



Evaluating HWTS: From evidence to action

Evidence of use and impact

HWTS Network Webinar

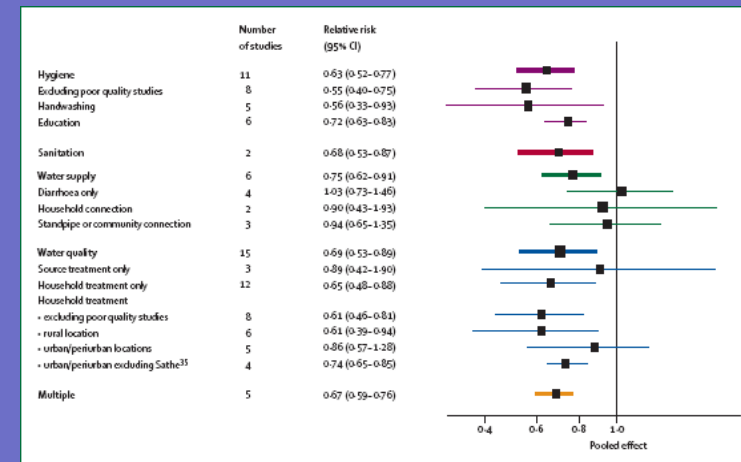
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Meta-analyses on HWTS

- Many studies document diarrheal disease reduction from HWTS
- Summarized in meta-analyses
- Results show HWTS effectiveness
 - 35% reduction (Fewtrell, 2005)
 - 47% reduction (Clasen, 2006)
 - 42% reduction (Waddington, 2010)
- Effectiveness equal to or greater than other inventions





Methodological Issues

- Critique of data
 - Blinded studies show no impact
 - Reporting bias of self reported data
 - Short study time
 - Non realistic conditions
- Critique of meta-analyses
 - Local conditions not included



Issues in Scaling HWTS

1. Use of an effective, appropriate HWTS option
2. Correctly and consistently
3. By the vulnerable target population
4. On a long-term and sustainable basis



Scaling Issue #1

Use of an effective and appropriate HWTs option

Proven HWTS Options

- Ceramic Filtration
- SWS
- SODIS
- Biosand Filtration
- PuR



What about boiling?

- Sub-optimal microbiological performance (recontamination)
- Potentially high cost
- Indoor air pollution associated with:
 - reduced birth weight, ARI, anemia, stunting (Retherford 2006)
- Higher levels of burn accidents (Rossi 1998)
- Other issues: Acceptability, environmental sustainability

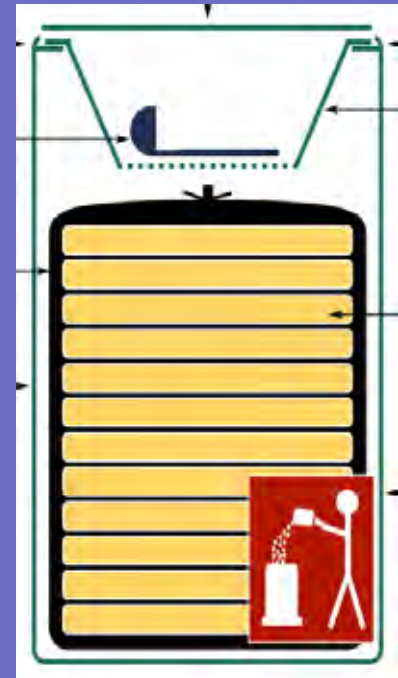
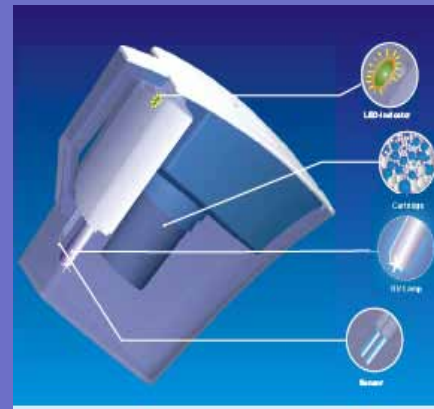
Distribution of samples by TTC count field studies

