Mobilizing nontraditional public health partners to mitigate the effects of coronavirus infection and to reduce the risk of emerging disease



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Overview/Agenda

- → The Current Crisis
- → Advanced Material Definition
- → Advanced Materials and Public Health Integration
- → Public Health Partnerships
- → The Advanced Material Pandemic & Future Preparedness Task force
- → Moving Forward
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The Current Crisis

Partnerships are a cornerstone of modern public health practice, yet...

- → During the Covid-19 Pandemic, many traditional partnerships brokedown
- → The Advanced Materials Community has long been an integral part of Public Health, but is often overlooked as a core partner



Advanced Material – Definition

ISO TC 229 JWG1 SG working definition

→ "Any material engineered, processed or synthesized, to provide enhancement in functionality or presents novel properties compared to conventional materials for a given application in a specific industry"



Advanced Materials + Public Health

Building Materials

- Create stronger, lightweight materials for new designs
- Increase compression strength of concrete to reduce
 amount of reinforced steel needed

Sensors

- Detect changes in material compression to improve safety and resilience
- Link infrastructure to internet/telecommunications networks for real-time monitoring

Medical Applications

- Reduce length of time for bacterial/viral diagnostic tests
- Improve sensitivity and range of saliva-based tests
- Develop needleless vaccines with high efficacy

Building Materials

Creation of self-cleaning and/or antimicrobial coatings to minimize spread of disease
 Improve flame-retardant coatings



Adapted from: G.N. The Potential for Nanotechnology to Improve Community Resilience through Better Building Materials, Sensors, and Medical Applications. *Nano Res Appl* 2015, *1*.



Sensors

 Enhance ability to detect chemical/ biological agents for early evacuation

Building Materials

• Develop new road structural layers to minimize maintenance and improve resilience

Public Health Partnerships



- Convening and facilitating multi- sector partnerships and coalitions that include sectors that influence health
- 2. Fostering and building genuine, strengths-based relationships with a diverse group of partners that reflect the community and the population
- 3. Authentically engaging with community members and organizations to develop public health solutions
- 4. Learning from, and supporting, existing community partnerships and contributing public health expertise

The 10 Essential Public Health Services. Available online: <u>https://phnci.org/uploads/resource-files/EPHS-English.pdf</u>(access ed on 3 January 2021).



Advanced Material Pandemic & Future Preparedness Task Force (AMPT)



An international Public-Benefit initiative focused on using Advanced Material to help solve some of humanity's most pressing challenges.



Moving Forward

- → Improve dialogue between Public Health and Advanced Materials Communities
- → Identify current and future challenges and where AM can fill gaps
- → Promote better use of technology to improve Public Health delivery and resilience



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