August 2001

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Recommended Citation
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The Necessity of Implementing a Public-Health Approach to Humanitarian Demining

Clearing mines is expensive, and demining programs usually consume funding before reaching the task of mine removal. The authors suggest ways to make demining more practical, effective, and economical using a “public-health” approach.

by Daniel H. Wolf, President, and Steven Barmazet, Publications Director, Terra Segura International

Introduction

Landmines are an epidemic, yet unlike other programs fighting epidemics, humanitarian demining does not conscientiously apply public-health techniques. National mine-clearing projects conform to inflexible military models that maximize central control while stifling local initiative. Intensive mine-at-a-time clearing efforts, though urgent in heavily land-farmed areas, are applied across the board, dissipating demining resources. This makes reducing risks across large areas and populations impossible, resulting in continuing and unnecessary deaths from unaddressed mine fields. Clearing every mine field is beyond the world’s demonstrated willingness to expend capital. Spreading reclamation and reducing casualties within existing resources requires more emphasis on overall risk reduction, more efficient methods and technologies, and increased incentives for private action.

Public-health programs do this by balancing what is best for individuals with what is best for all. Expensive acute care, such as caring for the sick during cholera epidemics, is the smaller part of the solution; the larger part is generalized threat reduction (e.g., providing reliable, potable water systems). The goal is to achieve the highest society-wide health benefit for the available funds, which are always insufficient.

A public-health approach in demining would optimize efforts to greatly reduce risk in concentrated areas where civilian exposure is extreme and needs are urgent (e.g., clearing paths to wells and schools), and moderately reduce risk over very large areas (e.g., locating and marking mine fields without clearing them, conducting mine-awareness education and establishing last-community response teams).

The wider perspective of public-health programming stresses coordination and cooperation with other organizations to cut costs for activities such as victim rehabilitation, economic development, and employment generation. Not only are overall risks and casualties reduced for given outlays, but communities and their economies also recover faster.

Humanitarian demining is more than reducing postwar injuries. It is also meant to build the conditions for a stable peace and a robust prosperity. Improving the whole public health is as important as eliminating individual threats.

Why Conventional Demining Is So Expensive

Manual demining is the gold standard for near-100 percent removal. However, the inherent risks elevate per-worker expenses, and the need for additional training. Checking for booby traps, clearing vegetation, probing carefully, digging up numerous suspicious objects and rotating crew members to deter stress and boredom requires multitudes of low-skilled detection personnel. With more than 3,500 personnel, for instance, the Cambodian Mine Action Center (CMAC) cleared only 10 sq km a year out of some 3,500 affected sq km. As a consequence, labor costs are astronomical.

Bureaucratic factors also increase costs. Centralization robs the arm of clearing activities by concentrating excessive resources in the bureaucratic tail. Relying on peacekeeping forces and national armies for leadership, the organizational models for these projects, not surprisingly, are military. Though efficient for combat, when applied to mine clearing, this model is inefficient, not economical, stifling to local initiative and adaptation, and slow to respond to new or newly-discovered beneficiary needs. Experimentation is directed from above, innovation must run a gauntlet of policies and doctrines, and local responses to local conditions must pass through levels of bureaucratic filters. Furthermore, most projects suffer all the typical problems of systems with third-party funding. A handful of distant agencies disburse most demining assistance (e.g., the U.N. and World Bank), while local units supervise this activity (e.g., the U.N. and Mire Mire). For those who have worked with LAO-UXO in Laos, it is not surprising to them to hear of the challenges faced by other nations: time is a luxury because Level 2 survays apply the method to all land (Level 1 surveys apply the method to the land of former Khmer Rouge officers led) to funding cutoff and contraction. Some who have worked with LAO-UXO in Laos are able to see the commercial utility of former. LAO-UXO may be somewhat robust than that, but no level of expertise would likely cause foreign donors to lose confidence, causing LAO-UXO to shut down from lack of funds. Even a recent U.N. policy review, noting the prevalence of "poor management and mismanagement," resulted in the United Nations "not be involved in the direct implementation of mine action activities." Even the most efficient programs are expensive. "Total monthly expenses for the Afghanistan Mine Action Program, for example, run $800 (U.S.) per deminer, only $150 of which is the actual wages; the rest is equipment, transport, food accommodations, insurance, medical support, etc. Total costs for the program's five expansion supervisors reach $250,000 each. The unfortunate result of all these costs is that clearance costs more than most agricultural land is worth. This eliminates one of the most powerful incentives for investing in demining—the lure of positive returns on investments. Private landowners will not invest in land clearance unless they expect to make a profit in order to support their families. Likewise, a government ministry in a poor country will not invest in clearing large areas if it cannot expect positive net returns, even considering the economic and social value of avoiding injuries and deaths. It must invest its limited funds in growth and development, not simply invest in ways that may produce net returns but are collective and economic well being.

