Smallpox Vaccines and Antivirals

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PHEMCE Smallpox Strategy

- Enough vaccine for every American (300 million doses)
- Primary response – contain the event
- A portion of population is contraindicated

ACAM2000

- Individuals with HIV, atopic dermatitis all age ranges including nursing and pregnant mothers
- Enough for 10 M individuals

MVA

- Treatment of those symptomatic with disease (1.7 million treatment courses)

Anti-virals

- CDC maintains inventory of vaccinia immunoglobulin (VIG)

Support licensure of MVA and approval of antivirals

BARDA Smallpox Strategy

• Develop and provide medical countermeasures (MCMs) for USG response in a smallpox emergency

• MCMs and uses
  — Vaccines to break chain of transmission
    • ACAM2000 (CDC program)
    • APSV (WetVax)
    • MVA
  — Vaccines suitable for special populations
    • MVA
  — Antivirals to treat symptomatic populations
    • ST-246
    • CMX001
Vaccine Projects

• ACAM2000 (sanofi pasteur; CDC program)
  — Licensed vaccine
  • Tech transfer to new facilities for manufacturing

• IMVAMUNE liquid frozen (Bavarian Nordic)
  — Awarded June 2007 under Project BioShield
  — Deliveries to SNS ongoing under CDC-held pre-EUA
    • HIV, atopic dermatitis (all age ranges and pregnant and nursing women)
  — Phase 3 lot consistency and safety study nearing completion
  — Head-to-head clinical trial with ACAM2000 to support licensure

• MVA freeze-dried (Bavarian Nordic)
  — Awarded 2009 under advanced research and development
  — Phase 2 trial underway
  — Potential long term savings in life-cycle management
    • Longer shelf-life
    • Stored at 2-8°C
Antiviral Projects

• SIGA Technologies – ST-246 (tecoviromat)
  — Awarded February 2011 under Project BioShield
  — Initiated delivery March 2013
  — CDC-held pre-EUA for treatment of individuals symptomatic with smallpox
  — In support of approval
    • Efficacy studies to establish dose in NHP

• Chimerix – CMX001
  — Supported under advanced research and development awarded 2011
  — In support of approval
    • Phase 3 study for the prevention of CMV infection in hematopoietic cell transplant patients
    • Phase 2 efficacy for treatment of early stage adenovirus infection
    • Efficacy in RPX model

• BARDA is working with both sponsors to develop RPX model
Resolution of Potential Issues

• Regulatory path
  – IMVAMUNE: CBER workshop September 2011 led to regulatory path for BLA
  – ST-246/CMX001: CDER symposium December 2011 led to path for NDA

• Life-cycle management
  – ARD contract supporting lyophilized formulation of MVA to extend shelf-life and store at 2-8°F
  – ST-246: storage at room temperature, apparent 5-yr stability
  – Potential for cost savings with CMX001 as a commercial product
Future of Smallpox Program

• Projects are relatively mature
• BARDA does not foresee expanding the program beyond the currently funded projects
  — BARDA continues to perform market surveillance
• Work with our PHEMCE partners to ensure products delivered, or with the potential for delivery, to the SNS are sustainable
• Continue to support licensure or approval of products currently under development