

Adaptive macro and micro communication strategies to eradicate polio in India: Social mobilization, opinion leadership, and interpersonal influence at unprecedented scale¹

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In the long roster of documented polio cases in India, Rukhsar Khatoon of Howrah District in West Bengal has a coveted place: she is the last entry, dated January 13, 2011. Two years later, on January 13, 2013, with no other polio cases reported, the World Health Organization declared India as being free of the wild polio virus. India's Rukhsar Khatoon is one among many "lasts" in the annals of global polio eradication: In 1991, a child in Peru represented the last case in the Americas; in 1997, a child in Cambodia was the last case in the Pacific region; and in 1998, a child in Turkey was the last case in Europe (Ferris, 2013).

With India's name off the list of endemic countries, only three countries remain that have yet not eliminated the stranglehold of the wild poliovirus – Nigeria, Pakistan, and Afghanistan. India's triumph over the wild polio virus demonstrates that it is possible to wipe out polio from this world. Not since 1979, when the smallpox virus was completely eradicated from nature, has the

world come so close to eradicating another infectious disease -- no small feat for a disease whose recorded history goes back several thousands of years. An Egyptian stele, a tablet employed as a tombstone, from about 1500 B.C., for instance, depicts an individual with an atrophied leg, signifying polio's long-stand in history.

The purpose of the present article is to analyze India's march toward polio eradication, focusing on the relentless implementation of macro and micro communication strategies. I discuss the micro-targeting and messaging interventions to achieve large-scale compliance, especially in the states of UP and Bihar, analyzing the elements of social mobilization, involvement and engagement of local opinion leaders, and a data-driven adaptive strategy. No country, at any time, has utilized the art and science of social communication for a greater public good as India did to wipe out polio. This article represents a modest attempt to analyze the communication-centric²

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elements that contributed to this public health triumph of epic proportions, and represents, truly, India's gift to the world.

Toward a polio-free world

It may come as a surprise to many that prior to 1955, until a vaccine for polio became available, the worst outbreaks of the disease were reported in Western Europe, Canada, Australia, and the United States (Oshinsky, 2005). Prior to, and post-World War II, polio was deeply feared globally and second only to the atomic bomb in the US because it hit indiscriminately, causing panic akin to present-day terror attacks. Polio spared no one, not even American President, Franklin Delano Roosevelt, and worse, it was insidiously partial to children, especially boys. One of the worst polio epidemics in the U.S. occurred in 1952, when 58,000 healthy people in the U.S.



Figure 1: Patients hooked to iron lungs in the 1952 U.S. polio epidemic Source: Wikipedia Commons (Public Domain)

contracted polio, of which 3,200 died, and 22,000 were left with deformed limbs, braces, crutches, and wheel chairs (Gould, 1995). An all too familiar sight in US hospitals were polio wards with endless

rows of patients hooked to iron lungs, ungodly mechanical ventilators that breathed for people who lost muscular control (Black, K., 1996) (Figure 1).

The tide against the scourge of polio began to turn when Jonas Salk announced the development of a safe and effective injectable vaccine on April 12, 1955. It was immediately put to use for the greater public good. When famed television reporter Edward R. Murrow asked Salk about who owned the patent to the vaccine, his response was: "The people I would say. There is no patent. Could you patent the sun?" While the Salk polio injectable vaccine has been available since the mid-1950s and the Sabin oral polio vaccine (OPV) since 1962, polio still has no cure. Vaccine-based prevention is the only cure!

Some 20 million people are living today who have been crippled by the polio virus. Polio is spread through the oral-fecal route from one person to another. The virus enters the body orally, multiplies in the intestine, and then spreads through feces in places besieged by poor hygiene and sanitation, high population density, and inadequate health services. The virus usually strikes children under the age of five, and can cause death and permanent, irreversible disability through paralysis of limbs. For every one case of paralysis that is reported, roughly 200 people carry the virus, 90 percent of them without symptoms (see <http://www.polioeradication.org/Polioandprevention.aspx#sthash.4TMsKhbV.dpuf>) Once a substantial number of children in a community (80 to 85 percent) are fully immunized against polio, the virus finds it difficult to find a host and dies out.

