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**Development of Burn and Mechanical Trauma Medical Countermeasures**

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* Medical Countermeasures (MCMs) product life cycle:
  + Market research
  + Advanced R&D
  + Procurement
  + Continued stakeholder engagement (NHCPC)
* ASPR Priorities for building readiness for 21st century threats
  + Strong leadership
  + Regional disaster health response system
  + MCM enterprise
  + Public Health Security Capacity
* BARDA develops MCMs by forming public/private partnerships to drive innovation
* CBRN Goal is to stockpile at least one MCM for all CBRN material threats
  + Invest in MCM to treat injury, not threat
  + Develop MCMs for unknown threats
  + deliver novel MCMs against bacterial/viral threats
* 52 FDA approvals, licensures, and clearances since 2009 (vaccines, other medications)
* Can acquire products before approval of FDA and insert into SNS
* Future vision:
  + Develop alternative skin and blood products
  + Take viral hemorrhagic fevers off the table
  + Bend the opioids epidemic curve
  + Use novel approaches to combat antimicrobial resistance
  + Preparation for any threat response
* MCM Development
  + Market research
  + Preclinical development
  + Clinical/Non-clinical development
  + Filing and launch preparation
  + Commercialization and Procurement
  + Readiness/Stockpiling
* Thermal Burn Program
  + Mitigate treatment bottlenecks across continuum of care for burn and blast injuries
  + Transform current standard of care with adoptable MCMs that builds national preparedness (create sustainable products for trauma and burn surgeons; imaging systems DeepView [burn depth system] aids in triage in MASCAL, graft technology,
* Programmatic Goals
  + Comprehensive: initial to definitive care
  + Adoptable
* Burn Development Philosophy
  + Holistic approach that addresses broader issue of adoption towards greater sustainability
* Thermal burns
  + **Initial care (0-72 hours post-detonation)**: fluids/electrolytes, airway management, pain management and initial wound care, patient tracking aids, initiate nutritional support
  + **Definitive care (73+ hours post-detonation)**: comprehensive burn wound care, aid functional recovery, donor site care management
  + **Facts and Figures**
  + 1% of total body surface area = 1-1.5 days of care
  + Only 350 burn surgeons in N. America
  + <50% accurate in burn depth assessment (non-burn specialists)
  + 127 burn centers nationwide
* Challenges/Solutions
  + Use of AI to image burn depth
  + Enable autograft sparing
  + Develop temporizing products
* Project BioShield
  + Argentum (initial burn care)
  + MediWound (Debridement/Excision)
  + Avita (ReCell) (Autograft Sparing)
* Burn Blast Kids
  + First 72 hrs of event
  + Delivered at site or make-shift facilities by state through SNS resources
  + Used by first responders for delivery of care and triage considerations
  + 30 pallets, care for 500 people for 24 hours
* Analysis of three events (Boston Marahon Bombing, 9/11, OKC Bombing)
  + Burn injuries made up 5-11% of all reported injuries
* Revamped Burn Blast kit based on needs of SMEs
  + Create a poly-trauma acute care kit (adult/peds),
  + Forward deplolyed/integrated into Regional Disaster Health Response System
    - Quick access for state/loclal control, preoduct rotation via VMI
  + SNS Burn Blast Kits
    - Revamped based on recommendations
    - Would arrive within 24 hours from warehouse
* New technologies
  + Imaging/communication devices
* Challenges
  + Loss of patient data
  + Fracture Management (detection and triage, stabilization, X-Ray bottlenecks)
  + Peer communication (situational awareness, telemedicine, consults)
  + Need faster triage (Develop ultrasound imaging solution, decision-assist devices)
* Communication
  + Develops a web and phone app
    - Synchronous and asynchronious peer to peer consultation among peers
    - Repository and dashboard for capability data
    - Vertical horizonal flow of information through state coalitions to state, to EOC, to federal level
    - Horizontal flow of information in Rx community
      * Stat guidance
      * Procedure consults
      * Transfer availability
      * Training modules