Improvements in Planning Demining

The picture is not entirely dismal. Coordination between military and civilian organizations has improved, and the United Nations has responded to critiques by beginning to focus on the coordination among, rather than the actual operations of, NGOs. Additionally, in an attempt to match needs with available resources, demining planners now apply triage to lands (i.e., prioritize them according to risk and necessity and authorize "treatment" according to these priorities). Obviously, acute threats such as mined schoolyards and water sources are treated immediately even at great cost. Ideally, public infrastructure and transportation are cleared next, then private infrastructure and productive lands, and finally low-value lands such as backwoods.

The desired treatments for these various levels of need have evolved into three accepted risk-reduction "treatment levels." From the top, Level 3 is complete clearing (the most expensive), akin to acute care; Level 2 is de-mining (targeting mine field perimeters meant to mined land in a safe holding pattern while making the unmired surrounding land available); and Level 1 is an aspirin-like treatment, generating general location data and impact information for planning purposes, accompanied by mine awareness training that is often ineffective.

Unfortunately, funds are too limited in many cases to cover all critical areas, much less mark mine fields to keep people safely out. Even when funds are available, the middle level of care is largely unattainable because Level 2 surveys apply the same labor-intensive techniques used for clearance itself, which is very expensive, especially in densely vegetated areas.

In order to make serious headway, overall performance must increase dramatically without expecting increased public funding. The challenge is enormous, and responsible agencies must go beyond easy fixes—they must make substantial changes in their organization and procedures and bring along donors and affected countries in both mined and donor countries.

Getting started requires three strategic responses: awareness of the utilitarian public-health philosophy, immediately implementing measures to improve performance within existing institutional constraints, and providing a sustained effort to create systemic flexibility, improve
...options and transition demining in situations towards a true public-health demining system.

The Utilitarian Approach to Reducing Societal Threat

Notwithstanding the humane concerns about all public-health programs, economic rationality and practicality govern attacks on everything from typhus epidemics to air crashes because it is impossible to protect everyone completely in a world with finite resources.

To end a typhus epidemic, for example, officials divide funds and efforts among acute care, programs of prevention and behavioral change, and construction of sanitation infrastructure. Similarly, to reduce airplane accidents, officials simultaneously promote safety in design, manufacture and operation. Attempting to eradicate all flies that carry typhus at the cost of other variables would be an inefficient (and Staphylococcus) strategy, as would spending all available funds to build a "perfect" airplane while leaving flight operations unregulated. In both cases, the assumption is that a single risk factor results in more deaths than a strategy of risk reduction that is operated but incomplete.

Attaining a perfect solution for a single aspect of public-health problems wastes resources. The fundamental premise is that the whole population is better off (i.e., stays healthier and lives longer) if all people are protected to some degree than if a few are protected completely. Instead of focusing resources on a small portion of the population, public-health workers should aim at significant proportions of their resources in a relatively thin layer over large groups, perhaps even entire populations.

So it should be with demining. Every day, people and livestock stray into unmapped and unmined mine fields, and every day, dozens of people succumb to the odds they face there. Reducing aggregate threat levels (i.e., reducing the odds of encountering a mine in all populated areas) would reduce deaths and injury more than the present practice of expending almost all resources on eliminating mines completely in only a few places. This method would also contribute more to economic development, political stability and tax generation.

