

Vector Control: Thinkers vs Doers?

by Manuel F Lluberas

There are no words to describe the level of devastation left in and around Port au Prince, Haiti in the aftermath of the violent earthquake that shook the country during fifteen or so seconds, January 2010. Entire neighborhoods lay in ruins. Hospitals, churches, offices and homes lay intertwined in unrecognizable piles of broken cement and twisted metal. Homes that were once shelters against the intense tropical sun and torrential rains became death traps for large numbers of families, many of which were killed quickly by the tons of debris falling on them. An untold number of others were unable to extricate themselves from their collapsed homes and eventually died of their wounds, associated sequelae, dehydration or simply perished because the meager rescue resources were overwhelmed by the magnitude of the disaster or were also victims of it.

The condition in which Haiti finds herself after the earthquake, combined with the lack of infrastructure before the disaster presents the real possibility of simultaneous outbreaks of malaria and dengue fever while the country struggles to deal with the litany of other pre-existing conditions and a myriad of other issues related to poor sanitation and hygiene. Then came cholera.

In less than a minute, Haiti went from the poorest country in the Western Hemisphere to perhaps one of the most devastated countries in the world with a long list of experts and

non-governmental organizations providing their professional opinions on how to proceed. This is a very common phenomenon in the wake of emergencies and disasters, especially when dealing with public health issues, but particularly with regards to vector-borne disease control. Disasters seem to generate a flurry of activity from public health luminaries from prominent organizations to provide expert opinions.

While it is certainly true that we live in a world based on knowledge, the real question is what type of knowledge is most valuable?

As a shrinking world tries to solve larger and more complex problems, public health professionals must not stray from basic science and field observations. Public health, especially as it relates to vector-borne disease control in the aftermath of emergencies and disasters seems to have lost the time-honored value of real experience and close observation on the ground where dusty clay or cement dust meets Gore-Tex® boots. We need to return to the real world of applied knowledge and real experiences like those gathered from field entomologists. In the Panama Canal Zone, the combined leadership and efforts of William C Gorgas, Ronald Ross, Joseph A LePrince and Samuel T Darling led to the elimination of yellow fever and a marked reduction in malaria incidence through an integrated mosquito control program. In Europe, Dr Giovanni Batista Grassi and

others did their part in Italy. Perhaps one of the greatest success stories in public health entomology comes from Brazil where Fred Soper, a man of legendary energy endowed with great common sense, campaigned vigorously for the eradication of *Anopheles gambiae*. In just 22 months, he was able to eradicate the mosquito from an area in Brazil of about 18,000 square miles, an area larger than the State of Maryland (<http://www.theus50.com/area.php>). His success was considered a great public health achievement long before the introduction of DDT in anti-malaria programs (http://www.malariasite.com/malaria/history_control.htm) and earned him many medals and citations. His campaign was so successful that *An gambiae* is still absent from Brazil.

“Knowing in the abstract is not the same as doing in the practice, but doing, as it turns out, can open up whole new ways of knowing” (Alan M Webber 2009). The world loves experts, but the problem in public health seems to be that the culture of knowers has overwhelmed the culture of doers and the doers have been relegated to “secondary thinkers” and not always taken seriously by those in the higher centers of knowing.

When it comes to emergency vector control, it seems that thinking has replaced doing and theory has trumped practice.

While in Haiti, for instance, the brief discussions related to which would be the appropriate

course of action in response to the impending vector-borne disease crisis on top of the disaster crystallized this never-ending struggle between thinkers and doers so eloquently described by Alan M Webber in his book titled *Rules of Thumb* (which should be placed in the list of required reading for public health schools and professionals).

