



ASPR

US Preparedness Efforts for Mass Casualty Scenarios

Mary Homer, PhD

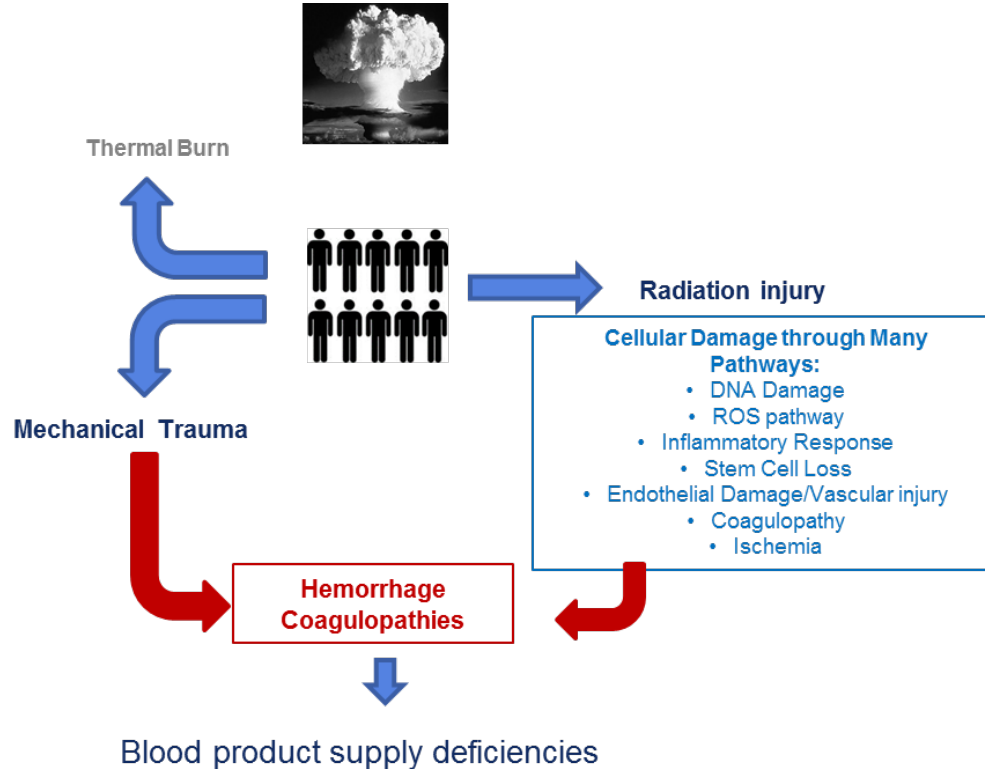
Branch Chief, Radiological & Nuclear Countermeasures Branch