In 1988, some nine years after the world had eradicated the scourge of smallpox³, the World Health Assembly established the Global Polio Eradication Initiative (GPEI). The triumph over smallpox was a phenomenal global public health feat, given the highly virulent disease killed an estimated half-a-million Europeans annually in the early 19th century (Hays, 1995). A killer without comparison, smallpox took 300 to 500 million lives during the 20th century, rendering tens of millions blind all over the world, and leaving hundreds of millions pock-marked survivors (Koplow, 2003; Henderson, 2009). After eradicating smallpox, the global public health community turned its attention to polio eradication. When GPEI was established in 1988, polio was endemic in 125 countries and some 350,000 cases of infant paralysis occurred each year (Figure 2).

The GPEI, spearheaded by national governments, WHO, Rotary International, UNICEF, the Centers for Disease Control and Prevention (CDC), and more recently the Bill and Melinda Gates Foundation is the largest public health initiative the world has known. Since 1988, some two billion children have been immunized against polio in more than 200 countries involving over 20 million vaccinators and volunteers. The number of polio cases has spiraled downward – by 99.9 percent -- from 350,000 in 1988, to a couple of hundred in 2013. An estimated 10 million children have been spared paralysis (see <http://www.gatesfoundation.org/What-We-Do/Global-Development/Polio>). Of the 3 types of wild polio viruses, the last recorded wild case of type 2 was in 1999, and of type 3 in November 2012. Only type 1 wild polio virus persists. The number of

countries with endemic polio have dropped from 125 to three (Figure 3)!

Toward a polio-free India

With its billion-plus people, squalid urban slums and remote rural communities, India was expected to be the last sanctuary for the wild polio virus (Paul, 2007). However, backed by strong political will, a country as huge and diverse and poor as India managed to stop polio in its tracks (Chaturvedi, 2008). Completing the “last mile” called for every ounce of human effort, ingenuity, and data-driven macro and micro strategy (Figure 4).

Beginning in the mid-1990s, the polio eradication efforts in India were intensified around National Immunization Days (NIDs) and “pulse polio” campaigns to reach every child under the age of five in every round. A National Polio Surveillance Project was established in 1997 to closely track the evolving epidemiology of the disease, and target efforts accordingly. The NIDs yielded good results in many states as immunity increased over time and the number of polio cases declined. The strategy changed accordingly, moving from a focus on a general population to more intensive engagement in localized geographic areas with particular communities where the children were at highest risk.

Despite this focused targeting, in the two most populous and poorest states in north India -- Uttar Pradesh (UP) and Bihar – the polio virus was resilient and relentless, finding new hosts amidst poverty, high population density, and poor hygiene and sanitation (Cheng, 2004). Especially troubling were some 107 Blocks (an

Figure 2: Some 125 countries had endemic polio in 1988.



Figure 3: The world map of polio in 2013



Figure 4: India's long road to polio eradication.

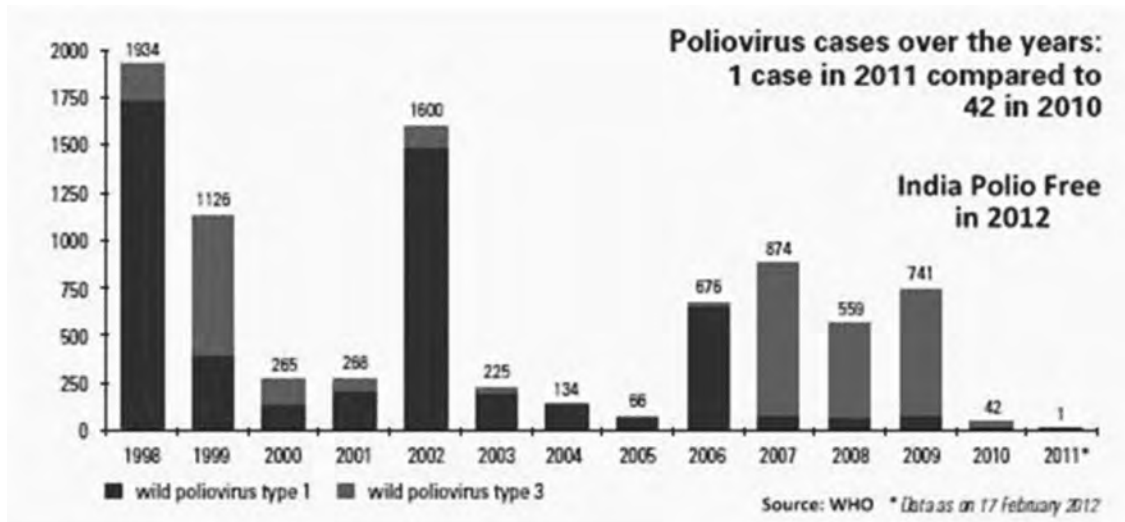


Figure 5: The dark areas represent the 107 polio reservoirs in western UP and Bihar State



