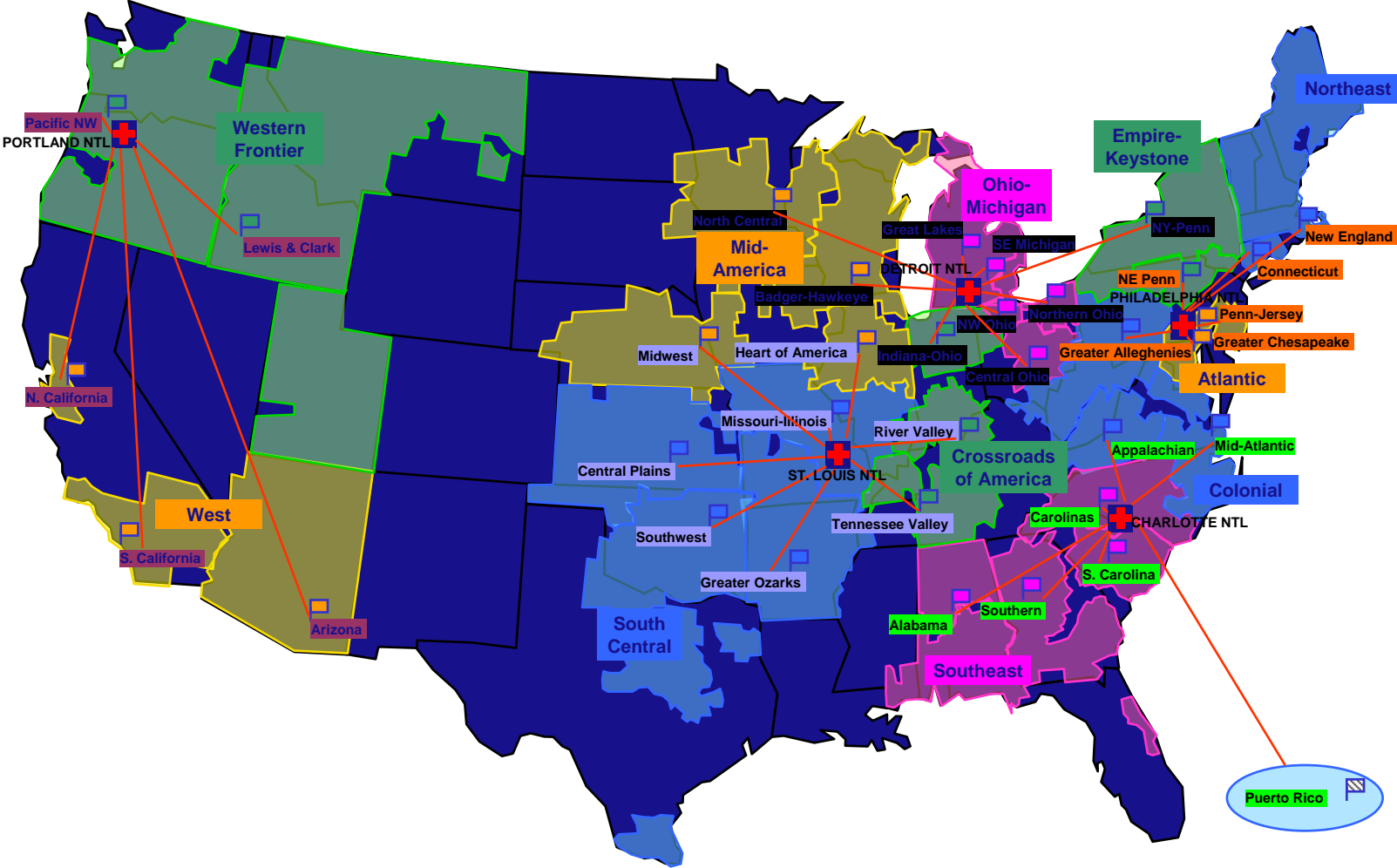


What Can Be Learned From Shipping Blood Products

Leo DeBandi
Senior Director, Production Planning
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American Red Cross Biomedical Services



