



**MEETING OF THE AD HOC GROUP ON ALTERNATIVE STRATEGIES FOR THE CONTROL
AND ELIMINATION OF MYCOBACTERIUM TUBERCULOSIS COMPLEX INFECTION IN LIVESTOCK**
Videoconference, 29 September 2020

The meeting of the OIE *ad hoc* Group on Alternative Strategies for the Control and Elimination of *Mycobacterium tuberculosis* complex Infection in Livestock (hereafter referred to as the Group) was held via videoconference on 29 September 2020.

1. Opening

Dr Matthew Stone, Deputy Director General of the OIE, welcomed the participants of the Group on behalf of Dr Monique Eloit, Director General of the OIE.

Dr Stone provided background information on the rationale and purpose of the meeting. He mentioned the UN Sustainable Development Goals (SDG) and noted that SDG 3 refers to global health challenges, including ending of tuberculosis (TB) in humans by 2030, which must include zoonotic TB (zTB).

He underlined that the decision to establish the Group was part of the implementation of the Roadmap for zTB, which was jointly launched by the WHO, OIE, FAO and the Union in 2017¹, and which describes ten priority areas of intervention for tackling zTB in people and TB in animals. He noted that some of the priority areas are associated with animal health, and include the need to (i) reduce TB prevalence in livestock; (ii) develop guidelines for the control of TB in livestock; and (iii) implement community-based interventions to reduce zTB in humans and livestock while recognising the cultural and socioeconomic realities of different settings.

Finally, Dr Stone noted that the purpose of the Group is to recommend actionable strategies to control TB in livestock in regions where the zTB burden in humans is high and slaughter of livestock is neither economically feasible nor culturally or socially acceptable.

2. Chairperson, agenda, and list of participants

The meeting was chaired by Prof Vivek Kapur. The OIE secretariat acted as rapporteur. The meeting agenda and the list of participants are provided in Appendices I and II, respectively.

3. Discussion on the Terms of Reference (ToR)

The Group noted that the source of TB in livestock can occur from a range of sources, which include other livestock, wildlife, and (in certain settings) humans. It is therefore important to consider reverse zoonosis (i.e. when humans infect animals) among the elements of a TB control strategy in livestock. The Group agreed to include this information in the ToR.

The Group noted that in the draft ToR, wildlife was not considered along with livestock as a target animal population of TB control strategies that aim at reducing zTB in humans. Although the Group recognised the important role of wildlife as a natural reservoir of TB and its risk of spillover into livestock, it acknowledged that the control of TB in wildlife, depending on the aim and country setting, requires a set of measures different from those in livestock. To keep the scope of work narrow and avoid adding complexity, the Group agreed to

¹ https://www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/Tuberculosis/Roadmap_zoonotic_TB.pdf

not include wildlife in the ToR.

The Group agreed that there is a need to develop innovative strategies for controlling TB in livestock in economically disadvantaged areas where slaughter is not an option and/or the zTB burden in humans is unacceptably high. However, the Group noted that another key challenge to be addressed in these areas is the lack of expertise and technical capacity. Therefore, rather than focusing solely on innovation, the Group suggested also considering ways to improve the efficient use of existing tools by the Veterinary Services. The Group also acknowledged that ‘one size does not fit all’ and that selected TB control strategies would need to be flexible and adaptable to the changing conditions of real-world scenarios.

The Group noted that the ToR do not specify whether ‘TB control strategies in livestock’ refers to local or national interventions. The Group agreed that the ToR should clarify that these TB control strategies refer to locally applicable interventions (i.e. at herd level) that may be scaled up to cover larger areas while taking into account the relevant socioeconomic and cultural settings.

During the discussion, it emerged that terms ‘culling’ and ‘slaughter’ were used as synonyms. The group, however, recognised that these terms may have different meanings in different legislative frameworks, and that only ‘slaughter’ is defined in the OIE *Terrestrial Animal Health Code*². The Group therefore agreed to use the term ‘slaughter’ throughout the ToR to ensure consistency of terminology. However, the Group also recognised that the term slaughter has negative connotations in some cultures, and therefore the terms culling or segregation should still be considered by the Group when formulating recommendations for the control of TB in livestock.

