# SYSTEMATIC REVIEW PROTOCOL: Zoonotic hazards in cattle value chain in Tanzania[[1]](#footnote-1)

Authors:

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DG and MC developed the protocol, SA refined the protocol. MC and SA are the guarantors of the review.

Amendments: future amendments to the protocol will be tracked through numerical ordering, and published with any subsequent publication.

Support: The systematic review was funded by the Consultative Group for International Agricultural Research (CGIAR) Research Program on Agriculture for Nutrition and Health, the Australian Centre for International Agricultural Research (ACIAR) and the “Safe Food, Fair Food” project (funded by the Federal Ministry for Economic Cooperation and Development, Germany).

The funders had no input in the development or refining of the protocol.

Registration: the protocol has not been registered

INTRODUCTION

Rationale: The CGIAR Research Program on Livestock and Fish (<http://livestockfish.cgiar.org>) was initiated in 2012 with an aim to undertake downstream transformation of selected high-potential livestock and fish value chains. These value chains were identified by a systematic approach based on their potential to contribute to pro-poor development. Nine value chains were identified for initial focus including dairy in Tanzania, pork in Uganda, and small ruminants in West Africa. A sister program, the CGIAR Research Program on Agriculture for Nutrition and Health (<http://a4nh.cgiar.org>) undertook to address food safety and zoonoses in these value chains. We undertook SLR in five of these value chains to generate evidence on priority zoonotic and food borne hazards and to explore if SLR was suitable for generating evidence to help prioritisation and planning research for value chain development.

Objectives: To gather information available in the published scientific literature related to zoonotic hazards in the dairy cattle value chain in Tanzania

Research questions:

1. What is the prevalence of the selected hazards in the target animal species and food products in the target country?

PICOS: what is the prevalence of (*Brucella* spp) infection in (cattle) in Tanzania?

1. What are the risk factors for each of the selected hazards in each of the selected populations in the target area?

PICOS: what are the risk factors for (*Brucella* spp) infection in (cattle) in Tanzania?

1. What impacts does each of the selected hazards in the target population have in the target area (including (i) overall disease burden (DALYs: Disability-adjusted life year[[2]](#footnote-2)), (ii) economic burden (at individual or population levels), (iii) health, (iv) social, (v) environment)?

PICOS: what type of impacts does (*Brucella* spp) in (cattle) has in Tanzania?

1. What are the available control strategies for each of the selected hazards and what is their effectiveness in the selected populations in the target areas?

PICOS: what are the available control strategies for (*Brucella* spp) in (cattle) in Tanzania and their effectiveness?

Population: Cattle value chain; Setting: Tanzania

Hazards:

|  |  |  |
| --- | --- | --- |
| **Food borne non-zoonotic** | **Food-borne zoonoses** | **Not exclusively foodborne** |
| *Salmonella typhi* | *Campylobacter spp* | *Leptospira* spp |
| Mycotoxins | (Toxigenic) *E. coli* | *Mycobacterium* spp |
| Antibiotic residues | *Salmonella* spp | *Brucella* spp |
|  | *Staphylococcus* spp | Rabies virus |
|  | *Clostridium perfringens* | *Bacillus* *anthracis* |
|  | *Bacillus cereus* | Rift Valley fever virus |
|  | *Cryptosporidium* spp | Q fever (*Coxiella* *burnetti*) |
|  | *Toxoplasma* spp | *Trypanosoma* spp |

