NATIONAL MEDICAL COUNTERMEASURE RESPONSE INFRASTRUCTURE

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Resilient People. Healthy Communities. A Nation Prepared.
BARDA’s Core Services ‘Wheel’

- CIADMs
- Fill Finish Mfg. Network
- Nonclinical Services Network
- Clinical Studies Network
- ADS Modeling Hub
- Regulatory & Quality Affairs

Centers for Innovation in Advanced Development & Manufacturing

Fill & Finish Manufacturing Network (FFMN) - 2013

Clinical Studies Network (CSN)

Regulatory & Quality Affairs (RQA)

Analytics Decision Support (ADS)

Nonclinical Services Network (NSN)

Centers for Innovation in Advanced Development & Manufacturing (CIADM)
Nonclinical Services Network

- BARDA Core Service
  - Proof of concept studies
  - Repurposing studies
  - Animal model development support

- BARDA’s National MCM Infrastructure
  - Provide nonclinical and preclinical study support for MCM development
  - Coordinate efforts with other Core Services to strengthen rapid response capabilities
Nonclinical Services Network

- Chemical, Radiation, Nuclear (CRN) Network
  - Contracts awarded SEP 2015
  - 5 RADNUC & 4 CHEM

- New “BIO” Network
  - Awards expected this year
  - Animal Model Testing
  - Toxicology Testing
  - Analytical Services
NSN Metrics – Tried & True

- Original 2011 CBRN IDIQ contract
  - Task Orders - 31 BIO, 2 CHEM, 15 RADNUC
  - Glanders, anthrax, meliodosis, rabbitpox, mousepox, Ebola, cyanide ingestion, H-ARS, GI-ARS, MERS, Influenza and Zika

- 2015 CRN IDIQ Contract
  - Task Orders – 3 CHEM & 7 RADNUC
  - Chlorine & cyanide exposure, cutaneous radiation injury, thrombocytopenia & vascular injury
  - Support of biosodosimetry testing
Clinical Studies Network (CSN)

- **STRATEGY**
  - To establish a clinical studies network pre-positioned to serve BARDA’s clinical research needs

- **GOAL**
  - To support the design, conduct, and analysis of clinical studies needed to advance clinical development of MCMs in preparedness and response environments
CSN Requirements

Phase 1 – 4 Clinical Studies

- Drugs
- Vaccines
- Diagnostics
- Devices
- Procedures

Special Populations

Domestic & International

During an Emergency

Hospitalized & Outpatient
Clinical Studies Network

- **Structure**
  - Awarded to 5 Contract Research Organizations (CROs) in April 2014
  - Oversight provided by BARDA’s Division of Clinical Studies

- **Trajectory**
  - Planning to initiate four (4) new CSN studies in 2017 using CSN
  - Continue to strengthen BARDA’s CSN processes and policies
## CSN Task Orders, 2014 to Present

<table>
<thead>
<tr>
<th>Task Order</th>
<th>Date of Issue</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>December 2014</td>
<td>Completed</td>
<td>Compile medical record data for sNDA (midazolam for neurotoxin-induced seizures)</td>
</tr>
<tr>
<td>002</td>
<td>February 2015</td>
<td>Ongoing</td>
<td>Clinical operations, project management, and site support for CDC Sierra Leone Ebola vaccine study – Phase 2/3</td>
</tr>
<tr>
<td>002A</td>
<td>February 2015</td>
<td>Ongoing</td>
<td>Data management, statistical, and safety support for CDC Sierra Leone Ebola vaccine study – Phase 2/3</td>
</tr>
<tr>
<td>003</td>
<td>July 2015</td>
<td>Ongoing</td>
<td>Conduct stockpiled H5N1 influenza vaccine study – Phase 2</td>
</tr>
<tr>
<td>004</td>
<td>April 2016</td>
<td>Ongoing</td>
<td>Obtain serum from 100 Zika-infected subjects for diagnostic device development</td>
</tr>
<tr>
<td>005</td>
<td>August 2016</td>
<td>Ongoing</td>
<td>Conduct stockpiled H5 influenza vaccine heterologous prime boost study – Phase 2</td>
</tr>
</tbody>
</table>
Regulatory & Quality Affairs

- Create & maintain systems to support critical processes related to regulatory operations and quality oversight activities

- Professional Depth!
RQA Capabilities Explained

- **BRITE Study**
  - Regulatory Operations
    - Train and utilize electronic Common Technical Document (eCDT) format for BARDA’s first IND application
    - Draft/ Approve Policies and SOPs for Sponsor-related activities
  - Quality
    - Perform audits related to all study materials
    - Release of drug product
RQA Trajectory

