

# Household Water Treatment and Safe Storage: Research and Implementation

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# HWTS Research Agenda

- Technology development and lab verification
- Field verification of performance
- Health impact trials
- Systematic reviews of health impact
- Economic evaluations
- Exploring effective communication strategies
- Evaluation of HWTS in emergencies
- Low-cost diagnostics
- Exploring alternative models of dissemination
- Scaling up (demand and supply)
- Ensuring sustainability and long-term use
- Technology verification and standards

# Research in support of Policy

## Objectives

- Advance major goals (e.g., MDGs)
- Secure support of WHO, MoHs, public health community
- Procure government support and resources among competing priorities
- Attract donor funding
- Develop rigorous evidence base
- Establish risk-based guidelines for water quality
- Develop product standards

## Examples

- Comprehensive lab testing for efficacy and safety
- Randomized controlled health outcome trials
- Systematic reviews
- Cost-benefit analyses
- Cost-effectiveness analyses
- Assessments of HWTs in emergency response
- Models demonstrating scalability and sustainability
- Technology verification protocols

# Research in support of Practice

## Objectives

- Advance NGO goals (e.g., communities served, systems installed, products sold)
- Improve efficiency of delivering services/coverage
- **Stress incremental improvement over state-of-the-art technology**
- Enhance acceptability and support by target population
- Maximize domestic content and local participation
- Ensure sustainability
- Show demonstrable progress to donors and attract additional funding

## Examples

- Adapt existing technologies already shown to be safe and effective
- Develop effective training programmes/materials
- Assess whether local products can achieve satisfactory performance
- Develop effective programmatic communications and campaigns
- Evaluate distribution models that build on existing communities and networks
- Provide practical tools to enhance uptake and long-term use
- Design simple methods for monitoring and evaluation of programmes

# Research→Implementation

## Policy and Practice

### Theme Papers

## Bridging the implementation gap between knowledge and action for health

Andy Haines,<sup>1</sup> Shyama Kuruvilla,<sup>2</sup> & Matthias Borchert<sup>3</sup>

## From research to action — a bridge to be crossed

Bjorn Melgaard<sup>1</sup>

## Editorials

## From Bangkok to Mexico: towards a framework for turning knowledge into action to improve health systems

Tikki Pang,<sup>1</sup> Ariel Pablos-Mendez,<sup>2</sup> & Carel IJsselmuiden<sup>3</sup>



**Getting Research into  
Policy and Practice  
(GRIPP)**

[WWW.jsiuk-gripp-resources.net](http://WWW.jsiuk-gripp-resources.net)

In collaboration with JSI(UK), Population Council, and Safe Passages to Adulthood, Opportunities and Choices programme launched the GRIPP website at DFID in November 2002. This web site provides support to researchers in getting their work into policy and practice. This

# Enhancing Collaboration between Research and Practice

## ■ Benefits:

- Practical Problem
- Suitable Setting
- Field Staff for sampling/surveillance
- Other Logistics
- Students (e.g., Oxfam)
- Cross-fertilization
- Low Marginal Cost
- Existing Funding

## ■ Obstacles

- Administrative Burden
- Cost
- Transparency
- Timing

## ■ Examples:

- EAWAG/SANDEC (multiple)
- Oxfam (Sierra Leone, Colombia, Dominican Republic, Haiti)
- P&G (multiple)
- JHC-CDCA (Nicaragua)
- EPNO-MIT (Nepal)
- FFH—(Bolivia)
- CARE (Kenya, Indonesia)
- PSI (Kenya, Tanzania)
- ICRC (Kenya)
- IDE (Cambodia, Vietnam)
- Unilever (India)

# Additional Resources

- International Network to Promote Household Water Treatment and Safe Storage ([http://www.who.int/household\\_water/en/](http://www.who.int/household_water/en/))
- WELL Resource Centre ([www.lboro.ac.uk/well/](http://www.lboro.ac.uk/well/))
  - Technical Enquiry Service - up to one day of free advice
  - Document Service - free of charge hard copy publications
  - Well Factsheets—practical, brief summaries
- Research Institutions (MIT, UNC, CDC, Johns Hopkins, LSHTM, Cranfield, WEDC, AIT, Pretoria)
- Dan Campbell Listserve (HIP)
- Practical Publications (e.g., *Waterlines*)
- Conferences/Associations
  - InterAgency Committee on Emergency WatSan (January)
  - WWF/WWC
  - IWA Health-Related Water Microbiology Committee

# Oxfam Pilot Programme--Colombia



- Six-month (March-September 2004) randomized controlled trial of a pilot program using locally-fabricated ceramic water filter using Katadyn® candles
- Following a baseline survey to confirm no differences between persons in intervention (n=415) and control (n=265) groups, filters were randomly allocated to half of the households (n=130) in each of three communities
- Follow-up at monthly intervals to assess water quality and diarrhoea prevalence

# Mean Thermotolerant (Faecal) Coliform (and 95% CI) per 100ml

Site	Control	Intervention	P-value
Curvarado	154 (124, 185)	50 (30, 71)	<0.0001
Dabeiba	220 (193, 247)	46 (27, 65)	<0.0001
Cartagenita	72 (61, 83)	0	<0.0001
Overall	151 (135, 166)	37 (26, 48)	<0.0001

*Filters reduced the level of faecal bacteria at all sites, with an overall reduction in arithmetic mean TTC/100ml of 75.3%. However, only in Cartagenita did the filters eliminate all TTC in product water.*

# Health Impact

Site	All ages			Children < 5 years of age		
	OR	95% CI	P-value	OR	95% CI	P-value
Curvarado	0.87	0.31, 2.39	0.781	1.37	0.21, 8.87	0.743
Dabeida	0.49	0.21, 1.13	0.095	0.60	0.24, 1.56	0.297
Cartagenita	0.21	0.10, 0.41	<0.001	0.19	0.06, 0.58	0.004
Overall	0.40	0.25, 0.63	<0.001	0.40	0.21, 0.76	0.005

*Overall, prevalence of diarrhoea was 60% less among households using filters than control households (OR = 0.40, 95% CI = 0.25, 0.63, P < 0.0001). However, the microbiological performance and protective effect of the filters was not uniform throughout the study communities, and corresponded with microbial performance.*