	<1	1 to 10	11-100	>100
Vietnam (Clasen 2008)	71.2	10.7	13.2	4.9
India (Clasen 2009)	37.0	38.3	22.2	2.5
Guatemala (Rosa 2010)	59.6	5.7	9.5	25.1

No1



1. Laboratory Testing
2. Field testing
3. Health Impact Analysis
4. Scalability

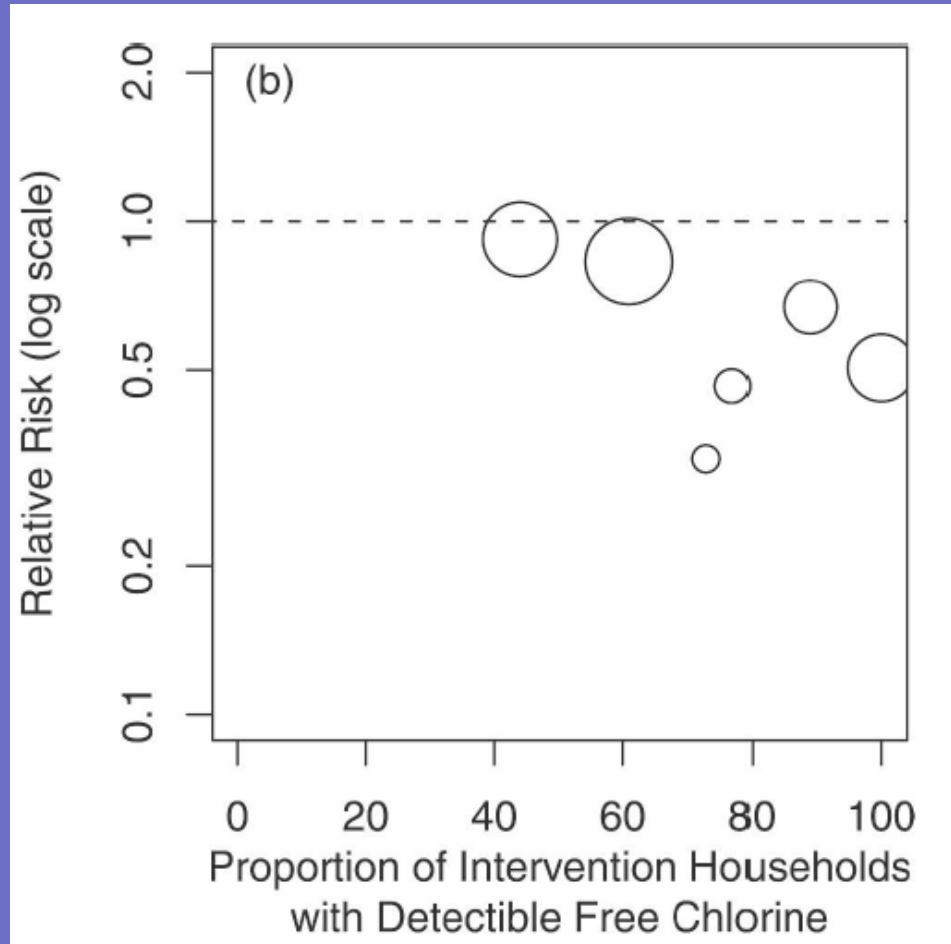




Scaling Issue #2

Correct, consistent use

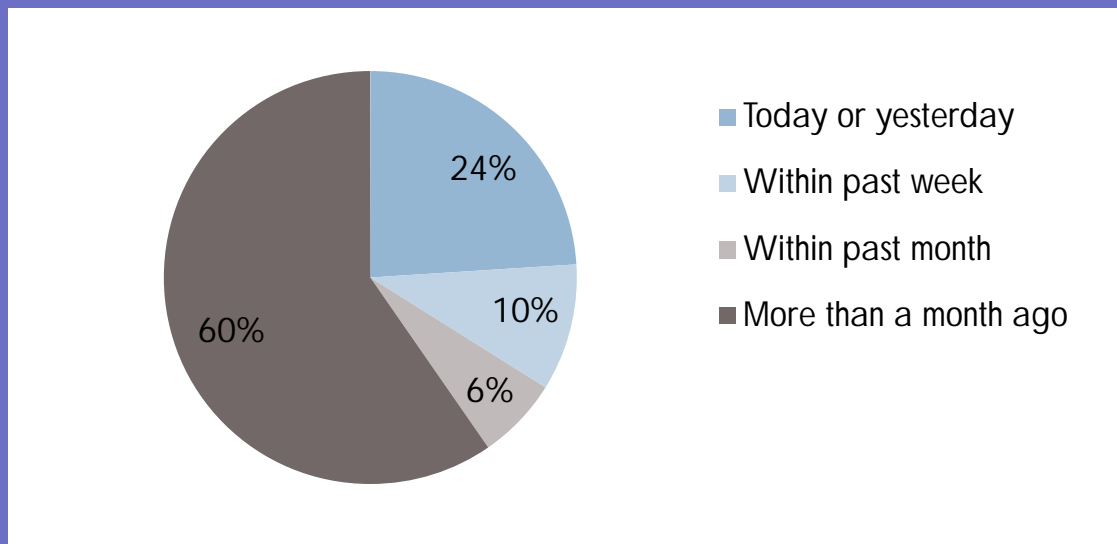
Compliance: Arnold et al. (2007)



Among studies of POU chlorine treatment, the risk of diarrhea was lower when compliance was larger.

Program Assessment: LifeStraw Personal

- 171/200 (85%) participants (from 122 households) interviewed
- Open ended question about last time of use:



- Current user = use in the previous week (34%)
- Consistent user = always drank filtered water + did not drink unfiltered water in previous week (13%)

Program Assessment: Haiti

- Many program assessments have been completed
 - Documenting no impact in terms of disease
- Leogane, Haiti
 - Began in 2001
 - Chlorination program
 - Technical follow-up / records
 - Survey conducted (Emory SPH)
 - 56% with chlorine residual
 - 55% reduced odds of diarrhea in <5s
 - 64% reduced odds of bloody stools