Finally, the Group decided to review the section ‘Actions to deliver’ of the ToR to ensure a common understanding of what to deliver within the Group and, also consistency with the above-mentioned changes in the ToR ([Appendix III](#)).

4. Draft questions for external experts

The Group recognised that one of its critical tasks of this initiative is to elicit expert opinion on TB control strategies by means of interviews and focus groups with external experts other than *ad hoc* Group members. This step is necessary to gather and collate information and formulate recommendations that are based on scientific evidence, and take into consideration different perspectives, needs, and values.

The Group agreed to finalise the first list of external experts by October 2020. Additional experts may also be considered in the future. The Group remarked that included expertise should go beyond veterinary medicine and include other disciplines such as social science, economics, and human medicine, epidemiologists, microbiologists, pathologists etc. Geographical and gender balance of subject matter experts should also be ensured. In [Appendix IV](#), a map showing the current distribution of proposed external experts is presented.

The Group reviewed the list of draft questions for the expert elicitation that had been shared before the meeting and proposed minor changes. The list of questions is in [Appendix V](#).

5. Opinion on whether *Mycobacterium tuberculosis sensu stricto* should be maintained in the Terrestrial Code Chapter 8.11.1. Infection with *Mycobacterium tuberculosis* complex.

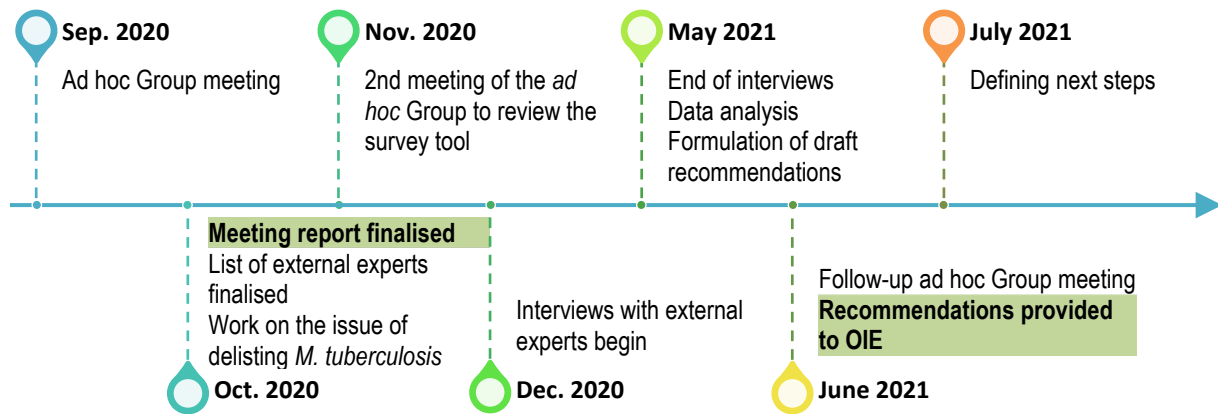
The Group took note of Scientific Commission’s opinion on whether *M. tuberculosis* should continue to be considered as a component of *Mycobacterium tuberculosis* complex for the purpose of the *Terrestrial Code*. The Group agreed to assess the quality and strength of the scientific evidence of *Mycobacterium tuberculosis sensu stricto* infection in livestock and potential for zoonosis, zoonoanthroponosis, or both. The Group’s opinion will be provided to the OIE Secretariat in written after the meeting.

6. Next meeting and timeline

The Group agreed to meet again to build upon the proposed questions and develop a formal survey tool. Interviews or focus Groups with external experts will begin before the end of 2020.

² Slaughter means any procedure that causes the death of an animal by bleeding.

Timeline and milestones (in green)



7. Finalisation and adoption of the draft report

The Group agreed to circulate the draft report electronically for comments before adoption.

