

By Bohdan W. Oppenheim and David Long

# Ebola: Doing too Little

**A**s Americans, are we too worried about Ebola — or not enough? Reports may be conflicting, but what we should focus on is clear: 1) how to stop the ongoing spread of Ebola; and 2) how to prevent massive disease outbreaks in the future.

Ebola killed more than 5,400 people in 2014. It's time to address it with a process that takes into consideration all systems — doctors, patients, medical devices, waste disposal, etc. — and how they interact together and as a whole.

This is “systems engineering”: a meticulous, effective and robust methodology for addressing the totality of a problem, evaluating all risks to make sure nothing is forgotten, omitted or misinterpreted. Every risk must be addressed and fully mitigated if we are to successfully handle Ebola and other disease outbreaks.

In May, the president's Council of Advisors on Science and Technology advocated for a systems approach to health care in a report to President Obama that outlined strategies for improvement. The report, *Better Health Care and Lower Costs: Accelerating Improvement through Systems Engineering*, included recommendations to better gather health data, give health-care providers the tools they need for systems approaches and share best practices.

As an example of systems engineering, the report cites the statewide Vermont Blueprint for Health, an initiative that provides medical practices with health information technology and multi-disciplinary community health teams. The teams include social work, nursing and behavioral health professionals working together to coordinate patient care and health needs. In 2012, the initiative helped lower health-care expenditures by 20 percent for children and 10 percent for adults younger than age 65. Patients were also more likely to receive proven preventive services and less likely to be hospitalized.

This will involve the collaborative work of multiple parties — systems engineers,

doctors, nurses, patients, emergency medical response teams, waste disposal teams, language translators, police, TSA, safety experts, the CDC and FDA — all “sitting around the same table.” Key components include:

- **Safe Patient Contact:** Investigate all people who may have come into contact with the patient, alerting them as soon as possible by safe means. Develop policies for when and how to refuse admission to public transportation. Have police and TSA professionals on standby to handle potential lack of cooperation from any individual. Keep an inventory of quality protective clothing (including shoes, inner and outer wear, head and eye protection, breathing masks and double gloves) to be used on a moment's notice by all individuals who may handle a patient.
- **Safe and Effective Waste Disposal:** Implementing safe, effective waste streams and disposals of the large amount of contaminated waste from each patient, including protective clothing, bed linens, bathroom tissues, cleaning and disinfecting agents, and anything that might have come into contact with bodily fluids, is vital.
- **Preparation for Potential Massive Outbreaks:** Maintain access to knowledgeable experts for what to do if a major accident occurs (e.g., a person with Ebola enters a public place with a large number of people in attendance, such as a sporting event). Beyond handling individuals and those with whom they've come into contact, develop backup plans for managing crowds.
- **Training and More Training:** Most importantly, all individuals engaged or preparing to engage in the above activities must receive comprehensive and effective training on safe procedures, proper protective clothing and equipment for decontamination. ☺



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