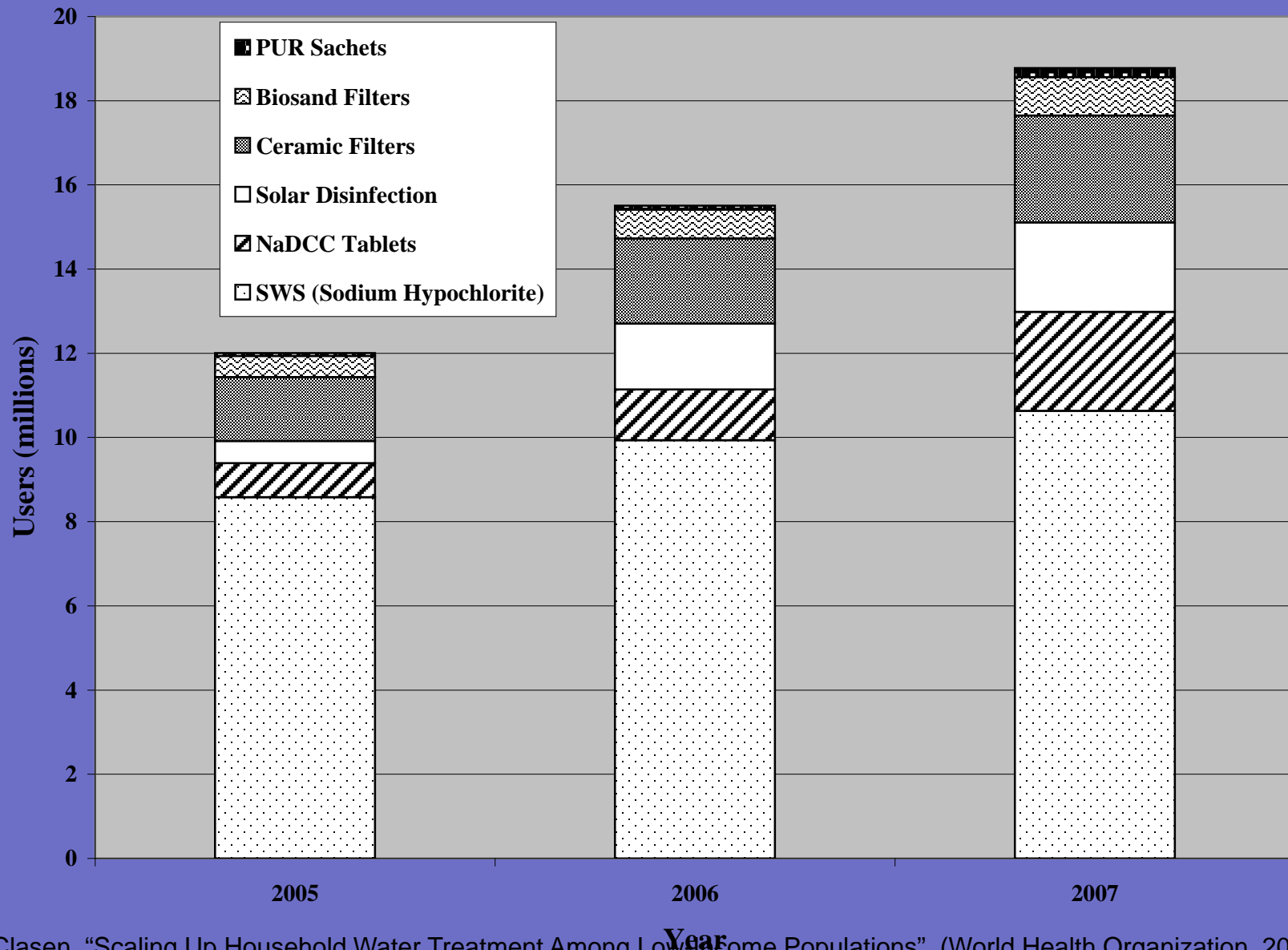
Program Assessment: Acute Emergency

		Reported Use	Effective Use
Nepal	Aquatabs	8%	7%
	Piyush	16%	8%
	WaterGuard	6%	3%
Indonesia	AirRahmat	3%	--
	Tabs	1%	--
	Boiling	88%	27%
Turkana	Aquatabs	13%	5%
	PuR	6%	2%
Haiti	Aquatabs	24, 75-92%	15, 54-66%
	Ceramic	72%	20%
	Biosand	53%	8%