.../Appendices

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Convened online as required, beginning Tuesday 29 September 2020

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Agenda

Start (Paris time)	End (Paris time)	Time	Item	Presenter
3:00 PM	3:05 PM	0:05	1. Check connection, microphones, welcome and brief introduction of the participants	Antonino CAMINITI
3:05 PM	3:15 PM	0:10	2. <i>Ad hoc</i> Group ToRs and OIE context	Matthew STONE
3:15 PM	3:40 PM	0:25	3. ToRs: review and consideration of the issue on delisting of <i>M. tuberculosis sensu stricto</i> ; alternative strategies to test and slaughter, approach (focus groups vs individual interviews to external experts) and expectations	Vivek KAPUR
3:40 PM	4:05 PM	0:25	4. Q&A and discussion	All together
4:05 PM	4:10 PM	0:05	5. Draft questions ¹ for focus groups and individual interviews and draft list of external experts	Vivek KAPUR
4:10 PM	4:25 PM	0:15	6. Q&A and discussion	All together
4:25 PM	4:30 PM	0:05	7. Next steps and way forward	Vivek KAPUR

¹ Draft questions (or broader domains of questions) to conduct focus groups or individual interviews will be shared with participants before the meeting.

MEETING OF THE AD HOC GROUP ON ALTERNATIVE STRATEGIES FOR THE CONTROL AND ELIMINATION OF *Mycobacterium tuberculosis complex* INFECTION IN LIVESTOCK

Convened online as required, beginning Tuesday 29 September 2020

List of participants

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MEETING OF THE *AD HOC* GROUP ON ALTERNATIVE STRATEGIES FOR THE CONTROL AND ELIMINATION OF *Mycobacterium tuberculosis complex* INFECTION IN LIVESTOCK

Convened online as required, beginning Tuesday 29 September 2020

Terms of Reference

Purpose

The purpose of the *ad hoc* Group is to discuss and propose strategies other than ‘test and slaughter’ that can be used to prevent, control, or eradicate tuberculosis (TB) in livestock. The aim is to reduce (and eventually eliminate) the disease burden of zoonotic tuberculosis (zTB) in humans. For the purpose of this *ad hoc* Group, zTB is defined as an infection in humans caused by those species belonging to the *Mycobacterium tuberculosis complex* that are transmitted from an animal host.

The *ad hoc* Group is convened under the authority of the Director General of the OIE, and reports through the Scientific Commission for Animal Diseases.

Background

The United Nations’ 17 Sustainable Development Goals (SDG) address the biggest problems the world is currently facing. Of these, SDG 3 refers to global health challenges, including ending the current epidemic of tuberculosis in humans by 2030 as one of its targets.

The path to achieving this target includes the reduction of the human burden of zTB, which is caused by infection with a member of the *Mycobacterium tuberculosis complex*, primarily transmitted from livestock to humans through direct exposure to infected animals or the consumption of contaminated milk and other animal products.

The mitigation of TB risk in livestock and, in consequence, zTB in humans, is accomplished in many countries through a combination of measures that include routine milk pasteurisation combined with the control of the disease in livestock through a ‘test and slaughter’ strategy. With this approach, animals are periodically screened using the tuberculin skin test, and reactors are slaughtered. Post-mortem inspection of carcasses, and condemnation or other appropriate dispositions in the case of lesion detection, with follow-up investigations in any herd submitting tuberculous cattle, supports identification of infected herds.

Although pasteurisation and heat treatment of milk, and reliance on post-mortem inspection under veterinary supervision have proven to be effective control measures in many countries, these are not viable solutions in many of the least economically developed countries of the world—where the greatest disease burden of zTB in humans is mostly concentrated—because of technological and logistical constraints.

Therefore, in poor rural communities, the control of TB in livestock represents an opportunity to reduce TB transmission at the human-animal interface, which may occur from livestock to humans, but also from humans to livestock (i.e. reverse zoonosis), under certain epidemiological conditions such as where people share the same living space with livestock. However, the currently practiced test-and-slaughter approach, although proven to be successful in eliminating livestock TB in some high-income countries, is unfeasible for economic or social reasons in many regions having the greatest TB burden in both humans and in livestock.

Hence, there is a well-recognised and urgent unmet need to reduce the risk of zTB transmission to humans through the reduction of TB prevalence in livestock by means of innovative strategies other than test and slaughter.

In 2017, the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE), the World Health Organization (WHO), and the International Union Against Tuberculosis and Lung Disease (Union) jointly developed a *Roadmap for Zoonotic Tuberculosis*, and a call for action to tackle zTB in people and animals. The Roadmap lays down 10 priorities, which include: (i) the need to reduce the prevalence of TB in livestock; (ii) the development of policies and guidelines for the prevention and surveillance and control of TB in animals; and (iii) the implementation of community-based interventions to reduce burden of TB in humans and livestock, recognizing the cultural and socioeconomic realities of each setting.

