



REPORT

Animal-inclusive Community-led Total Sanitation (A-CLTS)

SUMMARY

- In communities where animals live near humans, water, sanitation, and hygiene **(WASH) interventions that include a focus on animals and managing their waste can benefit both people and animals**, reducing their exposure to pathogens and maintaining healthy living environments.
- Close collaboration with the Government of Mali and UNICEF — prior to program implementation, as part of discussions about how to include animals in WASH interventions and at end-of-project debriefings—can lay the groundwork for animal-inclusive WASH strategies.
- While animal feces removal is important in maintaining clean home environments, practicing safe composting, reducing runoff from rainwater, improving the management of sick animals, and

A-CLTS PILOT PROJECT IN MALI

With generous support from the Osprey Foundation, IMA World Health and its partners conducted an Animal-inclusive Community-led Total Sanitation (A-CLTS) project in Segou, Mali. The project piloted an innovative WASH model that integrated animal waste management into CLTS based on extensive formative research to tailor interventions to the realities of rural Malian households. By forming a research team that included public health, WASH, and veterinary experts, we were able to document a wide range of risk factors for zoonotic disease transmission that could be addressed through an inclusive WASH program. This research team included partners from USCET, the One Health Center at the International Livestock Research Institute (ILRI), and leading academic research partners. The project also conducted a series of workshops with community members and other key stakeholders to identify A-CLTS behavior change strategies that community members felt they could adopt.

other practices are also important and may positively impact human and animal health.

- Making CLTS programs animal-inclusive requires careful formative research to guide program design, community mobilization, and adaptation of existing programs.

THE PROBLEM

In low-resource settings, most rural families raise livestock and poultry. These animals are an important source of meat, milk, eggs, crop fertilizer, skins, labor, cash income, insurance against unforeseen events, and dowry (Wodajo et al., 2020). But often, livestock, poultry, and their waste pose major health risks (Kaur, Graham, and Eisenberg, 2017) including gastroenteritis, long-term growth faltering among children, a compromised immune system, and other severe and/ or long-term adverse health effects (Batz 2013, Moore 2010, Lorentz, 2006, Robert-Gangneux, 2012). Approximately one-third of deaths among children less than five years of age that are due to diarrhea can be attributed to pathogens found in animal feces (Wang, 2015), and nearly two-thirds of human pathogens and three-quarters of emerging pathogens are zoonotic in origin (Jones, 2008; WHO, 2006).

According to the Food and Agricultural Organization, “domestic animals such as poultry, cattle, sheep, and pigs generate 85% of the world’s animal fecal waste, proportionally a far greater amount than the contribution by the human population” (FAO, 2017). For decades, WASH programs—including CLTS—have sought to improve human health, but their impact is likely limited because such programs have not addressed animals and their waste (Luby et al., 2018; Null et al., 2018; McQuade et al., 2020; Clasen et al., 2014). There have been urgent calls for “transformative WASH” that puts animals and their waste at the center of WASH programming (Prendergast et al., 2019).

There are multiple ways of ensuring that the environments humans and animals cohabit are healthy, including structural interventions that change the political and economic context, biological and chemical interventions, infrastructure and apparatus interventions, and educational and behavioral interventions that focus on changing the practices of farmers and other community members through

education and other behavioral techniques (Pinto et al., 2020). The program described in this report brief aimed to change community members’ management of livestock and poultry in ways that would benefit both humans and animals. IMA World Health's experience can inform WASH programming in Mali and elsewhere and will be of benefit in formulating future research on animal-inclusive WASH.

REDUCING HUMAN WASTE WITH CLTS

CLTS is the most widely used approach to reducing open defecation by humans living in rural areas and has been implemented in approximately 60 countries. In half of these countries (including Mali), CLTS is part of the national WASH strategy (Zuin et al., 2019). Despite its widespread use in rural settings, CLTS does not typically include domestic animal waste.

The phases of CLTS program implementation:

1. Pre-triggering
2. Triggering
3. Post-triggering
4. Follow-up
5. Monitoring
6. Declaration of open defecation free (ODF) status

Typically during the triggering phase of CLTS programs, maps are drawn of where humans defecate. The quantity of human feces produced by the village each year is calculated. Health care costs associated with open defecation are determined. Project staff conduct transect walks to see open defecation areas in the village. Human feces and food are presented together to show how flies move between the two. Community members are encouraged to commit to building latrines and stopping open defecation, and a village sanitation committee is formed to support adherence to commitments.

After triggering, communities are visited periodically over a period of six months before they are evaluated to see if they can be declared as open defecation free. Achieving ODF status is defined as the eradication of open defecation in the community; adequate, safe, and hygienic household latrines; use of sanitation by all household members throughout the community; and nearby handwashing facilities with water, soap or ash as well as evidence of regular use. The elimination of animal feces and other animal waste is not included in

the definition of ODF and is rarely a program focus. Even so, each CLTS step offers the opportunity to incorporate optimal animal management practices, including removal of animal feces, hygienic disposal of animal carcasses, safe composting and fertilization of crops using animal feces, and so on.

DESIGNING A MORE HOLISTIC CLTS PROGRAM

Formative research

Given the general exclusion of animal management in CLTS programming, IMA World Health and its partners conducted formative research in five villages to better understand current animal husbandry and animal waste management practices and to identify program strategies that might be used to improve animal management. Research partners included the International Livestock Research Institute (ILRI) and consultants (hereafter, referred to as the A-CLTS team).