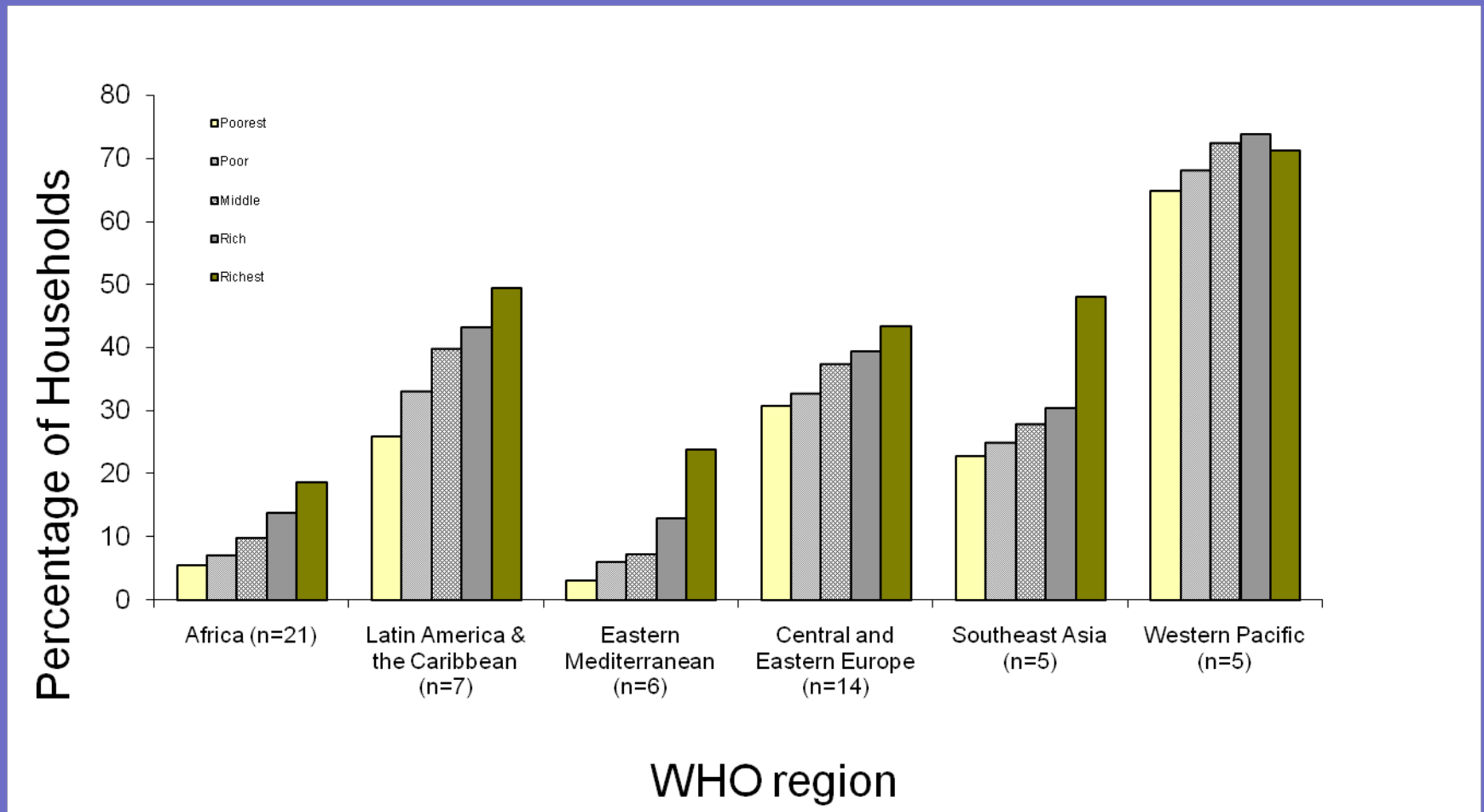
Scaling Issue #3

Targeting the vulnerable
population

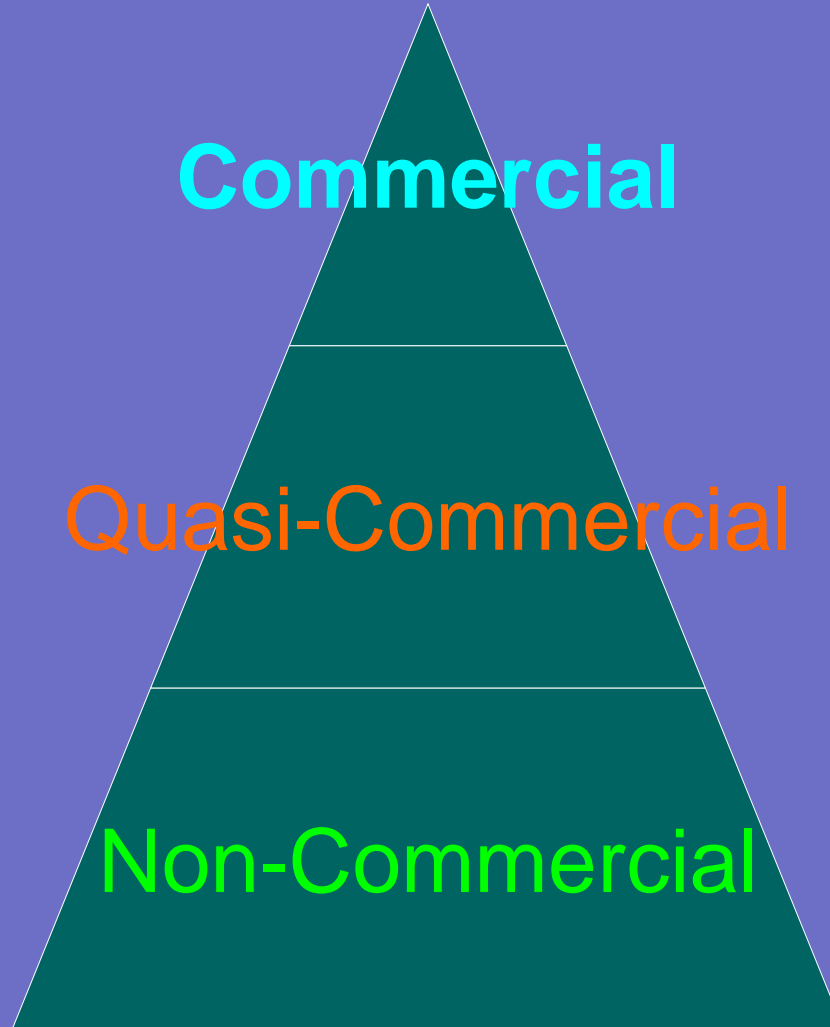
Estimate of HWTS use



Reported microbiologically adequate HWT-use increases with wealth



Distribution Strategies