METHODS

|  |  |  |  |
| --- | --- | --- | --- |
| Eligibility criteria | **Inclusion criteria**  Reporting the presence of relevant hazard in the target hosts (animal, animal source foods, people and wildlife) OR  Reporting economic cost, DALYs, social or other burdens, environmental impacts associated with the hazard OR  Reporting on aspects of risk factors, knowledge and control methods  **Exclusion criteria**  Written in language other than English OR  From outside of Tanzania OR  Published after December 2012 OR  Reviews if they do not contain original field research | | |
| Information sources | Online databases: PubMed, CabDirect, Web of Science, African Journals OnLine (AJOL) | | |
| Search | **PubMed**  (((salmonell\* OR mycotoxin OR residue\* OR campylobacter\* OR "e. coli" OR staphylococ\* OR clostridium OR listeri\* OR bacillus OR cryptosporidi\* OR toxoplasm\* OR leptospiros\* OR tuberculosis OR "mycobacterium tuberculosis" OR "mycobacterium bovis" OR brucell\* OR rabies OR anthrax OR "rift valley fever" OR "Q fever" OR "coxiella burnetii" OR trypanosom\*[Title/Abstract])) AND (cattle OR bovine OR cow OR "dairy cow" OR "dairy cattle" OR bos OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream[Title/Abstract])) AND Tanzania\*[Title/Abstract]  **CabDirect**  (title:(Salmonell\* OR mycotoxin\* OR residue\* OR campylobacter\* OR "e. coli" OR listeri\* OR clostridium OR bacillus OR cryptosporidi\* OR toxoplasm\* OR leptospiros\* OR tuberculosis OR "mycobacterium tuberculosis" OR "mycobacterium bovis" OR brucell\* OR rabies OR anthrax OR "rift valley fever" OR "Q fever" OR "coxiella burnetii" OR trypanosom\* OR staphylococ\*) OR ab:(Salmonell\* OR mycotoxin\* OR residue\* OR campylobacter\* OR "e. coli" OR listeri\* OR clostridium OR bacillus OR cryptosporidi\* OR toxoplasm\* OR leptospiros\* OR tuberculosis OR "mycobacterium tuberculosis" OR "mycobacterium bovis" OR brucell\* OR rabies OR anthrax OR "rift valley fever" OR "Q fever" OR "coxiella burnetii" OR trypanosom\* OR staphylococ\*)) AND (title:(Tanzania\*) OR ab:(Tanzania\*)) AND (title:(bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese) OR ab:(bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese))  **Web of Science**  Topic=(Salmonell\* OR mycotoxin\* OR residue\* OR campylobacter\* OR "e. coli" OR listeri\* OR clostridium OR bacillus OR cryptosporidi\* OR toxoplasm\* OR leptospiros\* OR tuberculosis OR "mycobacterium tuberculosis" OR "mycobacterium bovis" OR brucell\* OR rabies OR anthrax OR "rift valley fever" OR "Q fever" OR "coxiella burnetii" OR trypanosom\* OR staphylococ\*) AND Topic=(bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese) AND Topic=(Tanzania\*)  **AJOL**  (bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese) AND tanzania\* AND (Salmonell\* OR mycotoxin\* OR residue\* OR campylobacter\* OR "e. coli" OR listeri\*)  (bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese) AND tanzania\* AND (clostridium OR bacillus OR cryptosporidi\* OR toxoplasm\* OR leptospiros\* OR tuberculosis)  (bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese) AND tanzania\* AND ("mycobacterium bovis" OR brucell\* OR rabies OR anthrax OR "rift valley fever" OR "Q fever")  (bovine OR cattle OR cow OR "dairy cattle" OR "dairy cow" OR zebu OR milk OR yoghurt OR butter OR ghee OR "dairy product" OR cream OR cheese) AND tanzania\* AND ("coxiella burnetii" OR trypanosom\* OR staphylococ\*) | | |
| Study records | Download citations to Mendeley Reference Manager and to an excel file. | | |
| Selection process | SCREENING (TITLE/ABSTRACT)   * Download of titles and abstracts and removal of duplicates * Double blind screening of title/abstract (inclusion/exclusion criteria) * Selection of articles considered relevant by AT LEAST one reviewer   ELIGIBILITY AND QUALITY ASSESSMENT (FULL PAPERS)   * Download of full papers available online, or through library. Contact author. * Full paper review (inclusion/exclusion criteria); 10% of papers double reviewed * Full paper / abstract (data extraction) | | |
| **Data collection** | Standardized data extraction file. Data extracted from at least 2 reviewers for 10% of papers. | | |
| **Data items** | See data extraction template | | |
| Assessment of bias of single studies (quality criteria) | Quality of the papers to be judged according to quality criteria (see below). Articles judged as poor quality will be excluded from data synthesis. | | |
| Good quality | Medium quality | Poor quality |
| Unbiased selection of subjects | Biased selection of subjects is acknowledged and accounted for | Not acknowledged biased selection of subjects |
| Data analysis is appropriate | Limitations in data analysis are acknowledged and accounted for | Data analysis is not appropriate |
| Methods used are scientifically sound | Methods used are scientifically sound, although may not be the most appropriate methods | Wrong or inappropriate methods are used |
| Accurate description of methods | Some details on methods are lacking, but methods are understandable, and results remain valid | Methods are not clear or incomplete |
| Reported results are complete and seem accurate |  | Reported results are incomplete and/or inaccurate |
| Data synthesis | **Research question 1 and 2** (prevalence and risk factors). Data to be analyzed by hazard. When enough quality data is available, meta-analysis techniques will be used to obtain summary measures. If only limited data is available, data will be summarized descriptively.  **Research questions 3 and 4** (control and impact). Data will be analyzed by hazard. If sufficient quantitative data of good quality is available, simple quantitative analysis will be performed to summarize literature findings. Qualitative information will be combined, compared and contrasted to identify control options and impacts for each of the hazards. | | |

1. Note from editors: This protocol was not subject to peer-review [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)