Latrines and Disease Prevention

According to the World Health Organization, 88% of diarrheal disease is attributed to unsafe water supply and inadequate sanitation and hygiene. Improved sanitation reduces diarrheal morbidity to 32% with access to safe water and sanitation facilities and better hygiene practices, reducing morbidity from several key geohelminths (worm) diseases such as ascariasis (29% reduction) and hookworm (4% reduction).

There are several other specific diseases that are strongly tied to poor community level management of human waste, i.e. the use of adequately designed and managed latrines. Globally, diseases related to poor sanitation and inadequate disposal of feces include lymphatic filariasis, diarrheal diseases and intestinal worms, with lymphatic filariasis is endemic in many parts of Africa. Therefore, as part of the rapid assessment it is extremely important to focus on community level management of human waste.

Community level management of trash (municipal solid waste) is a different although somewhat related issue. It is extremely unlikely that rural or peri-urban communities will have an organized, effective solid waste (trash) management system. Trash is typically burned in small pits, buried or simply discarded across the community.

	Risks	Key Questions	Response
Assessment of latrines	· Local villagers can be embarrassed to discuss sanitation so be diplomatic	How many latrines are present in the community? (ideal is 1 compartment per 20-25 community members)	
	· Not nearly enough latrines for the number of community members	Are the latrines near critical water sources?	
	· Practices of open defecation in the community	What is the design of the latrines?	
	· Designing and maintaining well functioning latrines is harder than it seems and without community buy-in, sustainability is poor	For how long is a latrine used?	
	· If latrines associated with community medical facilities are poorly maintained or managed, it is likely that the same pattern will be observed across the village	How deep are the latrines dug?	
	· Improving the sanitation/latrine situation is complex and the required effort is quite high	What happens during high rain?	
		Are the latrines breeding sites for mosquitoes?	
		What is the availability, or lack thereof, of latrines associated with community medical facilities?	
Assessment of trash disposal	· There is unlikely to be an organized system for the disposal of trash, especially in rural settings	Is there an organized system for disposal of trash in the community? If not, how is trash disposed of?	
	· Improperly disposed of trash in piles or in the community can become health hazards due to infestation of vermin, sharp or hazardous materials where children play, etc	Are there piles of trash throughout the community?	
		If trash is in piles, are children playing in and around them?	

Risks	Considerations for Improving Conditions
Lymphatic filariasis	Culex mosquitoes typically breed in on-site sanitation systems such as wet pit latrines, septic tanks, cesspits, cesspools, drains and canals containing stagnant water polluted with organic matter
	In Southeast Asia and the Pacific, anopheles mosquitoes are the primary vector for both LF and malaria, so understand the country specific vector biology
	Look for the right vector in the right place
Diarrheal disease	Take drinking water from protected drinking sources like hand pumps or protected wells rather than rivers and streams
	Keep water pots covered when not in use
	Place latrines/toilet facilities at a safe distance from water sources used for drinking and other household purposes
	Keep animals away from houses, water sources and latrines

Good Practice Approach: Community Led Total Sanitation (CLTS)

Community Led Total Sanitation (CLTS) programs avoid up front hardware subsidies and create self awareness about waste through facilitation with communities. Investment monies in toilet/latrine programs in the past have promoted improved sanitation by focusing on constructing toilets yet people continued to defecate in open spaces. CLTS relies on the demand of the community to stop this behavior which has proven more effective. The process evokes emotions that prompt action where communities dig and build their own toilets/latrines and start using them. CLTS related research is showing that:

- CLTS can serve as an entry point for other poverty reduction and livelihood generation programs
- CLTS is most successful when community level champions are involved, facilitation and mobilization are high quality and time-intensive, communities are cohesive and it addresses the interests of poor marginalized community members
- Women benefit in terms of privacy, time saved and freedom from embarrassment
- Monitoring and follow up systems ensure sustainability
- Local community members need to be aware of the range of technological options for toilet construction and their impacts

Types and Designs for Latrines

	Considerations	Assessment of utility of method for present environment
Pit Latrines	Hole with an insect-proof cover surrounded by walls	
	Good only for dry porous soil where there is no water in the pits (breeding ground for mosquitoes)	
	Lids of wood or metal do not fit tightly enough	
	Lids of concrete can be cast in the holes but covers may be too heavy for children to lift and these can be damaged leading to loss of insect- and odor-proofing	
	High cost	
	See Diagram 1 below for design	
Pour-flush Latrines with water seals	Pit latrines with an S-bend water seat to prevent entry and exit of insects and escape of odors	
	Must be flushed with at least one liter of water	
	Works best where people accustomed to taking water with them to the toilet for washing	
	Solid objects should not be deposited to avoid blockages and damage to the seal	
	See Diagram 2 below for design	
Ventilated Improved Pit Latrines (VIPs)	Ventilation pipe fitted to draw odors way with air currents across the top of the pipe	
	Fresh air is sucked into the pit through the squat hole in slab covering pit	
	Relatively dark inside due to presence of the roof but this is essential for proper functioning	
	Door should be kept shut with only a small gap at top for air to enter	
	Partly effective against Culex mosquito	
	Blowflies emerging from pit are attracted up the pipe due to the light, but top of pipe is covered with flyproof netting, so insects die as they cannot escape	
	See Diagram 3 below for design	