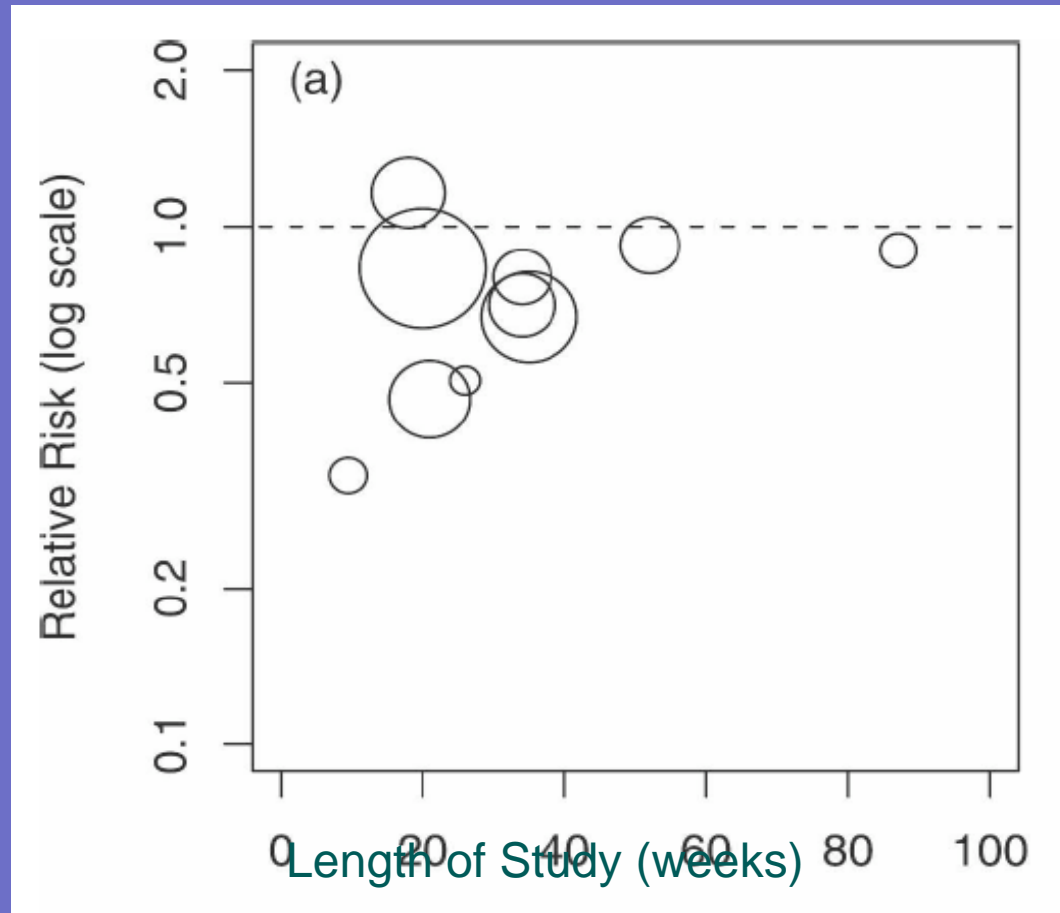
- Direct sales
- BOP marketing
- Organized/unorganized retail
- Micro-enterprises
- Social marketing
- Microfinance institutions
- Rural sanitary marts
- Self-help groups
- Mass distribution through public sector, UN agencies, NGOs, CBOs, etc.



