

SURGE CAPACITY SOLUTIONS FOR INFLUENZA PANDEMIC AND PUBLIC HEALTH CRISIS

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Brief is current as of the information cutoff date. The information is therefore preliminary and subject to further analysis and revision.

"Above all, this is an opportunity for global solidarity as we look for responses and solutions that benefit all countries, all of humanity. After all, it really is all of humanity that is under threat during a pandemic."

World Health Organization Director-General, Dr. Margaret Chan – April 29, 2009

OVERVIEW:

Novel influenza A (H1N1) is a new flu virus of swine origin that was first detected in April, 2009. The virus is infecting people and is spreading from person-to-person, sparking a growing outbreak of illness in the United States.¹ An increasing number of cases are being reported internationally.² It's uncertain at this time how severe this novel H1N1 outbreak will be in terms of illness and death compared with other influenza viruses. In addition, currently there is no vaccine to protect against this novel H1N1 virus. CDC anticipates that there will be more cases, more hospitalizations and more deaths associated with this new virus in the coming days and weeks.³ This could be only the beginning of a pandemic crisis. In addition to the change in the WHO Pandemic Alert Level to Phase 5,⁴ the rapid spread across the world and the reported deaths suggest that a pattern of more severe illness associated with this virus may be emerging. The WHO has warned all nations to "treat this as a window of opportunity to ramp up preparedness and response."⁵ The second wave of this disease, expected as early as three to six months, will likely be much more severe than the impact we are currently experiencing, and could be as severe as the pandemic influenza of 1918,⁶ which lasted over two years and killed what some scientists estimate to be 100 million people worldwide.⁷

"We have almost no surge capacity in our healthcare system. Some places of the country, many places in the world, have negative surge capacity. The water line is already above everyone's heads. As events continue to unfold, they will put great strain on our healthcare system."

Scott Layne, MD, Professor, Department of Epidemiology, UCLA School of Public Health on discussing the influenza A(H1N1) situation - April 28, 2009.

¹ U.S. Centers for Disease Control and Prevention: <http://www.cdc.gov/swineflu/>

² World Health Organization http://www.who.int/csr/don/2009_05_23/en/index.html

³ U.S. Centers for Disease Control and Prevention: <http://www.cdc.gov/swineflu/>

⁴ World Health Organization http://www.who.int/mediacentre/news/statements/2009/h1n1_20090429/en/index.html

⁵ World Health Organization http://www.who.int/mediacentre/news/statements/2009/h1n1_20090429/en/index.html

⁶ Cox N, Subbarao K (2000). Global Epidemiology of Influenza: Past and Present. *Annual Review of Medicine*, February 2000, Vol. 51, Pages 407-421.

⁷ Knobler S, Mack A, Mahmoud A, Lemon S, ed. "1: The Story of Influenza". The Threat of Pandemic Influenza: Are We Ready? Workshop Summary (2005). Washington, D.C.: The National Academies Press. pp. 60–61.

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The lack of viable surge capacity in the U.S. healthcare system has raised significant concerns that we simply will not have the ability to adequately manage a patient volume surge on the scale of the 1918 pandemic. The U.S. Government has estimated that a severe pandemic will likely result in nearly 10 million hospitalizations, 1.5 million Intensive Care Unit stays, and 750,000 patients requiring ventilators over an eighteen month period in the U.S. alone.⁸ Even a scenario where the event is only a moderate pandemic would result in about one million hospitalizations.⁶ According to the World Health Organization, **"All countries should immediately activate their pandemic preparedness plans."**

"PMG METASPACE™ PATIENT ISOLATION AND HEALTHCARE SOLUTIONS WILL HELP CONTAIN THE SPREAD OF AIRBORNE INFECTIOUS DISEASE IN THE EVENT OF INFLUENZA PANDEMIC OR BIOLOGICAL ATTACK"

With the still imminent and evolving threats of influenzas A (H1N1) ("swine flu") and (H5N1) ("avian flu") causing a pandemic event that will overwhelm all healthcare facilities around the world, PMG Associates has brought to market:

- Re-locatable, semi-permanent, healthcare facilities that can provide **immediate isolation and surge capacity for any hospital or any community** facing the challenges of providing sustainable, practical influenza pandemic planning and response in order to **reduce the risk of infecting other patients and healthcare staff.**

When existing medical facilities encounter a surging patient population that challenges healthcare facilities beyond their capacity, the PMG MetaSpace™ re-locatable hospitals will accommodate patients' isolation and care needs like no other temporary structure, tent or "facility of opportunity." Guidance from the Centers for Disease Control and Prevention (CDC) directs healthcare facilities to implement effective and essential measures of a pandemic preparedness plan that includes 1) protecting patients and staff from potentially hazardous airborne particles; and 2) developing surge capacity to accommodate the dramatic increases in the number of critically ill patients presenting at hospitals and other healthcare facilities. Healthcare facilities across the country are being directed to brace themselves for a full-scale pandemic that would result in the overwhelming of existing facilities.