**Trauma Hemostasis and Oxygenation Network
2019 Remote Damage Control Resuscitation Conference
June 24, 2019**

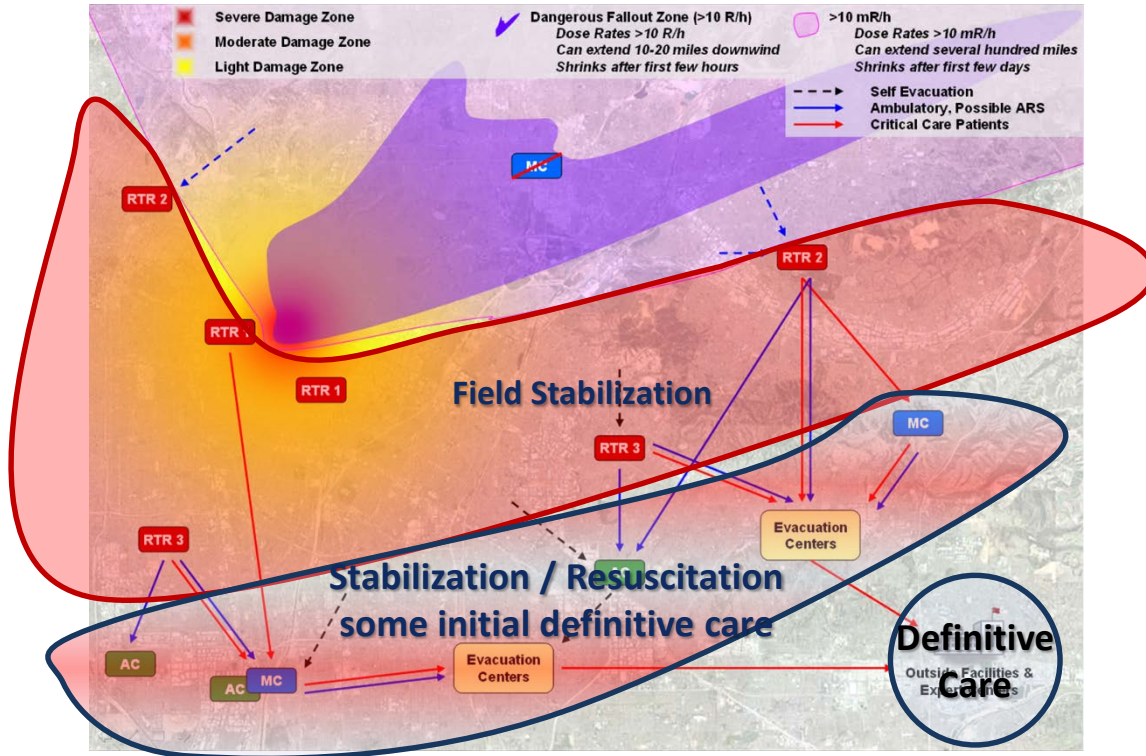
Radiological / Nuclear Threat Landscape



Projected Injuries from Nuclear Devices



Concept of Operations

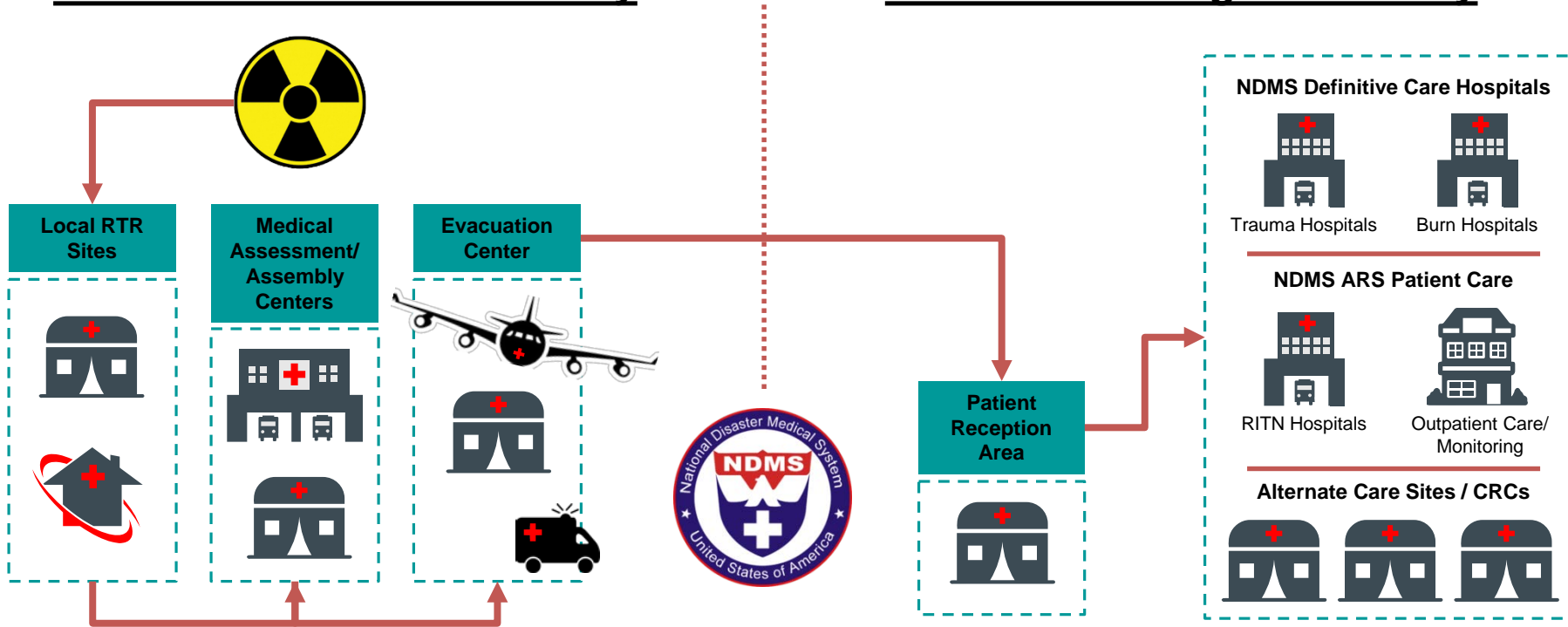


To maximize effectiveness of response – we must understand the limitations and constraints of each capability both independently and from a systems view to enable seamless integration of all assets and leverage every efficiency

Patient Movement

Disaster Affected Community

Distant Receiving Community



Medical Countermeasure Development



The BARDA Model

BARDA develops and makes available medical countermeasures (**MCMs**) by forming unique public-private partnerships to drive innovation off the bench to the patient to save lives.

Our Government Partners



NATIONAL CANCER INSTITUTE
Technology Transfer Center



National Heart Lung and Blood Institute



USAMRIID
United States Army
Medical Research Institute
of Infectious Diseases
Biodefense solutions to protect our nation