Scaling Issue #4

Achieving long-term and
sustainable uptake

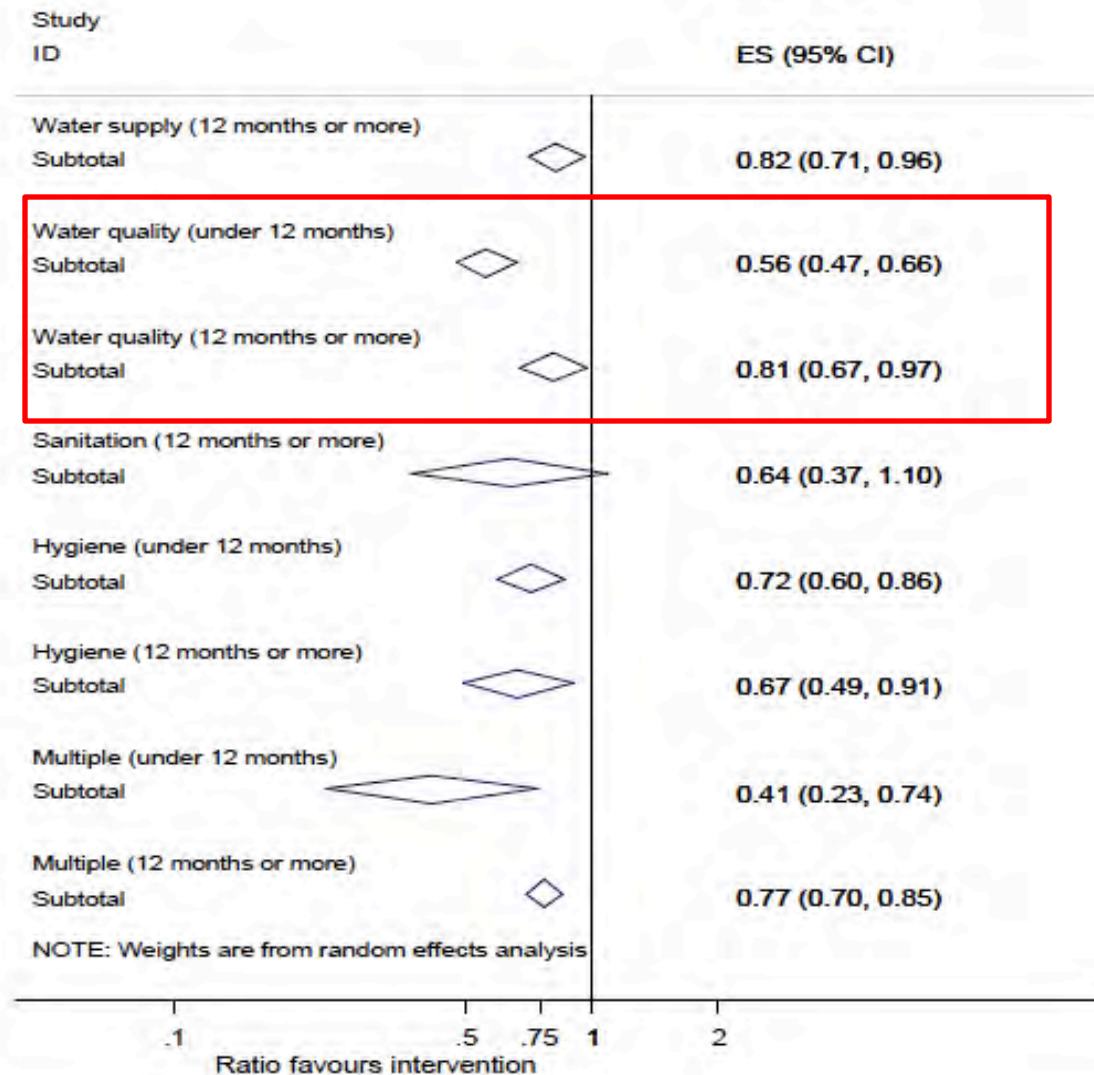
Sustainability: Arnold (2007)



The effect of point-of-use chlorine treatment on child diarrhea by length of intervention.

Sustainability: (Waddington et al.)