Shortly after the dust began to settle in and around Port au Prince, some of those experts with impressive titles and letters attached to their names left their offices in prominent institutions and travelled to Haiti to add their names and opinions to the relief effort. After a couple of quick meetings with some of the few remaining and available members of the Ministry of Health and a handful of experts from non-governmental organizations and institutions of higher thinking, the participants arrived at the conclusion that implementing an indoor residual spray (IRS) campaign for malaria vector control and introducing mass distribution of long-lasting insecticide-treated mosquito nets would be an appropriate intervention for the prevention of malaria and other mosquito-borne diseases in Haiti. While this combination has been adopted in most of sub-Saharan Africa and proven effective in a number of countries against *Anopheles gambiae* and a handful of other malaria vectors, the reader with basic entomological knowledge might question the logic behind the implementation of these tools against malaria vectors in Haiti. Simply put, IRS requires a structure on which to spray the residual insecticide and nets must be installed and used when the vector is actively seeking a blood meal. Neither of these conditions was present

in Haiti, where a large portion of the population is sleeping in tents or outdoors and the main malaria vectors and a number of other mosquito species are actively seeking a host outdoors and/or during times when nets are completely ineffective. More telling perhaps was the plan to augment these interventions with wide scale aerial spraying of Port au Prince. Moreover, selection of these interventions was agreed upon without any discussion related to entomological surveillance, a simple correlation between the number and location of the confirmed cases and actual mosquito populations, identification of the areas actually generating the mosquitoes, entomological inoculation rates, source reduction and larviciding or any other vector control-related tool, indicator or consideration, including costs.

Vector control deliberations in the aftermath of the disaster in Haiti are a clear example of the struggle between the two basic ways of knowing. The first way is from the head. It is the kind of knowing that comes from reading and thinking – the type in which knowers or theorizing experts excel. The other kind of knowledge comes from doing. Unlike the first type of knowing that starts in the head and stays there, this kind of knowing starts in the hands, moves up to the head and then back down to the hands in a knowing-doing loop.

The situation in Haiti seems to point out that a large number of organizations once tasked with providing leadership regarding the world's public health issues and had accepted those challenges with very positive and tangible results in the past seem to be driven today by theoreticians who derive their ideas from ideology and not

necessarily from real experience. Many of these organizations employ highly-paid staff advisors and consultants with impressive résumés many of whom have seldom walked on cement dust after an earthquake or the salty mud left by a tsunami, seen the inside of an African or South American hut while conducting IRS operations, witnessed the struggle for life of a child in malaria's or dengue hemorrhagic fever's death grip, tried to console one of the mothers burying these children, or sat with a microscopist trying to locate an elusive plasmodium or filarial worm from hundreds of microscope slides using dirty microscopes and earning measly wages. Moreover, when it comes to vector-borne disease control, much of the advice given is in the treat-the-patient concept while ignoring the fact that millions will continue to be killed and hundreds of millions more will be affected as long as the vectors remain well entrenched in the affected areas.

Many public health entomologists know first-hand the "knowers know better" syndrome. During the course of the last couple of decades, for example, getting funding for most public health entomology projects has required proposals to be presented by "thinkers" with advanced degrees, impressive résumés and a long list of letters after their names. Field public health workers, entomologists in particular, who see the problems firsthand and can devise practical solutions virtually on the spot might be useful in implementing what the thinkers might have prepared, but the actual preparation and meeting of the minds leading to the development of any plan is usually left to the thinking experts and consultants.

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The real question is, as someone who might be placed in a position to come up with a plan to help in a situation like the one the people of Haiti are going through, who do you ask, the thinkers or the doers? The people who need the most help must have access to the kind of knowledge that comes from doing, not necessarily the knowledge generated from thinking. The on-site doer usually knows the most about the enemy and what lets him win or lose.

Success in public health, especially that related to vector control comes from finding what works and why. It is most often reached through empirical evidence, not theory. Success comes from having answers you can trust and believe in. To get these answers, we must go beyond simply knowing.

We must obtain them through doing.

Thinkers can contribute, but they must accept that there is no substitute for experience and thus incorporate the experience of the doers in their contributions and not just their own theories. Doers, on the other hand, must occasionally take a break to become thinkers and carefully analyze their chronicles and those of other doers. Individuals with meaningful field experience in vector control should be included as decision-makers in the cadre of consultants/advisors selected by governments and international organizations.

We will be able to prevent or control malaria and other vector-borne diseases only when thinkers base their analysis on the accomplishments of doers, doers

re-examine their own accomplishments, and both sides work together.

REFERENCE CITED

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