National Institute of Allergy and Infectious Diseases



OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION
Managed by ORAU for DOE



Our Industry Partners



Radiological/Nuclear Countermeasures Program

GOAL:

To improve health outcomes for all victims of nuclear detonations and radiation exposure

FOCUS AREAS:

- **Treat** immediate needs of hematopoietic system (neutropenia, thrombocytopenia)
- **Mitigate** additional injuries and multi organ failure through systemic treatments (vascular injury, inflammation; coagulopathies)
- **Build** capacity for sustainable and robust blood products

STRATEGY:

- **Comprehensive** – Address systemic injuries from initial care to definitive care
- **Innovative** – Employ new technologies and treatment for robust systemic care
- **Sustainable** – Use of existing commercial products or development of products with transformative capacity in regular health care settings



National Institute of
Allergy and
Infectious Diseases



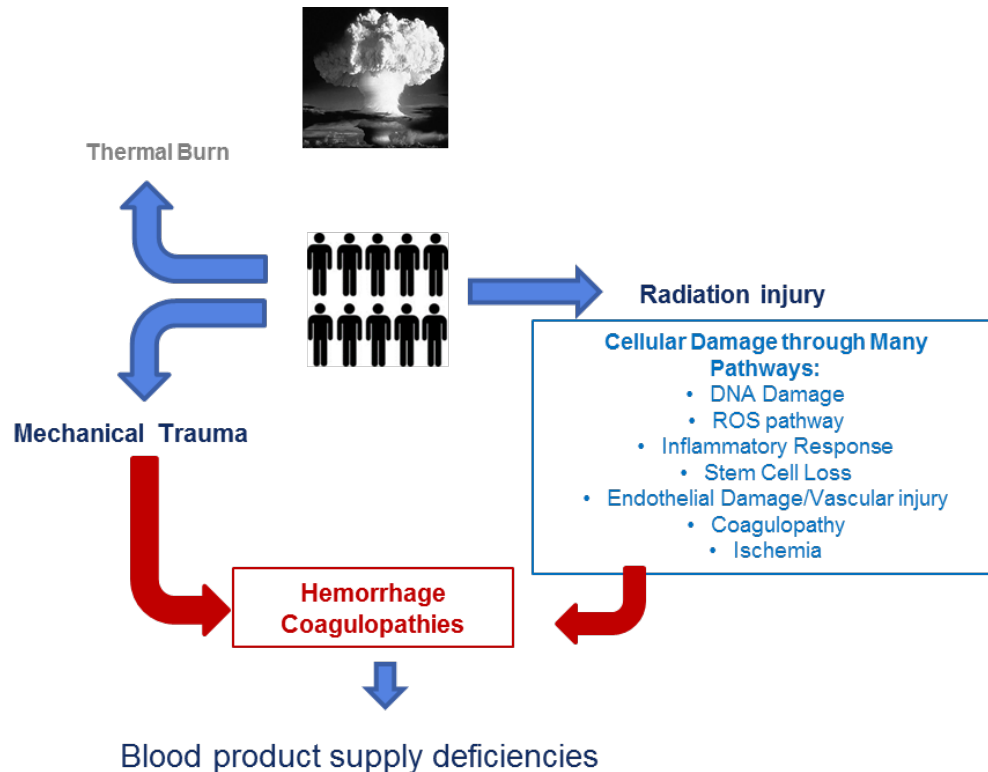
CENTERS FOR DISEASE
CONTROL AND PREVENTION