administrative unit within a district) of western UP and Bihar States which represented “polio factories” (endemic reservoirs). In 2003, an estimated 80 percent of the world’s new polio cases originated in these locations. To rid these two states of polio would require sustained and highly coordinated social mobilization campaigns.

Data-driven macro and micro communication strategies

By any measure, the scale of the polio eradication effort in India was staggering. In the last decade leading up to eradication, more than 170 million Indian children under the age of 5 were being vaccinated in two national immunization campaigns, involving the mobilization of 2.5 million vaccinators (UNICEF, 2012). Additionally, up to 70 million children in the highest-risk areas were vaccinated multiple times during Subnational Immunization Days (SNIDs). The on-the-ground mobilization was of epic proportions.

UNICEF, in cooperation with various international, national and state-level partners, led the implementation of intense social mobilization and behavior change communication campaigns (Black, M., 1996; Chaturvedi, 2008; Mittal & Matthew, 2007).⁴ What made the polio communication activities extraordinary, especially in UP and Bihar state, were the mapping and record-keeping associated with the macro-plan (at the state, district, and block level) and a relentless drive to reach each child as per the micro-plan (at the village, locality, and household level). Mapping and monitoring of each household was developed into a precise art

(or “German engineering”), where the room for error was minimal given the goal was complete eradication (Singhal, 2008).

More importantly, these macro and micro-plans for reaching every child under the age of five were continually refined, strengthened and benchmarked to measure their efficacy and effectiveness (Singhal, 2008). Michael Galway, who guided UNICEF’s communication and social mobilization efforts during these crucial years in India, emphasized: “The polio communication effort on the ground came with a tremendous accountability to both donors and clients. Therefore, the communication strategy had to be evidence-based, data driven, epidemiologically-guided, adaptive, and localized.”⁵

Achieving compliance, overcoming resistances and rumors

The organization of NIDs and SNIDs would mean little if caregivers did not know *when* and *where* these polio rounds would take place, and if they were not convinced that that these drops were essential to protect their children (Athar, Khan, & Khan, 2007). While it may seem that the central communication message is simple (immunize your child) and needs to be reinforced repeatedly without variation, challenges existed in reaching isolated communities, migratory populations, and every child during every round, as also in countering rumors about vaccine safety.

Tracking the immunization status of every child under the age of five was crucial in the NIDs and SNIDs, especially in the high-risk areas. If a child went unvaccinated during a polio round – at the

neighborhood immunization booth or during the door-to-door visit, the reason for missing the child (e.g., child was sick, in school or in the playground, or out of town) were noted, and at least three additional attempts were made within the following week to make sure the child was immunized.

Another challenge involved continued compliance by families in each round, spaced once every five to six weeks in the 107 high-risk blocks of western UP and Bihar state. How to convince families that polio can still cripple children who have been immunized several times? Michael Galway noted in a personal interview: "People live difficult lives in this part of the world and they, understandably, get angry when we are back in their house every six weeks with a polio vaccine. What they really want is electricity, water, schools for their children, sanitation, and better health care."⁶

An even tougher challenge was convincing those who were misinformed and resisted vaccinations for reasons that were personal, local, cultural, and frequently changing. To do so, frontline workers developed new tools to engage with families, to record the reasons for refusal, to better understand the complexities of multiple community identities even within the same village or urban slum, and to overcome deeply-rooted social and cultural barriers, such as the practice in UP and Bihar of not allowing newborns to be immunized. When questions were raised or resistances detected, answers were researched, messages pre-tested in the field, and the social mobilization team, composed of local health workers and volunteers, would rope in key influencers –

whether imams, school teachers, community leaders or medical doctors – to engage and convince the families.