GOALS

- A successful filing of Zika vaccine candidate IND
- Continue to enhance BARDA-wide Quality Audit Capability
- Implement an integrated Quality Audit Schedule (project level)
Analytic Decision Support (ADS)

Develop modeling, visualization, and decision support tools for medical consequence and public health assessments across the CBRN, pandemic influenza & emerging infectious diseases risk spectrum for preparedness and in a response

- **Project BioShield (2004)**
  - Material Threat Assessments, Medical Consequences

- **National Influenza Strategic Plan (2005)**
  - On-site HHS real-time Modeling Hub

- **PHEMCE Implementation Plan (2012)**
  - Information Visualization Tools

- **HHS Innovation Lab (2016)**
  - BARDA Visualization Hub
ADS Capabilities

- In-house team of computational modelers, developers, analysts & data scientists
- Environment dedicated to data sciences & collaborative decision-making
- Reach-back capability to interagency partners through the HHS modeling and visualization hub (“VizHub”)
  - DTRA, NIH-MIDAS, CDC, National Labs
- Growing portfolio of computational decision support tools for influenza, CBRN & EIDs
Fill & Finish Manufacturing Network (FFMN)

- Establish a network of existing facilities that are pre-qualified and under contract to fill & finish vaccine/drugs for U.S. Government-contracted manufacturers
  - Fill & Finish surge manufacturing for pandemic influenza
  - Support influenza-focused, EID or CBRN contractors that do not have fill & finish capabilities already in-house
  - Produce clinical investigational lots, engineering lots & commercial scale lots
FFMN Capabilities

- Well-established CMOs with fill & finish expertise in the following:
  - Formulation, Fill & Finish Vials/ Syringes
  - Technology Transfers
  - Regulatory Support
  - Analytical Development
  - Clinical Trial & Commercial Scale lots
  - Labeling & Packaging
  - Storage & Distribution
  - Lyophilization
  - Live Vectored/Virus Products
## FFMN Task Orders

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<tr>
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<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1T</td>
<td>Tech transfer of influenza vaccine candidate for pandemic fill &amp; finish surge manufacturing capability</td>
<td>Ongoing</td>
</tr>
<tr>
<td>2T</td>
<td>ZMapp® Filling</td>
<td>Complete</td>
</tr>
<tr>
<td>3T</td>
<td>CDER Pathway pilot program for drug shortage product: Magnesium Sulfate Injection Solution Aseptically Filled into 10mL Plastic Syringes</td>
<td>Collaboration with FDA</td>
</tr>
<tr>
<td>4T</td>
<td>CDER Pathway pilot program for drug shortage product: Succinylcholine Chloride Injection Solution Aseptically Filled into 10 mL Glass Vials</td>
<td>Collaboration with FDA</td>
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Centers for Innovation in Advanced Development & Manufacturing

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Centers for Innovation in Advanced Development & Manufacturing (CIADM)

2006

2009

2011

2012

2013

2014
HHS CIADM Program Objectives

- Establish public-private partnerships to construct/retrofit U.S.-based, commercial-scale, biopharmaceutical facilities that support advanced development and manufacturing of MCMs

- Provide core services, on a routine basis, for the advanced development and manufacturing of CBRN biopharmaceuticals supported by the U.S. Government

- Provide, in an emergency, necessary U.S.-based surge capacity to respond to an emerging infectious disease, pandemic influenza, and currently known or unknown threats

- Provide biopharmaceutical oriented workforce development through training programs aligned with current regulatory guidelines
CIADM Program Numbers

- 3 awards in June 2012... potential 25 year contractual public-private partnerships

- Cost share for infrastructure building in Base Period [up to 8 years]

- Once fully operational [“ready’], 50% capacity for core services is to be allocated for USG directed work

- To date, 4 Task Orders have been awarded
CIADM Program Trajectory

- Continue to leverage available Core Service capabilities for routine, & response oriented, requirements
- Work with CIADMs to de-risk pandemic surge requirement
- Address capability gaps
  - mergers & acquisitions
  - industry technology advancements
- Maintain/ Enhance collaboration with Dept of Defense ADM program
- Sustainment!
Centers for Innovation in Advanced Development & Manufacturing

- **CSN**: Clinical Studies Network
- **FFMN**: Fill & Finish Manufacturing Network
- **CIADM**: Centers for Innovation in Advanced Development & Manufacturing
- **RQA**: Regulatory & Quality Affairs
- **ADS**: Analytics Decision Support
- **NSN**: Nonclinical Services Network

Years:
- 2006
- 2009
- 2011
- 2012
- 2013
- 2014
Very Important BARDA Contacts

Nonclinical Services Network (NSN)
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