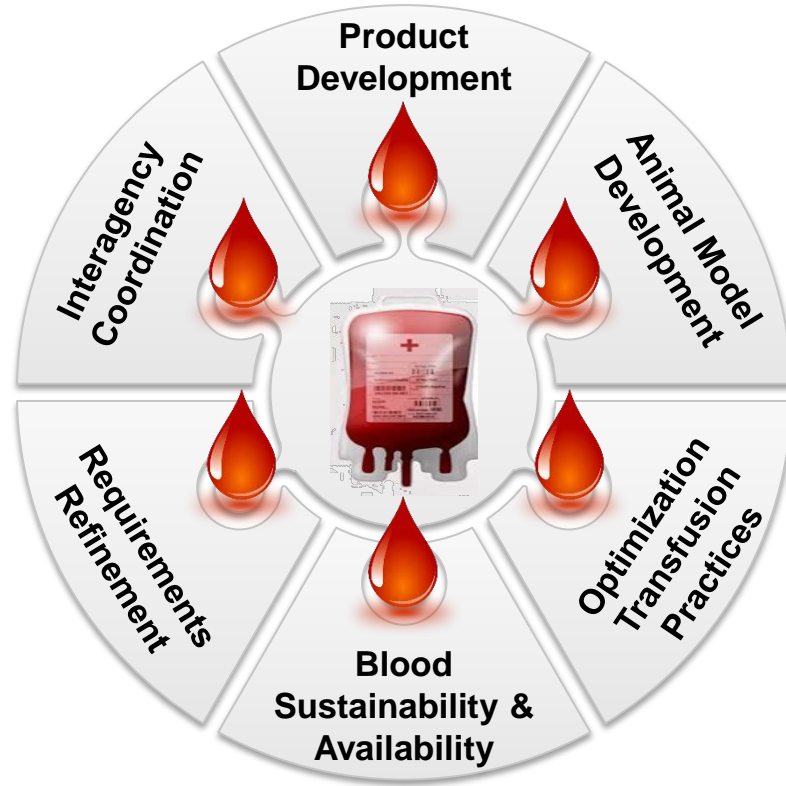
National Heart, Lung,
and Blood Institute