This *ad hoc* Group is convened to consider the three specific priorities listed above, and to explore and recommend actionable strategies to control TB in livestock other than by test and slaughter.

Finally, comments from several OIE Members have been received asking to either maintain or delist *M. tuberculosis* sensu stricto as part of the notifiable species currently included in the *Mycobacterium tuberculosis* complex of the OIE *Terrestrial Animal Health Code*. Acknowledging that available scientific evidence led experts to contradictory opinions on the possibility of transmission of *M. tuberculosis* sensu stricto from animals to humans or other animals, the charge of this *ad hoc* Group also includes the formulation of recommendations for OIE Specialist Commissions based on the most updated scientific knowledge on the matter.

The organisation of this *ad hoc* Group is framed within the activities for zTB of the FAO-OIE-WHO Collaboration (Tripartite) Work Plan to combat health risks at the Animal-Human-Ecosystems Interface using the One Health approach.

Actions to deliver

The *ad hoc* Group will:

- **Discuss** new knowledge and understanding of the biology of species belonging to the *Mycobacterium tuberculosis* complex associated with zTB, including considerations of the socioeconomic impact for humans and the potential of reverse zoonosis for livestock, to help define new strategies for disease control in livestock.
- **Identify** and describe current disease control strategies for TB in livestock, including identifying constraints and limitations of current approaches, but also opportunities for improving efficiency of existing disease control measures.
- **Identify** and describe new disease control strategies for TB in livestock, including options other than the test and slaughter approach, that could reduce economic impacts while remaining socially and culturally acceptable in low-resource settings. These strategies should consist of measures that can be implemented at herd level, with potential to scale up to national and regional strategies.
- **Recommend** which disease control strategies for TB in livestock could be implemented in different epidemiological, cultural and socioeconomic scenarios such as economically disadvantaged rural areas, or where slaughter is not socially acceptable.
- For each recommended strategy, **describe** pros and cons, implications for local and international trade, and steps for implementation. This will be achieved by reaching out to other subject matter experts to help inform recommendations.
- **Identify** experts other than *ad hoc* Group members with relevant field experience in the control of TB in livestock to elicit expert opinion on TB control strategies through interviews and focus groups. Such expertise should not be limited to veterinary medicine, but should also include social science, economics, and human medicine. Geographical and gender balance of subject matter experts should also be ensured.
- **Recommend** whether *Mycobacterium tuberculosis* sensu stricto should be included among the notifiable species of the *Mycobacterium tuberculosis* complex of the OIE *Terrestrial Animal Health Code* based on available scientific evidence.

Considerations

Ad hoc Group's members are expected to be familiar with:

- The [Roadmap for Zoonotic Tuberculosis](#).
- Chapter 8.11 [Infection with Mycobacterium Tuberculosis complex](#) of the OIE *Terrestrial Animal Health Code* (most recent update adopted in 2017).
- Chapter 3.4.6 [Bovine Tuberculosis](#) of the OIE *Terrestrial Animal Health Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (most recent update adopted in 2009, currently under revision).
- All other relevant material shared by the OIE and *ad hoc* Group's members.

Expectations

Before the first video call *ad hoc* Group's members should:

- Sign the OIE *Undertaking on Confidentiality of Information* (if not done already).
- Complete the *Declaration of Interests* form.
- Read and study in detail all materials provided by the OIE prior to the meeting (see section 'Considerations').
- Agree on the appointment of the Chair of the Group.
- Contribute to online and offline discussions.
- Contribute to drafting any advice.
- Understand that the membership of this *ad hoc* Group may be revised between group meetings to reflect changing needs and priorities (for example, if additional expertise becomes necessary).

Deliverables

Deliverables of this *ad hoc* Group include:

- Short-term deliverables (by October 2020): Report of the first meeting, list of additional external experts, and survey questions for interviews to be conducted with additional external experts.
- Short-term deliverables (by January 2021): Recommendation for OIE Specialist Commissions on whether *Mycobacterium tuberculosis* sensu stricto should be included among the notifiable species of the *Mycobacterium tuberculosis* complex of the OIE *Terrestrial Animal Health Code*.
- Medium-term deliverables (by mid-2021): Meeting reports that capture the main discussion points and conclusions of the *ad hoc* Group, including the description of potential new strategies to control TB in livestock, and next steps.
- Long-term deliverable (by end of 2021-beginning of 2022): A policy paper addressing the priorities of the *Roadmap for Zoonotic Tuberculosis* associated with the control of TB in livestock.