⁸ www.pandemicflu.gov

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There is an urgent need to expand acute healthcare capacity within areas that may be severely impacted by influenza A(H1N1) over the anticipated two year period that the pandemic could last. Past planning practice and common current guidance at the local and regional level is to rely upon "facilities of opportunity" such as school gymnasiums, hotels, or open-spaced commercial venues that can be converted to "alternate care facilities". This operational model will further exacerbate the negative economic impact associated with additional unnecessary interruptions to the flow of commerce. Communities that follow this model will unnecessarily increase their legal exposure and financial risk when they commandeer existing private sector commodities that may never be able to be returned to their original intended purpose. Using existing community assets such as hotels and school buildings will also fail to address the requirement to provide negative pressure isolation conditions.

Innovative solutions to the "surge capacity" dilemma are immediately required. The only sensible and viable solution is to utilize rapidly deployable, semi-permanent, transportable, regulatory compliant facilities. The proposed solution, the PMG MetaSpace™, is a state of the art, transportable health care facility that can be deployed on an emergency basis within a short period of time. Unlike the current soft-sided (tent-like) products that are on the market, the PMG MetaSpace™ can be comfortably and effectively utilized continuously for months, or even years, if needed. PMG MetaSpace™ is capable of providing negative pressure isolation and treatment areas on any scale for contagious influenza patients or any mass care scenario.

PMG MetaSpace™ is capable of addressing multiple problems with maximum flexibility and scalability to meet the current challenges of Emergency Management, Public Health, and Healthcare Preparedness planning efforts throughout the world in response to the influenza A(H1N1) outbreak. It can address the requirements of sheltering, feeding and bulk distribution of relief or medical supplies. PMG MetaSpace™ is flexible enough to be configured as a single large acute care facility in one location, or it can be deployed as multiple stand-alone Neighborhood Emergency Health Centers (NEHCs) for the treatment of patients requiring primary health care services. This application may be of particular value in a region where existing medical infrastructure cannot provide primary care, screening, education, triage, distribution and administrative requirements necessary for mass

prophylaxis or mass immunization operations, such as may be required following activation of the Strategic National Stockpile (SNS).

The advanced airflow characteristics of the proposed system are well-suited for provision of a safe environment for the housing of patients in a ward-type setting, or the system can provide semi-private or private patient care rooms. The system may be set up as a stand-alone facility or multiple support facilities, and it is able to provide the structure and utilities necessary to support the deployment of mobile surgical facilities such as those used by the U.S. military, Civilian Medical Reserve Corps, U.S. Public Health Service, and federal Disaster Medical Assistance Teams (DMATs).

To address the current influenza A(H1N1) disease outbreak, the PMG MetaSpace™ solution will provide the necessary bed-surge capacity to accommodate for the increased patient volumes likely to overwhelm even the most advanced healthcare systems. As the influenza A(H1N1) virus continues to mutate, spread and cause greater impact across the country and the globe, the PMG MetaSpace™ solution will provide additional surge capacity where needed, at a fraction of the cost of traditional healthcare construction and in a fraction of the time it would take to build those hospitals.

PMG MetaSpace™ will help medical facilities contain the spread of impending and potentially deadly infectious diseases by meeting their [isolation and surge capacity needs](#) as they activate influenza pandemic plans. Since developing the original prototype of this concept for the US Public Health Service in 2003, the PMG MetaSpace™ has been refined to be rapidly deployed as an immediate and self-sustainable healthcare facility for communities and regions to meet the requirements of the U.S. Department of Homeland Security National Preparedness Guidelines and, specifically, the Target Capabilities of:

- Common Mission: Community Preparedness and Participation
- Protect Mission: Critical Infrastructure Protection (CIP)
- Protect Mission: Public Health Laboratory Testing
- Respond Mission: Critical Resource Logistics and Distribution
- **Respond Mission: Responder Safety and Health**
- Respond Mission: Public Safety and Security Response
- **Respond Mission: Isolation and Quarantine**
- **Respond Mission: Medical Surge**
- Respond Mission: Medical Supplies Management and Distribution
- Respond Mission: Mass Prophylaxis
- Respond Mission: Mass Care
- Respond Mission: Fatality Management
- **Recovery Mission: Restoration of Lifelines**
- **Recover Mission: Economic and Community Recovery**