Efforts to eradicate polio globally and in India, received a big setback when a 2003 *fatwa* issued by influential Muslim clerics in the West African nation of Nigeria warned their communities to avoid polio vaccination for it would, they said, make children sterile⁷. Heeding the *fatwa*, members of some Muslim communities in northern Nigeria stopped vaccinations. A minority of Muslim leaders in India also supported the *fatwa*. UNICEF and other partners joined hands with premier Muslim institutions (e.g. Aligarh Muslim University, Jamia Milia Islamia University, and others) to address and overcome misguided *fatwas* or other ostensibly faith-based opposition. In addition, local religious leaders were engaged in mosques and *madrasas* (religious Islamic schools) to support polio eradication. Many of them signed appeals and provided printed testimonials during prayers, festivals, and community events. Countering rumors without delay, and that too in close partnership with credible and influential religious and local leaders, help put the Polio program back on tracks.

Influence of social mobilizers and local opinion leaders

In 2008, during one of the SNIDs, I spent several days in western UP to witness the social mobilization activities first-hand. I met dozens of community mobilizers belonging to the Social Mobilization Network (SMNet), which UNICEF helped launch in 2001. At the time of my visit, some 4,300 community mobilization coordinators (CMCs) actively worked in

44 districts in UP, supported by an umbrella of block, district, and sub-region coordinators, who continuously liaison with local administration, public health officials, stakeholders, and partner agencies to utilize resources optimally. The CMCs were strategically placed in high risk areas (HRAs) concentrated around western UP and select eastern and central pockets of the state, forming the link with the underserved community most at risk. On average, each CMC tracked 440 households and about 375 under-5 children, covering about 1.85 million households and 1.6 million children during each of pulse polio rounds (once every 5-6 weeks), in addition to routine immunization of children (Singhal, 2008).

In western UP, the frontline social mobilizers that I met were mostly women, who lived and worked in communities that are at high-risk for ongoing transmission of the polio virus. With some training, these mobilizers maintained and updated extremely complicated data and records of children in their area, which is consolidated upward during each round through multiple levels (community, locality, block, district, and State), analyzed, and fed back with amazing alacrity.

What made these on-the-ground social mobilizers tick was the personal rapport, credibility, and trust they brought to an interpersonal encounter. As Chaturvedi (2008, p. 5) noted: “Nothing beats the familiar face, the lilt of the local dialect and the genuine concern of the friendly neighborhood aunt who may say: ‘He looks a little pale today, have you taken him to the doctor? Don’t neglect your health while looking after the babies and don’t

forget to come to the polio booth on Sunday’”. Such personalized, localized interaction with a locally-respected woman, backed by a network of local influencers and opinion leaders, provided an opportunity for iterative dialogue, discussion, and decision-making, leading to the imbibing of the two miracle drops of the oral polio vaccine.

Opinion leadership is the degree to which an individual is able to influence informally others’ behavior in a desired direction (Rogers, 2005; Singhal & Dearing, 2006). SMNet’s social mobilizers worked very closely with local “influencers” (religious, occupational, and societal) to actively engage them in convincing resistant households. Between January 2006 and April 2007, the percentage of local influencers who accompanied vaccination teams during house-to-house activities doubled in high-risk pockets of UP, significantly boosting immunity in the community (Figure 7). Further, the presence of local *pradhans* (chiefs of local government), medical practitioners, imams, and shop keepers, visibly demonstrated that polio eradication was not an imposition from the outside, but a goal that the community owned.

The cumulative effect of community influencers working shoulder-to-shoulder with community mobilizers is evident in Figure 8, showing the number of households resistant to immunizing their children in Uttar Pradesh dropped by half in within six months.

Adaptive communication strategy

The on-the-ground mobilization and vaccination strategy in western UP and

Figure 6: A micro-plan detailing households within a locality in a polio endemic village. Source: Arvind Singhal



Figure 7: The rising engagement, over time, of local influencers in UP state.