Tentative timeline

Several video calls and (possibly) a physical meeting will be organised. The first video call of the *ad hoc* Group will be held on Tuesday 29 September 2020.

Annex 1. Membership

Ad hoc Group's Members

- 1) Dr Paula Fujiwara (the Union, observer) pfujiwara@theunion.org
- 2) Dr Anna Dean (WHO, observer) deanan@who.int
- 3) Dr Junxia Song (FAO, observer) junxia.song@fao.org
- 4) Dr Vivek Kapur (Chair) vkapur@psu.edu
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- 8) Dr Timpiyian Leseni talakutb@gmail.com
- 9) Dr Misheck Mulumba mulumbam@arc.agric.za (Member of the OIE Scientific Commission)

Annex 2. Meeting arrangements

Given the current international health situation, a series of online meetings in the form of **video calls** and **electronic consultations** with *ad hoc* Group will be organised.

The **first video call** will be held on Tuesday 29 September 2020 to:

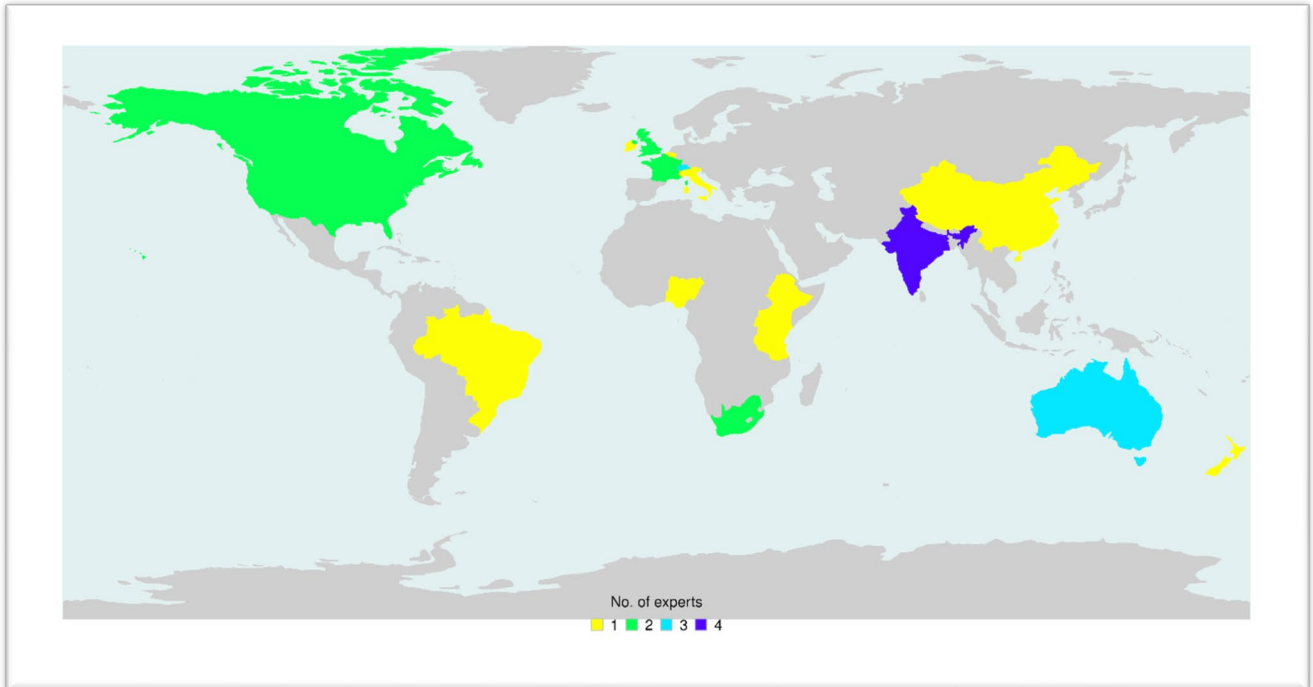
- (i) Discuss and amend, if necessary, the present ToRs;
- (ii) Identify and select **additional external experts** with field experience in TB control in livestock and other relevant areas of expertise to elicit expert opinion on zTB control strategies via **individual** or **group interviews**;
- (iii) Discuss and endorse the **list of questions** to ask in the interviews. Annex 1 “Membership” includes a roster of suggested external experts.