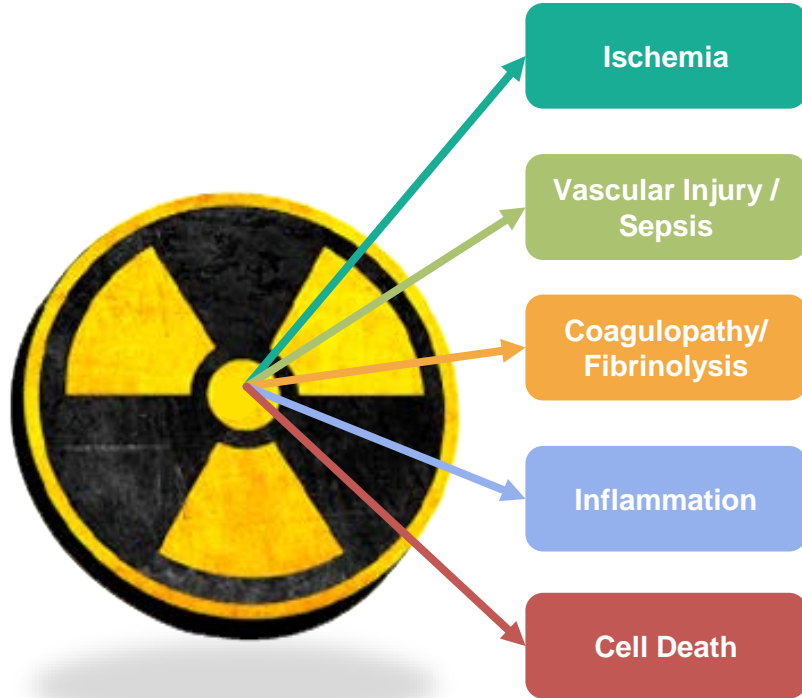
Projected Injuries from Nuclear Devices



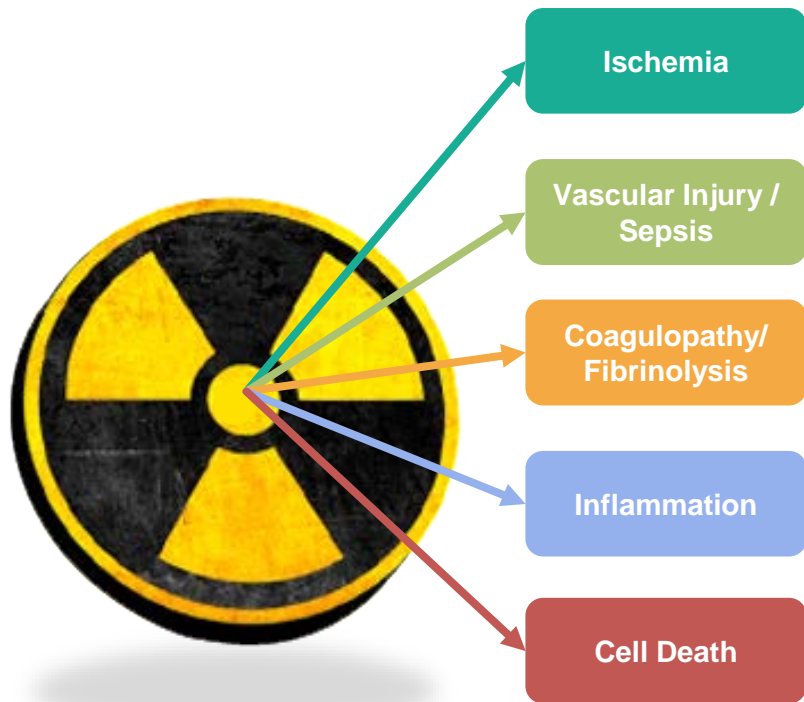
Blood Portfolio Activities



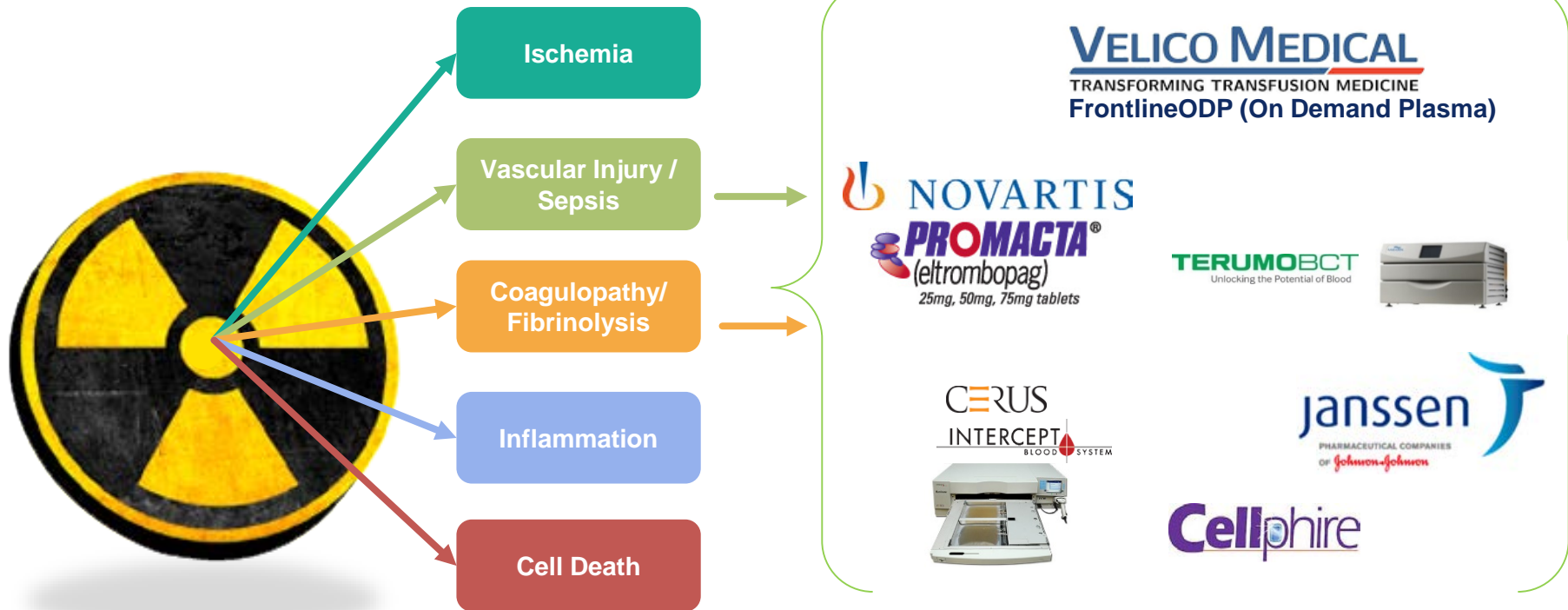
Radiological and Nuclear Portfolio Product Development