The A-CLTS team partnered with the Government of Mali's Direction Nationale de l'Assainissement et du Contrôle des Pollutions et Nuisances (DRACPN; National Directorate of Sanitation and Pollution and Nuisance Control) to carry out formative research which included:

1. Focus groups with men and women who kept livestock (to share their perspectives on raising livestock);
2. Focus groups with female caregivers of young children responsible for animal care/management;
3. Semi-structured interviews with livestock keepers and caregivers to better understand animal husbandry and child rearing practices;
4. Key informant interviews with health program implementers, para-veterinarians, and village leaders on prior animal-focused interventions and policies and community social dynamics;
5. Unstructured observations of children and their caregivers and other household members to inform understanding of behaviors related to the study's outcomes of interest.

Results from the formative research indicated that livestock and poultry were raised for many purposes, including for labor, milk, meat, manure, cash, and religious events. Many domestically raised animals lived

in close proximity to humans due to concerns for the animals' security and people's attachment to the animals. The A-CLTS team documented frequent interactions between humans and animals during day-to-day life, including when managing animal feces, during milking, birthing animals, when caring for sick animals, and during slaughtering and carcass disposal. Roles and responsibilities for each of these tasks varied by gender and age. For example, men were mainly responsible for cattle, donkey, and horse manure removal; women were mainly in charge of small ruminant (sheep and goat) and poultry feces removal. Additionally, children played in animal enclosures and were in regular contact with poultry and livestock as well as their droppings. Furthermore, livestock received infrequent health care because of communities' limited access to veterinary services.

Participatory workshops with stakeholders

After formative research ended, the A-CLTS team carried out a pilot study which included intervention development workshops in three villages. As part of the workshops, moderators presented 12 health risks/problems identified during the formative research. Workshop participants (youth and adults who raised livestock) ranked the risks/problems in order of perceived importance. When combining the lists from the three community workshops, the top three ranked risks/problems were:

1. Contamination of food after cleaning and removing child feces;
2. Human exposure to animals due to lack of animal confinement;
3. Children's exposure to germs when playing in the dirt.

To address these challenges, workshop participants suggested that:

1. Good hygiene practices could be encouraged by discussing with household members the risk posed when exposed to feces;
2. Existing animal containment structures might be improved upon or new structures built;
3. Animals could be confined immediately upon their return from grazing;
4. Children could be supervised more closely while playing within the compound; and

5. Use of mats might limit children’s exposure to dirt.

The team also held a workshop with national stakeholders to discuss an appropriate strategy for implementing animal-inclusive CLTS. Stakeholders included the national WASH focal point, the regional director of DRACPN, a regional CLTS officer, one government veterinarian, a representative of the government’s water and sanitation department, local leaders, and a private veterinarian. Following the workshop, the A-CLTS team met with representatives from UNICEF and DRACPN to share community members’ prioritization of the 12 risks/ problems as well as community members’ suggestions for how to address the three they identified as highest priority.

Monitoring human and animal waste for ODF certification

During the pilot study, DRACPN monitored CLTS and A-CLTS program implementation and progress toward achieving ODF status using standardized forms the A-CLTS team and DRACPN itself developed. To test the impact of animal-inclusive activities on animal feces management, baseline and endline assessments in 25 villages were conducted (5 villages where only CLTS was implemented, 10 villages where animal management activities were added after CLTS had already been implemented, and 10 villages where CLTS and animal management interventions were offered concurrently). The assessments included household-level semi-structured interviews and the counting of animal feces in various locations within and outside houses. Unfortunately, the household-level evaluation was not based on a representative sample due to social distancing restrictions necessitated by COVID-19. Even so, at baseline, animal feces near humans—and in particular—chicken feces—were common.

KEY TAKEAWAYS

During the A-CLTS pilot study in Mali, IMA World Health and its partners successfully incorporated animal management into CLTS triggering activities but experienced challenges when it came to monitoring activities.

Based on the pilot experience, IMA World Health recommends the following ways of including animals into CLTS:

1. During village mapping, consider identifying where humans and animals defecate as well as where animals are (or are not) confined.
2. Consider including both human and animal feces during exercises that demonstrate fecal-oral contamination.
3. Bear in mind animal fecal waste when calculating medical expenses associated with exposure to feces, including the estimation of feces amounts produced.
4. Consider the availability of latrines, human waste disposal and animal confinement sites, the location of manure and compost pits, and water points that are shared by humans and animals on transect walks.
5. In addition to meeting the traditional standards for ODF regarding human sanitation and hygiene, communities where animal management is included in the assessment must continuously ensure that animal feces are not scattered/yard is swept; waste is stored in manure piles or compost pits; animals are confined using enclosures with raised perimeters; and animal remains are burned or buried. In short, the A-CLTS team found that monitoring open defecation--in preparation for communities becoming ODF and after certification--could be more challenging when animal feces were included in programs.

CONCLUSION

- Integrating animal management has the potential to help the Government of Mali strengthen its CLTS programming for improved community health.
- The A-CLTS pilot can serve as an example that provides insights to help other governments, non-governmental organizations, and research institutions think through how they research, design, and implement animal-inclusive WASH strategies.

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