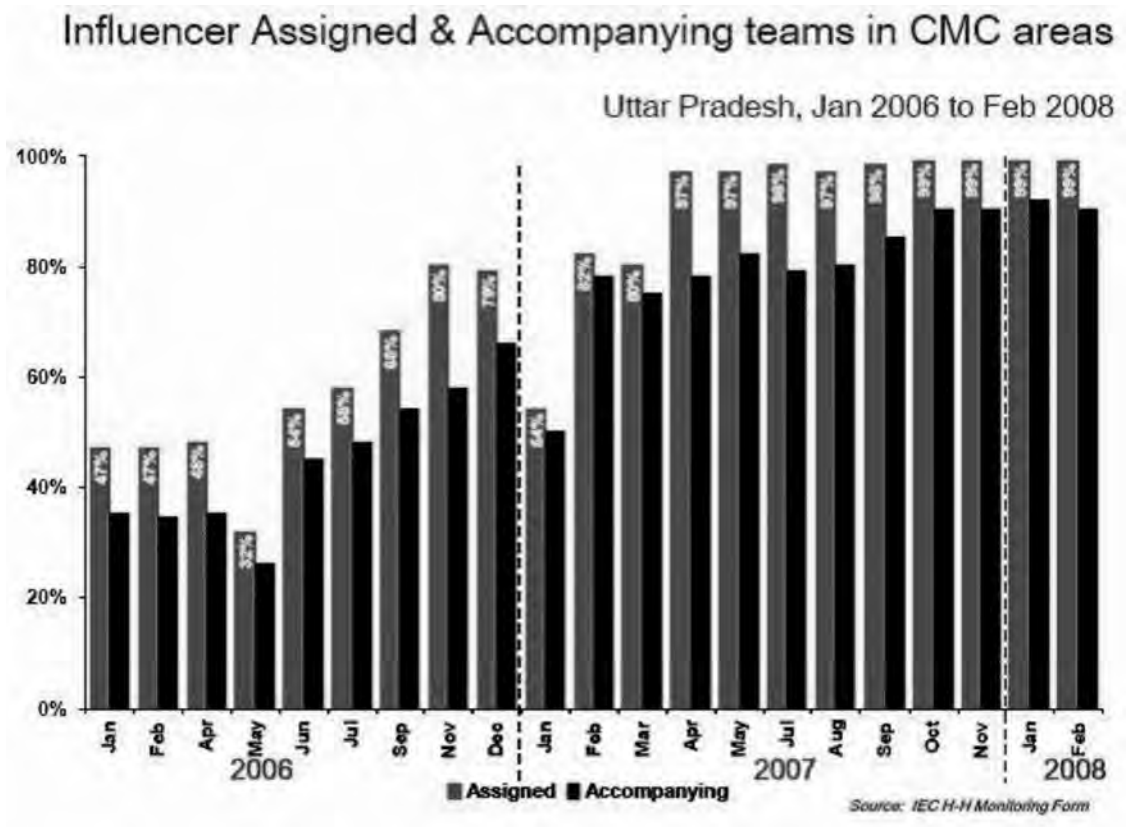


Figure 8: The declining number of resistant households as community influencers work shoulder-to-shoulder with community mobilizers.

The Declining Number of Resistant Households in the State of Uttar Pradesh In Each Successive Polio Round In High Risk Areas With Community Mobilizers

