

**COMMEMORATION OF 30 YEARS OF FREEDOM FROM SMALLPOX  
WHO/SEARO, NEW DELHI**

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**By Bill Foege**

**INTRODUCTION**

**When our grandson, Max, was 7-years-old, he asked, “What is the most important thing people could do to make the world better?” Today we celebrate a partial answer as we recall the army of people, who three decades ago made decisions to make the world better.**

**It is 30 years since the WHO declaration of smallpox freedom. But it is 34 years and 2 months since the last case in India. Over a third of a century!**

**Over the years, on every return to India, I have searched the faces of people on the street looking for pockmarks. Soon I could find no pockmarked face under the age of 10, then 20 and now, no pock marks under age 35.**

**It was a powerful experience to observe the Indian system – Which took smallpox from the intensity of over 1000 new cases a day in Bihar alone, (indeed for one period in the spring of 1974 Bihar had more than one new case of smallpox every minute) to zero in the entire country 12 months later. We honor the memories of those no longer with us who made it possible. Dr. MID Sharma, Dr. P. Diesh, Dr. Mahendra Singh, Mr. Prem Gambhiri, Mr. Harcharan Singh and hundreds of others.**

**It was an effective coalition of workers from around the world, multiple agencies, even corporations, working under the India Ministry of Health. We lost our national or corporate identities in the pursuit of a shared objective. By May 1974, with 8 months of experience and expansion of surveillance and containment as the primary approach to smallpox eradication, the program became so efficient that a virus that had eluded the best efforts of vaccination programs for 170 years was subdued in the blink of an eye. Why? Because, in biological terms the coalition evolved faster than the virus could evolve!**

## **LESSONS APPLICABLE TO OTHER PROGRAMS**

**The smallpox program was worthwhile in itself, even if there were no lessons for other programs.**

- **Lives set free**
- **Misery prevented**
- **Resources available for other things. That is justification enough.**

**But there are lessons. And they cascade in numbers far beyond our ability to examine them today.**

- 1. First, smallpox eradication did not happen by accident. Stephen Hawking, in *A Short History of Time*, said the history of science is the gradual realization that things do not happen in an arbitrary fashion. This is a cause and effect world and smallpox disappeared because of a plan, conceived and implemented on purpose...by people. The same could happen and will happen for other diseases.**
- 2. A second lesson. Know the truth. That is the basis for surveillance systems...to know the truth. Once the truth was known, of where the smallpox virus was at a point in time, it was possible to eliminate it. The strategy of mass vaccination had always assumed it was not possible to know where the virus was. If hidden, one had to assume that it could be anywhere, and the appropriate response was to protect everyone. Herd immunity was the strategy.**

**Every review of the smallpox problem in India concluded there was need for high vaccination coverage in every segment of the population. Experts from India, WHO, CDC, all concluded that 80% coverage was not actually being achieved and therefore the goal needed to be increased to 100%. That logic made no sense even at the time. If you**

**can't reach 80%, you certainly can't reach 100% but their conscience was now clear by having declared that goal. Herd immunity was unexamined. Even the 1968 Smallpox Expert Committee report says there are now two strategies but where smallpox is rampant achieving herd immunity is still the most important of the strategies.**

**Even poor containment in the early months of the new strategy, October to December of 1973, was still relatively effective in reducing virus transmission. But it was always responding to old information, last month's figures or last week's search. But it could not be better than the information garnered from surveillance...and so we return to the primacy of surveillance. Knowledge is power.**

**The miracle in India, having reached near perfection in surveillance and containment by May 1974, was the rapid decline from extremely high levels of smallpox to zero in 12 months. It is a feat unprecedented in public health history.**

- 3. A lament heard often in global health today is that we don't have the delivery capacity to deliver the tools. A lesson in smallpox eradication was to spend the time needed, as WHO did, to systematically improve the tools and the techniques to deliver them. Better vaccine, an easier vaccination technique, the bifurcated needle, techniques to efficiently track the virus and to encircle the virus with people immune to smallpox.**
- 4. Lesson #4 is the power of coalitions. Successful coalitions share certain characteristics. The first is a clear vision of the last mile. This was never in doubt in the Smallpox Eradication Program. The last mile was the**

**total absence of smallpox cases and smallpox transmission. Smallpox control was never even raised as a consideration.**

**The coalition team suppressed individual egos for a common goal. That was the secret of smallpox eradication in India. The boundaries between the Central Government of India, states, districts, WHO, NGO's, the public, and private industry were totally obscured as a new team formed with a tenacious focus on an outcome of removing the scourge of smallpox. Clear to participants, difficult to convey and missed by recent historians. You had to be there!**

- 5. Fifth, a corollary was the substance that held that team together. The essential glue for this kind of coalition is trust. It was trust that allowed for the most transparent discussion and arguments over tactics. It was the trust of Dr. Karan Singh in Drs. Mahendra Dutta and MID Sharma that allowed him to support surveillance/containment when others were advising him to return to mass vaccinations.**
  
- 6. Sixth, social will is crucial. In theory, eradicating smallpox was possible from the time vaccine became available. It became easier as science and technology improved the tools. But that was not enough. The 1970s became the last decade of smallpox because of social will. That is not possible in the absence of adequate tools, but it is not inevitable even with adequate tools. The development of social will quickly metamorphosed to political will.**
  