Products

- Whole Blood
 - Shelf-Life: 21 Days
 - Validated Transit Time: 48 Hours
 - Temperature Requirement: 1-10 Degree Celsius
 - Maximum Number Of Units Per Container: 12 Units
 - Normal Release Time: 3 Days
- Red Cells
 - Red Blood Cell, Leukoreduced Red Blood Cell
 - Shelf-Life: 42 Days
 - Validated Transit Time: 48 Hours
 - Temperature Requirement: 1-10 Degree Celsius
 - Maximum Number Of Units Per Container: 25 Units
 - Normal Release Time: 3 Days

Products (continued)

- Frozen Product
 - Fresh Frozen Plasma, Frozen Plasma, Cryoreduced Plasma, Cryoprecipitate
 - Shelf-Life: 1 Year
 - Validated Transit Time: 48 Hours
 - Temperature Requirement: ≤ -18 Degrees Celsius (Cryoprecipitate ≤ -20 Degrees Celsius)
 - Number Of Units Per Container: 16 Units
- Platelets
 - Single Donor Platelet (SDP), Random Donor Platelet (RDP)
 - Shelf-Life: 5 Days
 - Validated Transit Time: 24 Hours
 - Temperature Requirement: 20-24 Degrees Celsius
 - Number Of Units Per Container: 5 SDP Units, 15 RDP Units

Scope

Volume

- Distribute Approximately 6M Red Cells / 650K Single Donor Platelets Annually
- Distribute 22,000 Red Cells / 2,000 Single Donor Platelets Daily

Daily Transit Volumes Between Blood Centers

- 2,000 Red Cells
- 150 Single Donor Platelets
- 500 Plasma Units
- 30,000 Test Tubes

Methods Of Transportation

- Ground (Employee/Volunteer/Contract Courier)
- Next Flight Out Air Service (Same Day Air Transport)
- Overnight Flight Service (Next Day Air Transport)

Shipping Considerations

- Shipping Container Use
- Transportation
- Shipping Container Construction
- Management

Shipping Container Use

“One Size Fits All” Versus “Multiple Containers”

- Inventory Cost
- Single Container Requires Less Investment
- Single Container Requires More Design Engineering To Maintain Variety Of Temperature Ranges

“Disposable Container” Versus “Multiple-Use Containers”

- Multiple-Use Container Must Be More Durable
 - Cardboard Or Corrugated Plastic
- Multiple-Use Container Has Associated Recycling Costs
 - Retrieving From End-User
 - Management Program
 - Paying To Ship Air

Transportation

Refrigerated Or General Cargo

- Refrigerated Transport
 - Requires Temperature Monitoring (Or Must Validate Vehicle To Ensure Temperature Maintained)
 - More Expensive
- General Cargo
 - Requires Validated Shipping Container To Maintain Temperature

Self Or Paid Carrier

- Self Transport
 - Infrastructure Required For Self Transport (Vehicles / Drivers / Maintenance)
 - More Control And Flexibility
- Paid Carrier
 - Less Flexibility
 - Must Understand Your Business And Products
 - Must Understand Carrier's Transport Process

Shipping Container Construction

- Size
 - Economic Shipping Quantity Versus Ergonomic Handling
- Box, Cooler, Or Combination
- Tamper Evident
 - Chain Of Custody Requirements
- Product Breakage
- Validation
- DOT/TSA/Airline Regulations
- Brand/Image

Management

Tracking

- ARC Uses National Group To Coordinate / Monitor Shipments
- Must Build Relationship With Carriers

Weather

- Airport Shutdowns / Road Delays
- Time Of Year Has Impact If Using Commercial Air Transport

Time Requirements

- Distribution Planning
 - Number Of Distribution Sites

Thank You

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