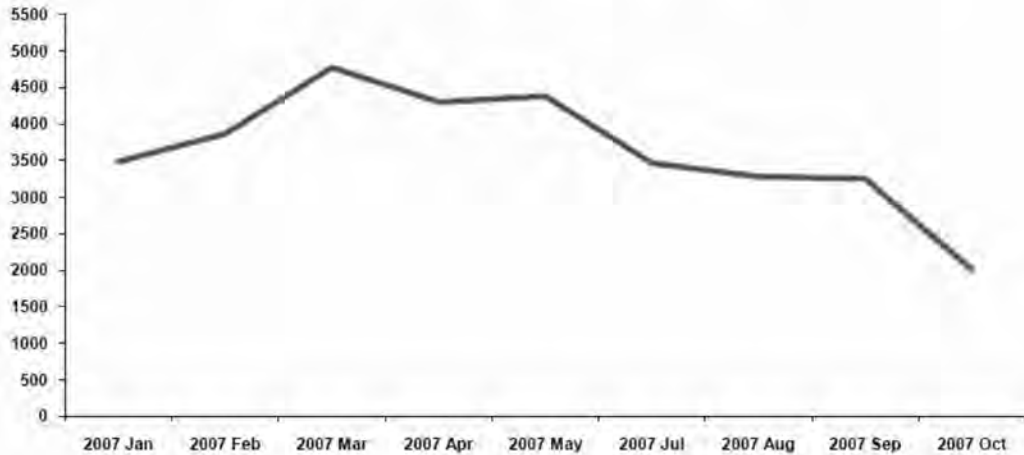
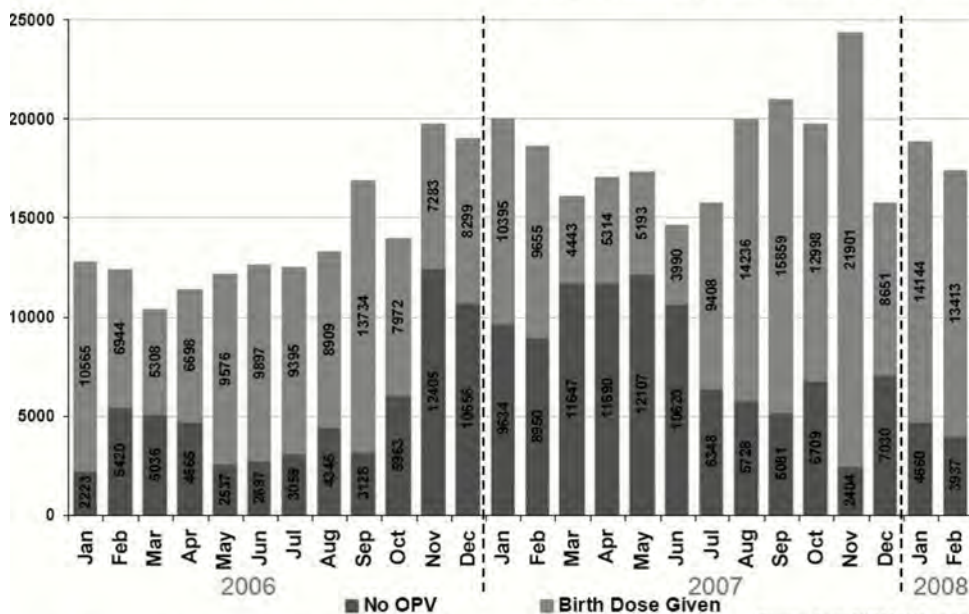


Figure 9: The rising coverage of newborns to keep pace with the evolving epidemiology of the polio virus.

Birth dose to children less than 1 month, CMC HRAs
Uttar Pradesh, Jan 2006 to Feb 2008



NOTE: Increase in the number of newborns identified in 2006(last quarter) was followed by the birth dose initiative which had its impact starting only in mid 2007
Source: Form A(SM Net Reporting)

Bihar was dynamic and nimble, guided by emerging data, and responding to the evolving epidemiology of the polio virus. For instance, as immunity levels began to rise in communities for children under the age of five, it was imperative to increase the vaccine coverage of newborns. Newborns were especially at risk for polio, given the established social norm in rural and semi-urban households in UP and Bihar to shield the newly-arrived from “evil outside eyes,” – a cultural response to cope with high infant mortality. Immunizing newborns was critical in UP and Bihar, the two most populous Indian states with a combined population of 300 million, where some 18,000 babies were delivered each day. No newborn could be missed.

This shift to target newborn households is evidence of how the communication strategy was continually adapted to keep pace with the epidemiological data. As polio in north India became more clustered in the youngest children, getting to these newborns before the polio virus was imperative. Community mobilizers were on location with alacrity, convincing mothers of newborns and their husbands and in-laws to immunize their child within hours (or days) of their birth (Figure 9).

Conclusions

There is much for the world to learn from India’s journey to eradicate polio:

- the relentless implementation of macro and micro communication strategies;
- the micro-targeting and micro-messaging to achieve compliance, overcome resistance, and counter rumors;

- large-scale and intensive on-the-ground social mobilization and active and purposive involvement of local religious and opinion leaders; and,
- an evidence-based, data driven, epidemiologically-guided, adaptive communication strategy.

The room for error with polio eradication is next to zero, given that it takes only one individual to transmit the virus. India’s journey toward remaining polio-free needs be equally relentless, until Nigeria, Pakistan, and Afghanistan eradicate the wild polio virus.

It has been over 30 months since Rukhsar Khatoon’s name was recorded on India’s polio roster. That is an epic triumph in the annals of global public health. It has brought the world a step closer to eradicating polio. We all await the day when the final entry will be made in the global roster of polio cases.