Public-health programs and methodologies vary considerably by disease and social setting. Some methods are primarily epidemiological—identifying causes. Others are sociological; (e.g., working to change hygiene habits) or public-works-oriented (building sanitary water and sewage systems to interrupt disease cycles). All programs share two goals: 1. to implement the most effective strategic attack on the epidemic, in order to stop it in its tracks and turn it around; and 2. to maximize effectiveness per dollar invested.

Nor coincidentally, the second goal flows from the first. Good public-health programs exploit the weaknesses of their disease adversaries and reinvent themselves as they confront new conditions. Using tools from the fields of epidemiology, economics, sociology and political science, among other programs, analyze not only the disease but also the social and technical advantages and impediments faced in the struggle against disease. Public-health officials are not magicians but pragmatists. They attempt to maximize organizational effectiveness and optimize use of available resources in order to minimize aggregate death and injury. This requires continuously analyzing and tinkering with organizational functioning; developing, testing and refining improvements; integrating new technologies, and continually attending to stakeholders at all levels. Ignoring any single element threatens optimization efforts.

Immediate Practical Measures: Improving Performance Within Existing Constraints

Years of deminer debates and complaints prompt the following suggestions:

- Measure efficiency. Funding agencies increasingly understand that the true measures of demining efficacy are reduced casualty rates and increased land available for safe use.
- Employ comprehensive law and contract. Penalties, levels of performance, and corruption must be specified in contracts, with consequences for overruns. Strategic planning of mine clearance, as well as boundary and relocation work, should be subject to the same standards as contract work. Employees need rewards and retribution. If they understand that their work is global and meaningful, they will feel more responsible for and committed to projects.
- Use appropriate methods and knowledge. Successful companies and NGOs have expert knowledge; they should be included in planning voluntary standards and free exchange of information, though messy, will stimulate cooperation across the spectrum of demining organizations.
- Improve regulatory oversight. There are many different technologies that should be developed and deployed for different conditions is honored more in the breach than in the practice. Rich-country military RD&D has produced some extraordinary military machines. Building wonderful machines that deminers cannot afford to buy and maintain is of little help. Successful technologies optimize price, utility and operating cost within the socioeconomic circumstances of a country's use. Because labor is relatively cheap and capital is expensive in developing countries, preferred equipment may be different from that favored in the developed world. National inventories should allow deminers ready access to the best detector for the soil and logistical conditions they face, and remote-control brush cutters should be made widely available in order to speed up one of the slowest steps in demining.

Transition of Institutions: Relaxing Constraints and Enhancing Adaptive Response

In the long term, to better enhance economic rationality, it is possible to vary organizational fundamentals such as:

- Employee input into product development. Stakeholders should be designated in the planning, design and costing of new equipment.
- Demand and adopt appropriately designed technologies. Centralization is often justified by the low sophistication of local personnel. Advanced training and education of local employes could render this strategy irrational, though initial expense would increase significantly.
- The organizational model for public projects should migrate towards smaller teams that can operate quasi-indepen­dently and foster team spirit. Field workers could then assume more re­ponsibility, in turn, stimulating cooperation across the spectrum of demining organizations.

Conclusions: The Larger Benefits of a Public-Health Approach

In mined countries, poverty is the rule, and devastation is both cause and effect. Most land has low economic value relative to land in rich countries, and expected revenues are small. This makes most demining economically irrational and therefore unsustainable. Mine clearance depends on philan­thropy, a funding stream that is pres­ently inadequate and possibly subject to erosion. Changing this picture will require careful but dramatic action.

Better humanitarian demining is justifiable on the basis of faster economic growth and lower costs. But the benefits go far beyond this. As demining costs fall and investments in infrastructure, economic activity of all kinds will recover and expand. The result will be more prosperity and political stability, reduced reliance on economic assistance, fewer economic causes of conflict, and less need for foreign military interference and peacekeeping.

This article is based on a paper Mr. Wolfe presented at the UNOSOS conference, New York, April 9-12, 2001.

References

- Figures provided by Prof. James Trefethen.