- 7. Every public health decision ultimately requires a political decision for implementation. The lesson that follows is that public health practitioners must enter the world of politics. They should take it as part of their job description to provide politicians with the information**

**needed for good public policy decisions. It is labor intensive to make such information flow effective as politicians change. I suggest that in a more perfect world, a large percentage of politicians would have received their training in public health!**

- 8. Next, implementation of successful public health practices is primarily a management problem, not a science problem. Solutions rest on good science, but the implementation of those practices is primarily dependent on management. Smallpox had some intriguing scientific problems, but eradication depended on managers.**
  
- 9. The usual management techniques were important. However, at the same time workers were encouraged to experiment with tactical approaches, which if effective could readily be replicated by others. Monthly meetings in every endemic state allowed for rapid transfer of information. We didn't wait for annual reviews. Flexibility in tactics became a hallmark of the program.**
  
- 10. The combination of science, managerial abilities and political decisions made it possible to concentrate skills and resources from anyplace in the world to the point of need, or, in the words of an Indian physician, “putting water on the house that was burning rather than the other houses.” I grew up with the saying that some things had to be seen to be believed but I learned with smallpox that the opposite is true. Some things have to be believed to be seen.**
  
- 11. Next, we learned about BOSSES. We have all had bosses who do annual performance ratings. But in a very real sense...our bosses include every person who will ever live in the future. Because we are**

**preparing the world they will live in. With smallpox eradication we served our bosses quite well.**

- 12. We learned TENACITY. Tenacity won't always bring success. But it is the only thing that will. Mae West once described a suitor as so tenacious he was the kind of man a woman would have to marry to get rid of. We were tenacious.**
  
- 13. We learned about THE MEASUREMENT OF CIVILIZATION. The measure of civilization is finally how people treat each other. It measures a nation, a political party, a society, a university, a program. How we treat people is the measure of us as people. Smallpox eradication taught us how to treat people we will never actually see.**
  
- 14. We learned the need for OPTIMISM. The trouble with being an optimist, of course, is that people think you don't know what's going on. But it is the way to live. I tell students there is a place for cynicism and a place for pessimism and whenever you need it, contract for it but don't get those people on your payroll. They will ruin your day. We were an optimistic group.**
  
- 15. Smallpox eradication proved it was possible to choose a global objective and bring global resources to bear. Will Durant once observed it was unlikely the world would join forces unless it feared an alien invasion. Smallpox demonstrated the possibility of surrogates for an alien invasion. This disease provided a shared risk and therefore required a shared effort to remove it. In later years many other problems—nuclear arms, polio, SARS, HIV, H1N1 flu, to name a few—would demonstrate the power of understanding shared risks.**

**Smallpox was a small step in showing it was possible to have problems short of an alien invasion which could mobilize the world. Pursuing such problems is worth the effort both because of the inherent good but also because they provide practice in working with others and thereby breaking down illogical social barriers.**

- 16. While the objective was global, implementation was always local, requiring local knowledge and respect for local customs. The strategy for smallpox eradication did not change from country to country, but culture determined the actual tactics most useful. Only the specific locality can provide information on who is sick, who is hiding from the vaccinators, when people are available for vaccination, how to hire watch-guards, or how to secure the cooperation of the community. In all cultures an approach of respect was needed to avoid trampling on cherished beliefs or traditions.**
  
- 17. Communications represent the nervous system of successful coalitions. Reporting from search and containment workers to the PHC, then to the district, the state, and finally central level improved continuously. In return, surveillance reports were collated and analyzed and the results shared widely to provide transparency on where problems existed and where actions were working. Local workers knew their position in the global effort. “We are all in this together” was a palpable feeling. This in turn engendered a pride in the work being done, not just by smallpox workers but also workers borrowed from other health programs. Trust, effectiveness and knowing the truth all depended on good communication systems.**
  
- 18. Evaluation was the key to interpret where the deficiencies were, a method to correct those deficiencies, and a way, finally, to project when each district and state would reach the tipping point of controlling**

**smallpox faster than it was spreading. It was possible to predict where resources were needed in advance rather than simply reacting each day to the information of that day. Evaluation was not an add-on; rather, it was a priority management tool to more effectively use scarce resources. The mantra from the American Management Association was repeated hundreds of times...you get what you inspect, not what you expect. An essential ingredient in “Knowing the truth.”**

**19. Finally, the lesson of humility was a constant. Smallpox eradication, in retrospect, seems inevitable. But the chain of events allowed so many opportunities for failure that everyone involved was apprehensive until the end. The apprehension was well founded. The many things that could have prevented eradication were the foibles of people, not the strengths of smallpox. In the end the problems were not due to the nature of smallpox but rather to the nature of humans.**

**While the lessons are many, what is the greatest gift of smallpox eradication in India and the world? It takes us back to the first lesson listed, that this is a cause and effect world. It is the demonstration, once again, that the coordinated action of dedicated people can plan a rational future. This does not have to be a world of plagues, disastrous governments, conflict, and uncontrolled health risks. It is possible to plan a rational future and smallpox eradication is a constant reminder that we should settle for nothing less.**

**Thank You.**