Endnotes

1. When Prof. K. John Babu, editor of the International Journal of Communication and Social Research invited me to serve on the editorial board, and invited me to contribute an article, I took his invitation seriously. I asked myself: what value could I uniquely add to this inaugural issue. After some deliberating, I decided to make an attempt to capture, even if modestly, the salient elements of India’s macro and micro-level communication and social mobilization strategy to eradicate polio. That this new journal originates from India helped in steering my decision. It would not be boastful to say the following: no country, at no time, has at such unprecedented scale, used the art and

science of social communication for a greater public good as India did to wipe out polio – a public health triumph of epic proportions. It is India's gift to the world, and a tribute to its millions of polio workers.

Personally and professionally, I have been privileged to have many encounters with India's polio program. I have vivid memories of imbibing the oral polio vaccine drops straight out of a refrigerator in a doctor's office as a child growing up (in the late 1960s) in Lucknow, UP state, and then in Chakradharpur, Bihar state (now in Jharkhand). Later in life, as a health and social communication researcher and scholar, I witnessed at close quarters India's polio eradication program in western UP in 2008, under the auspices of UNICEF, the agency that led the on-the-ground social mobilization and communication actions.

My activities included field visits to several blocks and villages of Meerut District and in-depth interactions with officials and community mobilizers of UNICEF's SMNet, local health officials, and polio resistant families. Further, I reviewed archival records (in Delhi and Meerut), both historical and current, of India's march toward polio eradication. Especially golden were in-depth personal interviews with Michael Galway and Naysan Sahba, both officials in UNICEF's Programme Communication Unit in New Delhi, and Dr. Hamid Jafari, WHO's project manager for Polio Surveillance in India. Robert Cohen, Ketan Chitnis, Rina Gill, and Neha Kapil of UNICEF's C4D unit and Jeffrey Bates of the Polio Team, New York, helped enhance my understanding of the macro and micro

communicative elements in India's polio strategy (see Singhal, 2008).

Since 2010, I have been privileged to serve on the Independent Monitoring Board of the Global Polio Eradication Initiative, which has helped to further sharpen my understanding of the vital role of communication and social mobilization in eradicating polio from the remaining three endemic countries: Nigeria, Pakistan, and Afghanistan (Closser, 2008). Toward this end, I have learned quite a bit from participating in on-the-ground polio activities in northern Nigeria (especially in Sokoto and Zamfara states) and in Pakistan (including Lahore and vicinity in Punjab state and areas in and around Peshawar in Khyber Pakhtunkhwa).

An important disclaimer: The views that I express here are solely mine – in my capacity as a scholar and sense-maker of communication strategy, and not to be attributed to either UNICEF or the IMB. This piece, while written especially for this volume, draws upon my previous sense-making attempts (i.e. Singhal, 2008). Almost all the data presented here is in the public domain and most of it available from the following sites: <http://www.polioeradication.org/> and UNICEF (2012) available at [http://www.unicef.org/india/Polio_Booklet-final_\(22-02-2012\)V3.pdf](http://www.unicef.org/india/Polio_Booklet-final_(22-02-2012)V3.pdf). Also, see McNeil (2011).

2. In this article, we focus more on the interpersonal and ground-based elements of the polio communication strategy (see also Obregon et al. 2009), while acknowledging the important role of mass-media polio campaigns, include the long-running one featuring Bollywood

superstars, Amitabh Bachchan and Shah Rukh Khan, promoting the two miracle drops. In addition, there was widespread media coverage of sports stars and other celebrities vaccinating children, radio jingles, millions of strategically placed posters, banners and print advertisements, and continuous engagement with all mass media – national, regional and even the local vernaculars.

3. The only other infectious disease that has been eradicated is rinderpest (a German word meaning “cow plague”), a viral, highly contagious, and deadly disease afflicting cows (see <http://en.wikipedia.org/wiki/Rinderpest>). In June of 2011, the United Nations FAO confirmed the disease was eradicated.

4. While UP and Bihar were the last bastions of the polio virus in India, West Bengal, Karnataka, Andhra Pradesh, Maharashtra, and Delhi were always at risk, because of migration (of laborers and their families) from UP and Bihar to work on construction projects and in agricultural fields. Even within a state or a district there is seasonal migration of labor to work in fields, orchards, brick kilns, and construction projects. Hence, during each polio round, a vast array of “mobile” polio teams were employed to cover migrant populations at bus stations, construction sites and on trains.

