative collected data on the incidence and prevalence of CE and some programme indicators to form a first regional baseline of cases in humans and animals (PAHO/WHO, 2015).

For more information on this subject please see online at http://www.who.int/echinococcosis/resources/IWGE_Report_2016_Extended_boxes/en/

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ANNEX 2. MEETING AGENDA

DAY 1		
Welcome coffee		
09:30–10:00	Welcome address	
10:00–10:30	Setting the scene: Introduction to meeting context and vision Around the table introductions of participants and expectations from the meeting	WHO Secretariat: Bernadette Abela-Ridder
10:00–12:00	Introduction of proposed way forward: - structure - participation Discussion Agreement on the format of IWGE for the coming 2 years	Thomas Junghanss, Chair IWGE Okan Akhan, Co-Chair IWGE All participants
12:00–14:00	Lunch break	
14:00–15:30	Proposed work plan CE streams - Clinical - Control AE streams - Clinical - Control Methodological issues (guidelines) Discussion Agreement on the work plan for IWGE for the coming 2 years Assignment to working groups (CE clinical, CE control, AE clinical, AE control)	Thomas Junghanss, Chair IWGE Okan Akhan, Co-Chair of IWGE All participants Marcel Zwahlen
15:30–16:00	Coffee break	
16:00–17:30	CE clinical CE control AE clinical AE control	Working groups

ANNEX 2. Continued

DAY 2		
09:00–9:15	Summary of day 1 Objectives of day 2	Rapporteur Chair
9:15–11:00	CE clinical CE control AE clinical AE control	Working groups
11:00–11:20	Coffee break	
11:20–12:00	Working group summaries Discussion Agreement on work plans for CE clinical, CE control, AE clinical, AE control Presentation on HERACLES	Working group rapporteurs Adriano Casulli
12:00–14:00	Lunch break	
14:00–15:30	Links to other initiatives Universal health coverage Health systems strengthening Intersectoral action for health	
15:30–16:00	Coffee break	
16:00–17:00	Wrap up, next steps	Working groups Chair Secretariat
17:00	Final remarks and closure	Chair Secretariat

ANNEX 3. LIFE CYCLES AND INTERVENTION POINTS OF ECHINOCOCCOSIS

Alveolar and Cystic Echinococcosis – Two diseases Life-cycles and intervention points