Radiological and Nuclear Portfolio Product Development



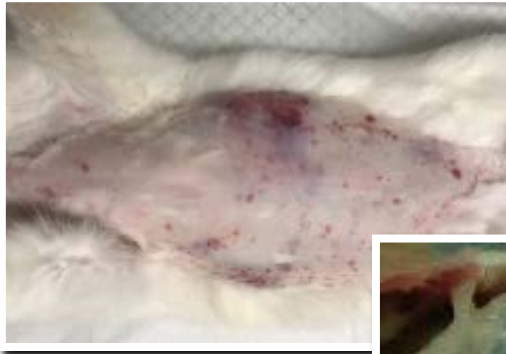
Radiological and Nuclear Portfolio Product Development



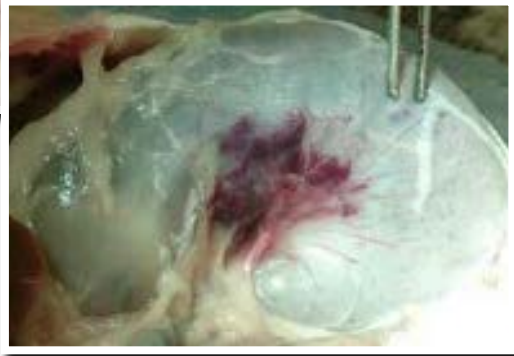
Animal Model Development

Male New Zealand Rabbit

RIC07, 7.50 Gy



RIC03, 8.50 Gy



Male Gottingen Minipig

ID690, D13, 2.50 Gy



ID690, D13, 2.50 Gy

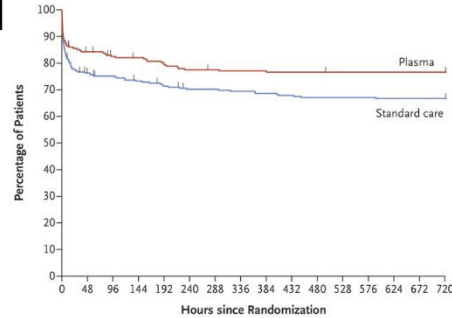


Use of Blood Products Early Improves Survival

Plasma

Prehospital Plasma during Air Medical Transport in Trauma Patients at Risk for Hemorrhagic Shock.
J. Sperry N Engl J Med 2018; 379:315-326J

Survival



No. at Risk	0	48	96	144	192	240	288	336	384	432	480	528	576	624	672	720
Plasma	230	183	172	170	169	168	168	168	168	168	168	168	168	168	168	168
Standard care	271	194	181	179	173	172	172	172	172	172	172	172	172	172	172	172

Platelets

Platelet transfusion improves hemostasis and survival in a substudy of the prospective, randomized PROPPR trial, Cardenas et.al. Blood Advances 24 July 2018; 2, 14