The scope of these interviews is to collect information on current or potential strategies to control TB in livestock across different settings from the socioeconomic and cultural settings around the world. Expertise could also be related to animal diseases other than zTB for which test and slaughter is commonly applied. Collected information should include both the veterinary dimension of the intervention to control the disease as well as consideration of the cultural and socioeconomic impact of such intervention.

Information will be collated and discussed with the *ad hoc* Group in subsequent video calls to identify the most suitable strategies for zTB control. A final electronic or physical meeting of the *ad hoc* Group will be held to discuss more thoroughly the selected strategies, and to propose next steps.

Appendix IV

Geographical distribution of (possible) external experts



List of questions for external experts

Task	Question
<p>1. Discuss current knowledge and understanding of the biology of species belonging to the <i>Mycobacterium tuberculosis</i> complex (MTBC) associated with zTB to help define new strategies for disease control in humans and in livestock.</p>	<ul style="list-style-type: none"> • What current knowledge or understanding of the biology of members of the MTBC associated with zTB has emerged of relevance to the development of new strategies for disease control in humans and livestock? Please summarize and provide citation where appropriate. • What is the quality, strength, and relevance of the evidence, as well as <u>effect size</u> (if available)?
<p>2. Identify and describe <u>current</u> disease control strategies¹ for TB in livestock, including identifying constraints and limitations of current approaches.</p> <p>¹ Current control strategies are strategies that are currently carried out by official veterinarians, private veterinarians, paraprofessionals, or a combination of them.</p>	<ul style="list-style-type: none"> • What are the <u>current</u> practices of disease control for TB in livestock in practice in different settings? • Do you have any knowledge of <u>current</u> approaches beyond test-and-slaughter? • What are the constraints and limitations of the <u>current</u> approaches?
<p>3. Identify and describe <u>new</u> disease control strategies for TB in livestock², including options other than the test and slaughter approach, that could reduce the impact of the disease while remaining feasible in low-resource settings.</p> <p>² New control strategies are strategies that may include new original approaches to control TB in livestock, but also the repurposing of existing strategies in a different setting.</p>	<ul style="list-style-type: none"> • Do you have any knowledge of <u>new</u> approaches beyond test-and-slaughter? • Do these alternative interventions consider the economic, social and cultural impacts and feasibility of control measures? • What is the quality and strength of the evidence? • What are the potential impacts of these alternative interventions on international trade?
<p>4. Recommend which disease control strategies for TB could be practically implemented in different epidemiological and socioeconomic scenarios such as economically disadvantaged rural areas or where slaughter is not socially acceptable. For each recommended strategy, please describe pros and cons, implications for local and international trade, and steps for implementation.</p>	<p>[We need some actual questions here, or are you going to use the text from the task column?]</p>
<p>5. Identify experts other than <i>ad hoc</i> Group members with relevant field experience in the control of TB in livestock to elicit expert opinion on TB control strategies.</p>	<ul style="list-style-type: none"> • Who would you recommend as key subject matter experts or relevant public and private stakeholders in the broad areas of bTB, zTB or disease control whom we should include in this formal consultation process?

Supplemental questions:

1. How might we understand the impact and risk pathways of bTB in livestock, humans, and wildlife?
2. How might we determine the level of efficacy, efficiency and cost-effectiveness of vaccines or other interventions to control the spread of bTB? and,

Annex V (cont.)

3. How might we establish standards for and increase access to fit-for-purpose diagnostic and vaccination tools?
 4. How might we produce advocacy tools, including economic and social evidence?
 5. How might we get human and animal health authorities interested in developing / sharing / using accurate prevalence estimates of bTB?
 6. How might we use market-based incentives for bTB control?
 7. Do we have diagnostic capabilities and easy to perform tests to detect zTB in samples taken from human or TB in samples taken from animals and differentiate them from *Mycobacterium Tuberculosis sensu stricto*?
 8. How can we monitor the success of alternative control interventions not only in economic terms, but in terms of social and cultural acceptance?
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