# SYSTEMATIC REVIEW PROTOCOL: Zoonotic hazards in small ruminant value chain in Senegal[[1]](#footnote-1)

Authors:

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SGT, BAY and APNN are the guarantors of the review.

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

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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, fish in Egypt 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 small ruminant value chain in Senegal

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 (*Bacillus* spp) infection in (small ruminant) in Mali, Senegal, Côte d’Ivoire, Mauritania and Burkina Faso?

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 (*Bacillus* spp) infection in (small ruminant) in Mali, Senegal, Côte d’Ivoire, Mauritania and Burkina Faso?

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 (*Bacillus* spp) in (small ruminant) has in Mali, Senegal, Côte d’Ivoire, Mauritania and Burkina Faso?

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 (*Bacillus* spp) in (small ruminant) in Mali, Senegal, Côte d’Ivoire, Mauritania and Burkina Faso and their effectiveness?

Population: Small ruminant value chain; Setting: Mali, Senegal, Côte d’Ivoire, Mauritania and Burkina Faso

Hazards:

|  |  |  |
| --- | --- | --- |
| **Food borne non-zoonotic** | **foodborne zoonosis** | **foodborne and direct zoonosis** |
| Antibiotic residues | *Toxoplasma gondii* | *Trypanosoma* spp. |
| Heavy metals | *Cryptosporidium* spp | *Bacillus anthracis* |
|  | *Echinococcus* spp. | Q-fever |
|  | (toxigenic) *Escherichia coli* | Rift Valley fever |
|  | *Giardia duodenalis* | influenza |
|  | *Salmonella* spp. | *Brucella* spp |
|  | *Bacillus cereus* | *Chlamydia* spp |
|  | Coccidies | Helminths |
|  | *Mycoplasma agalactiae* |  |

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 hazards OR  Reporting on aspects of risk factors, knowledge and control methods  **Exclusion criteria**  Written in language other than English and French OR  From outside of Mali, Senegal, Côte d’Ivoire, Mauritania and Burkina Faso OR  Published before January 1988 and after December 2012 OR  Reviews if they do not contain original field research | | |
| Information sources | Online databases: PubMed (English), African Journals OnLine (AJOL) (English), Google scholar (French) | | |
| Search | **PubMed**  (((“antibacterial residue” OR “antibiotic residue” OR ‘heavy metal\*” OR “heavy metal\* residue” OR toxoplasm\* OR cryptosporid\* OR “echinococ\* OR “toxigenic Escherichia coli” OR “toxigenic E. coli” OR “giardia duodenalis” OR “G. duodenalis” OR salmonell\* OR “bacillus cereus” OR “b. cereus” OR coccid\* OR “Mycoplasma agalactiae” OR “M. agalactiae” OR “contagious agalactia” OR trypanosom\* OR anthra\* OR “coxiella burnetii” OR “q fever” OR “rift valley fever” OR “RVF\*” OR influenza OR brucell\* OR Chlamyd\* OR helminth\* [Title/Abstract])) AND (“small ruminant\*” OR sheep OR goat\* OR meat[title/Abstract])) AND (mali\* OR Senegal\* OR “Ivory Coast” OR Mauritania\* OR “Burkina” [Title/Abstract])  **AJOL**  (“small ruminant” OR sheep OR goat OR meat ) AND (mali\* OR Senegal\* OR “Ivory Coast” OR Mauritania\* OR “Burkina”) AND (antibacterial residue\* OR “antibiotic residue” OR “heavy metal” OR "heavy metal residue” OR toxoplasm\* OR cryptosporid\*)  (“small ruminant” OR sheep OR goat OR meat ) AND (mali\* OR Senegal\* OR “Ivory Coast” OR Mauritania\* OR “Burkina”) AND (echinococ\* OR “toxigenic Escherichia coli” OR “toxigenic E. coli” OR “giardia duodenalis” OR “G. duodenalis”)  (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")  (“small ruminant” OR sheep OR goat OR meat ) AND (mali\* OR Senegal\* OR “Ivory Coast” OR Mauritania\* OR “Burkina”) AND (“G. duodenalis” OR salmonell\* OR “bacillus cereus” OR “b. cereus” OR coccid\* OR “Mycoplasma agalactiae”)  (“small ruminant” OR sheep OR goat OR meat ) AND (mali\* OR Senegal\* OR “Ivory Coast” OR Mauritania\* OR “Burkina”) AND (“M. agalactiae” OR “contagious agalactia” OR trypanosom\* OR anthra\* OR “coxiella burnetii” OR “q fever”)  (“small ruminant” OR sheep OR goat OR meat ) AND (mali\* OR Senegal\* OR “Ivory Coast” OR Mauritania\* OR “Burkina”) AND (“rift valley fever” OR “RVF” OR influenza\* OR brucell\* OR Chlamyd\* OR helminth\*)  **Google scholar**  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (fièvre de la vallée du rift)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (fièvre Q)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (métaux lourds)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Résidus d'antibiotiques)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (brucellose)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Bacillus)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Escherichia coli)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Mycoplasma agalactiae)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Trypanosoma spp.)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (influenza)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Helminthes)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Toxoplasma gondii)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Cryptosporidium)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Echinococcus spp.)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Coccidies)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Giardia duodenalis)  (petit ruminant ou mouton ou chèvre) et (Mali ou au Sénégal ou Côte d’Ivoire ou Mauritanie ou Burkina Faso) et (Salmonella spp.) | | |
| Study records | Download citations to Mendeley and/or 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)