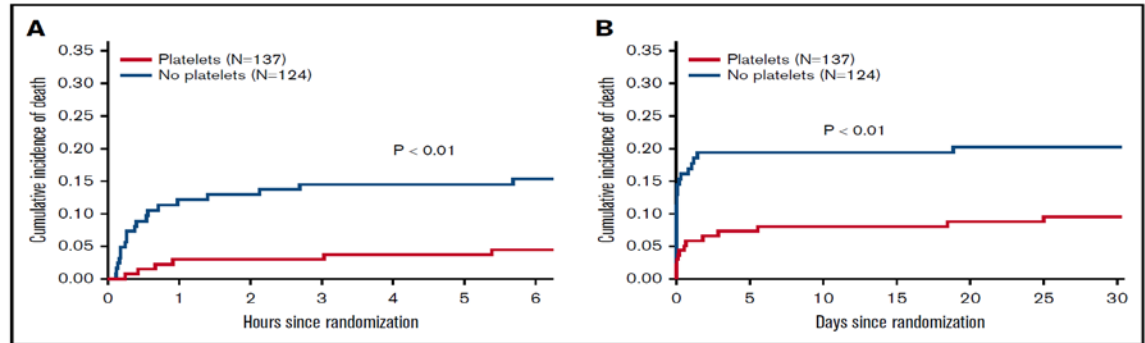
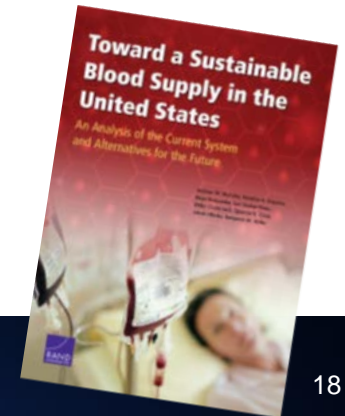


Figure 1. Kaplan-Meier curves. Curves demonstrate cumulative incidence of death during the first 6 hours (A) and 30 days (B).

Challenges of Transfusion in Austere Setting

- Blood products are currently unavailable in a pre-hospital setting (Rural areas are an additional challenge)
 - Stockpile of blood products currently unrealistic
- During the 2015 Zika outbreak, FDA required a halt in blood product collection in Puerto Rico
- Future sustainability and availability under investigation



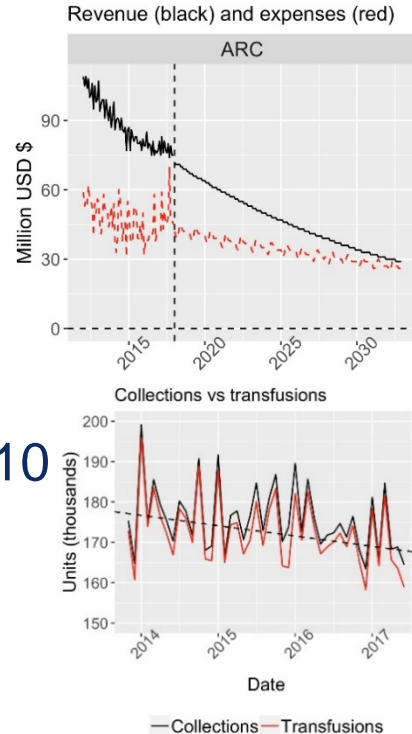


American
Red Cross

Blood Sustainability & the Path Forward



- Sustainability Issues:
 - Reduction in transfusions/Limited surge capacity
 - Competition driving costs down/Reimbursement Issues
- Work with OASH, major US Blood Centers & ASPR/SIIM modeling group
- Establishment of Blood and Tissue Gap Analysis Model 2010
 - New algorithms based on decade-old data
 - Applicability in trauma may not be reflected



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How to Contact BARDA



Medical
Countermeasures.gov

medicalcountermeasures.gov

Portal to BARDA: **Register to request a TechWatch meeting!**



www.fbo.gov/
("FedBizOpps")

Official announcements and info for all government contract solicitations



www.phe.gov/BARDA

Program description, information, news, announcements



www.drive.hhs.gov

DRIVE questions



www.usajobs.gov
Join the team!

