BARDA Radiological and Nuclear Countermeasures Program

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Radiological / Nuclear Threat Landscape

Nuclear Detonation

Radiation Dispersal Device
Lungs: (Pulmonary) Pneumonitis, fibrosis

Blood: (Hematopoietic) Decrease in blood count: Pancytopenia (Neutropenia; Thrombocytopenia) → Severe bone marrow damage

Intestines: (Gastrointestinal) Mild damage → Moderate damage → Severe damage

Damage manifests in organ systems

Systemic Damage Occurs Across Radiation Syndromes

Ablation of the hematopoietic system increases risk for bleeding, infection, and organ damage.

- Thrombocytopenia
- Anemia
- Neutropenia
- Lymphopenia
- INFECTION
- HYPOXIA
- BLEEDING
Impaired immune function and loss of epithelial integrity creates conditions for opportunistic infections

SEPSIS

Bacterial Translocation
Damage to the vasculature will impact global organ function.

- **Inflammation**
- **Clotting**
- **Hypoxia**
Targeted Natural History for MCM Development

- Vascular Injury / Sepsis
- HYPOXIA
- SEPSIS
- HYPOXIA
- CLOTTING
- INFLAMMATION
- INFECTION
- BLEEDING

- Ischemia
- Coagulopathy / Fibrinolysis
- Cell Death
- Inflammation
Current Portfolio and Product Testing

**Leukine:**
- Number 35 in FDA approvals for BARDA
  - Leukine (Partner Tx)*
  - Neupogen (Amgen)*
  - Neulasta (Amgen)*
  - Promacta (Novartis)

**Vascular Injury / Sepsis**
- 3+ Products Tested

**Cell Death**
- 7+ Products Tested

**Inflammation**
- 4+ Products Tested

- **Pathogen reduction – RBCs** (Cerus)
- **Pathogen reduction -- Platelets** (Terumo)
- Promacta (Novartis)
- Spray dried plasma (Velico)
- Thrombosomes (Cellphire)
- ARS Therapeutic (Janssen)

**Breakout session, Tuesday, October 30th 2:15 - 3:15:**
Developing Nonclinical Models with Partners
Examples of Repurposing in BARDA’s Rad/Nuc Portfolio
VELICO MEDICAL
TRANSFORMING TRANSFUSION MEDICINE
FrontlineODP (On Demand Plasma)

Platform and Transformative Technologies

Targeted Natural History and Product Testing

Unique Business Models

Enabling Regulatory Strategies

Novel Partnerships

Looking Forward

- Strategy continues based on polypharmacy and repurposing approaches
- Looking to leverage across other threat areas
  - Mechanical trauma
  - Thermal burn
  - Chemical injury
  - Infectious diseases
- Highest treatment priorities:
  - Neutropenia (cellular therapies)
  - Thrombocytopenia
  - Vascular injury/Sepsis
  - Coagulopathy/Hemostatic dysregulation
  - UPCOMING: Inflammation
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How to Contact BARDA

**Medical Countermeasures.gov**
 navalcountermeasures.gov/home.aspx

Portal to BARDA: 
 Register to request a TechWatch meeting!

**www.fbo.gov/**
 (“FedBizOpps”) 

[Official announcements and info for all government contract solicitations](https://www.fbo.gov)

**https://www.phe.gov/about/**
 BARDA/Pages/default.aspx

[Program description, information, news, announcements](https://www.phe.gov)

**www.drive.hhs.gov**

[DRIVE questions](https://www.drive.hhs.gov)

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