5. Personal interview with Michael Galway, Chief, Programme Communication, UNICEF, New Delhi, conducted on January 9, 2008.

6. Personal interview with Michael Galway, *Ibid.*

7. See

<http://blog.foreignpolicy.com/node/6637>, retrieved on August 8, 2013.

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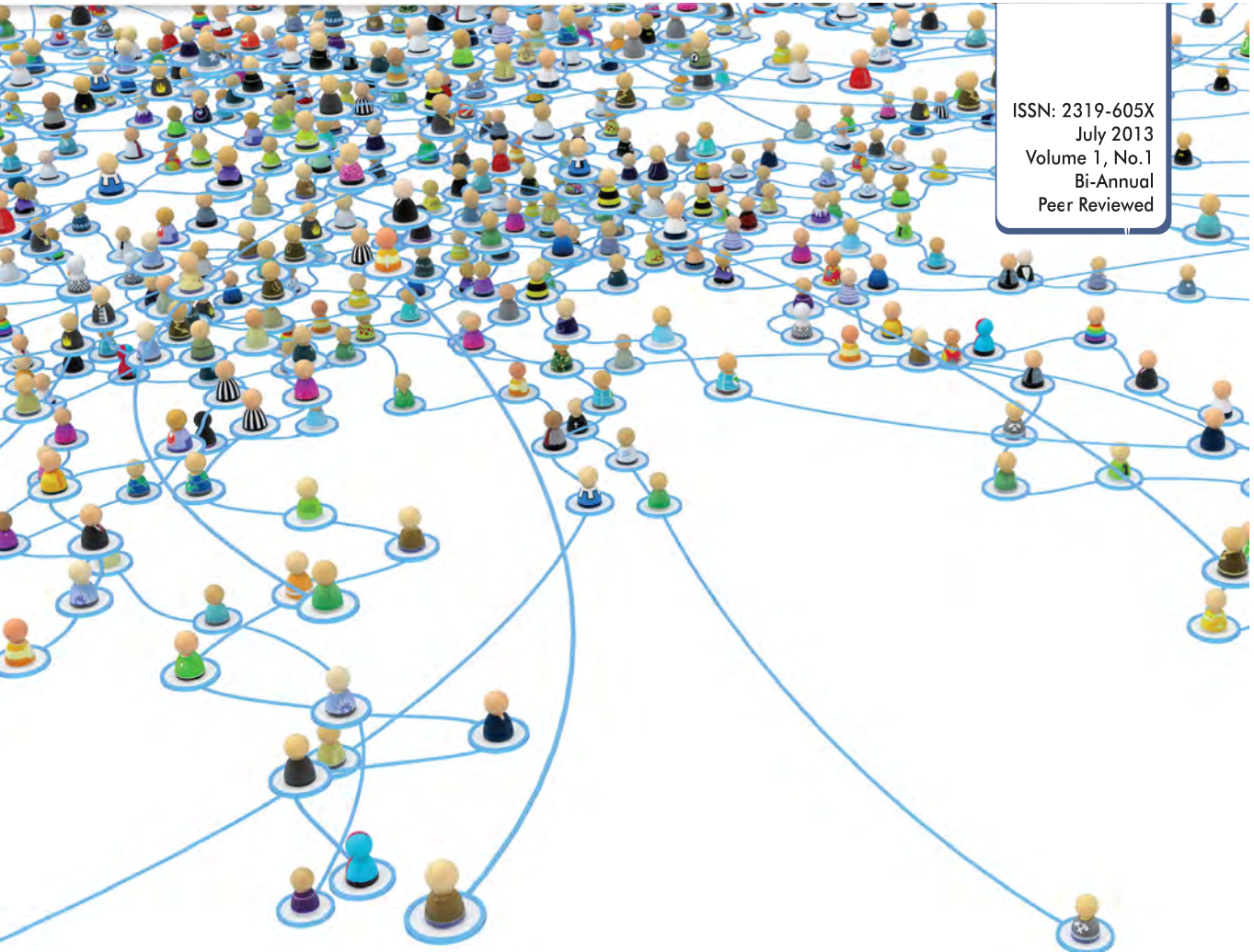
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