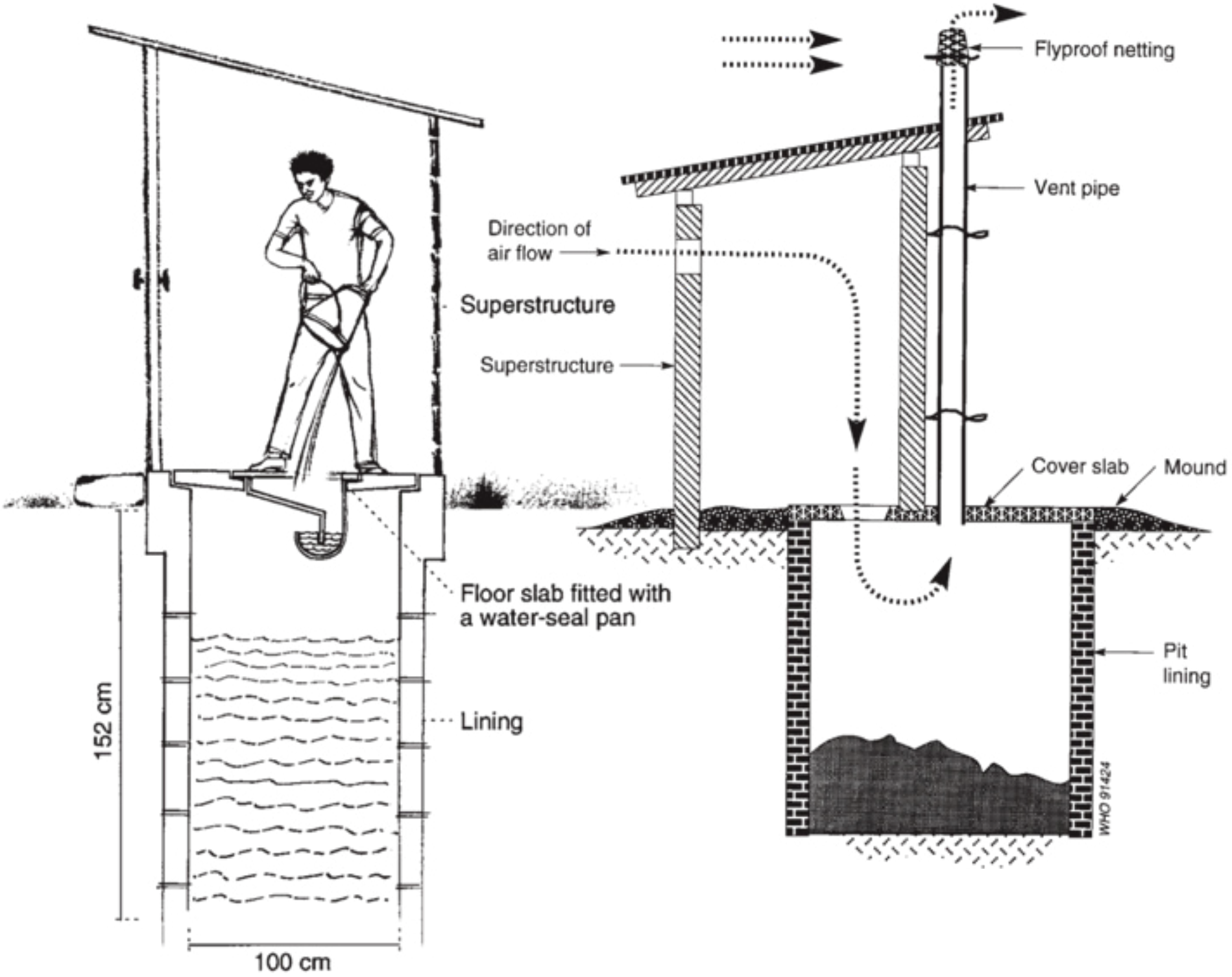
Septic Tanks	For areas without piped water-borne sewage system	
	Watertight settling tanks receive waste carried by water	
	Liquid and solid matter separate, the latter having to be removed at intervals	
	Liquid effluent may flow out through an outlet, typically in a soakway pit or led into a drain but overflow may form a puddle where mosquitoes can breed	
	Tanks are important breeding grounds for Culex and Aedes mosquitoes as they can enter through ventilation pipes or cracks/openings in covers s0:	
	Cover ventilation pipe with aluminum or steel mesh screening	
	Ensure cover is sealed effectively-cover with sand, large gaps filled with foam rubber	
	Install a soakaway pit	
	Close outlet with material that is easily removable	
	Apply oil, chemical larvacide or polystyrene beads if the above does not work (screen outlet if polystyrene beads are used to ensure they aren't flushed out)	
Soakaway pits	Water in soakaway pits tends to stagnate and can become favorable breeding grounds for mosquitoes	
	Fill pits with small stones	
	If pit does not overflow regularly, apply polystyrene beads to control mosquito breeding	

Additional Resources

To reference the complete modules on latrines and disease prevention, see the IFC/NewField's series of rapid assessment health modules.

World Health Organization (WHO) key facts and figures related to sanitation http://www.who.int/topics/sanitation/en/
World Health Organization (WHO) key facts and figures related to hygiene http://www.who.int/topics/hygiene/en/

Rozendaal, J. Vector Control: Methods for use by individuals and communities. WHO 1997 http://www.who.int/whopes/resources/vector_rozendaal/en/


Flyproof netting
Vent pipe
Direction of
air flow
Superstructure
Superstructure
Cover slab
Mound
Floor slab fitted with
a water-seal pan
Pit
lining
Lining
152 cm
100 cm
WHO 91424