Figure 8 - Summary forest plot by study length - high quality evaluations



Hunter (2009)

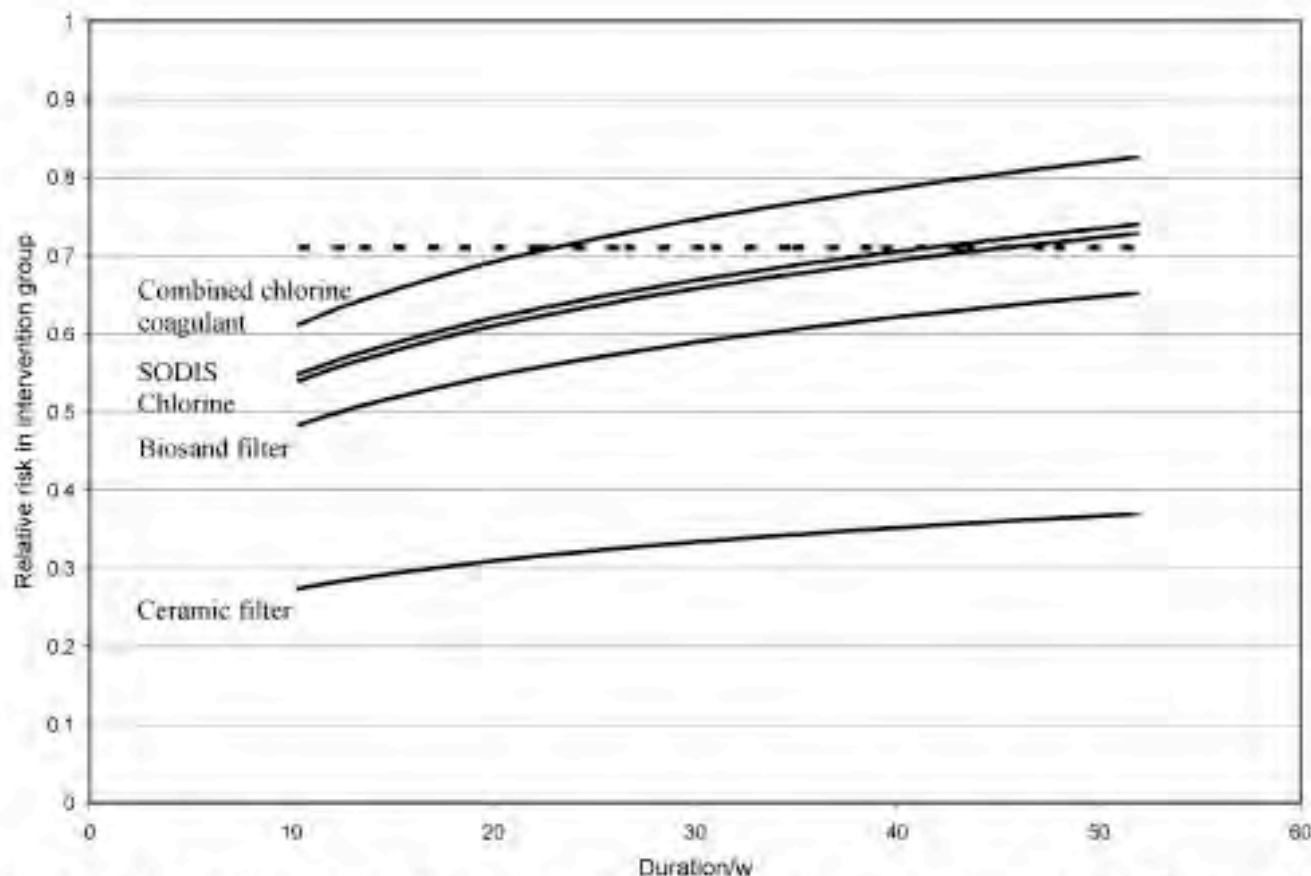


FIGURE 3. Impact of duration of follow-up on effectiveness of the different intervention types unblinded and the midpoint estimate of the likely impact of reporting bias due to lack of blinding.



Challenges and opportunities for HWTS

- Effectiveness:
 - Achieving and demonstrating actual HWTS effectiveness for preventing diarrhea in the absence of reporting bias in a large-scale program
- Scaling-up:
 - Achieving correct, consistent use of effective and appropriate HWTS by a vulnerable population on a long-term and sustainable basis
- Rights:
 - Avoiding diversion of resources from water supply and shifting water burden to the poor



“The notion that ‘being humanitarian’ and ‘doing good’ are somehow inevitably the same is a hard one to shake off”
(Slim, 1997)

Thank you.
I am happy to take questions.

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