Deloitte.

The National Academies of Sciences, Engineering and Medicine Workshop on Medical Products Supply Security

December 2020

Overview of COVID-19 challenges to the Supply chain

The medical products finished goods supply chain faced four key challenges during the first 90 days of the COVID-19 pandemic

CHALLENGES

Handling surges in demand of critical products

Suppliers received orders at volumes substantially above historic purchase levels. However, demand patterns among different medical device types presented significant differences.

Minimizing supply disruptions

COVID-19 created supply challenges for a complex interconnected supply network

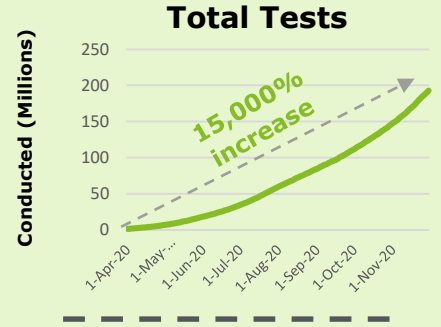
Sustaining operations while preserving workforce safety

Stakeholders put in place business continuity plans that leveraged their expertise in emergency response and adhered to regulations.

Supporting the evolving public health agenda

The supply chain collaborated with federal, state and local governments on an effort to ensure that the U.S. medical products supply remained safe and efficient.

SUPPORTING FACTS



400+% **Increases in N95 orders** in January and February 2020

Order data from GPO Premier. Test Data from the COVID Tracking Project

1700 Individual components **required to produce a single ventilator**

60% **of all ventilator supply** is produced outside the US

42% YoY **decrease in air freight capacity** in April 2020

12% Organizations in the U.S. that felt they were **highly prepared for the impact of COVID-19**

< 48 hours Until safety protocols were **put in place at plants and distribution centers**

6+ Federal agencies **collaborated with the medical products supply chain** to coordinate response efforts

- **FEMA Supply Chain Stabilization Task Force**
- **CDC Guidelines**
- **FDA guidances and EUAs**
- **Adherence to changing state and local requirements**

Sources: Premier, GAO, AdvaMed, FEMA, IATA, The COVID Tracking Project, the Washington Post, Deloitte Analysis

Medical devices are reliant on complex international supply chains, driven by specialization, global competition, and resource allocation considerations.

The COVID-19 pandemic highlighted the strengths and weaknesses of this supply chain

Interdependent Networks support competition but are more susceptible to global disruption

- Ventilators exemplify a complex interdependent network, requiring up to 1700 parts from **9 tiers of global suppliers** in dozens of countries
  - Medical Device Manufacturers ramped up US production of ventilators **from 700 units a week to 10,000 units per week** in response to the global pandemic

Specialization helps scale and economize technological developments, but can create logistical bottlenecks

- Companies with specialized expertise were critical to developing and producing the various elements of COVID-19 testing kits
  - Early shortages were seen for nasopharyngeal swabs, transport media, and reagents as **specialized manufacturers' capacity was maxed out**
  - Changes in regulatory guidance and substantial increases in production capacity began addressing these shortages with some reagent manufacturers **producing 4-20 times its monthly capacity by June**

Efficient Capacity Use supports resource allocation but minimizes available surge capacity

- The PPE shortage demonstrated the limit of traditional manufacturers' capacity, with companies running at **100% capacity to meet continuing demand**
  - A combination of surge capacity, new market entrants and partnerships, and innovative approaches have alleviated some capacity issues
  - The capital and time-intensive investments required to expand production certain PPE (i.e. N95s) precludes substantial expansion

Source: GAO, FEMA, AdvaMed, HBR, WSJ, NYT, NPR, The Washington Post, Deloitte Analysis

Leading practices to mitigate supply disruptions during the pandemic

Practices to manage supply disruptions align with four themes: avoidance of single sourcing, effective supply risk monitoring, data transparency, and proactive inventory management

Avoidance of single sourcing

Manufacturers that had **multiple sources of key components**, including **domestic suppliers** experienced minimum disruption

- U.S. manufacturing accelerated product turnaround and allowed companies to be able to meet the needs of the emergency
- A global strategy that assessed the sourcing risk of 1st and 2nd tier suppliers was a differentiator for some manufacturers
- Having key components and raw material sources in multiple global locations helped companies build resilience to local disruptions

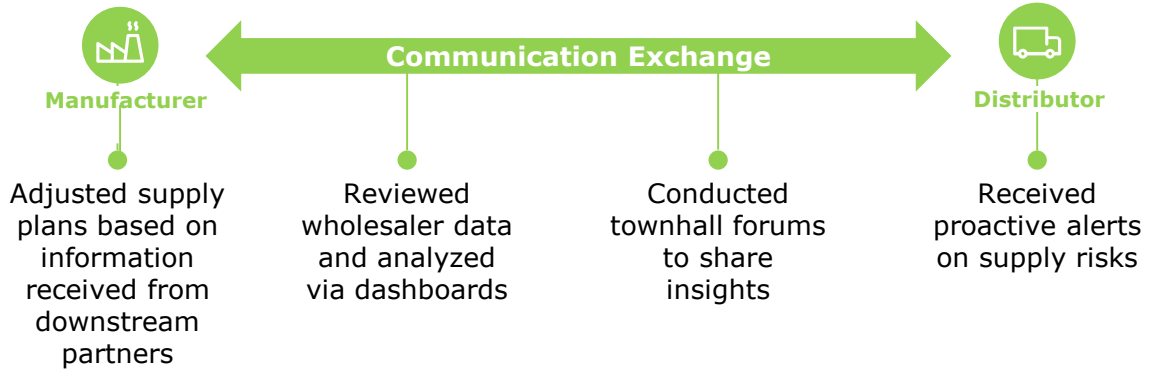
Supply Risk Monitoring

Manufacturers and distributors assessed how **disruptions to site / DC staffing would impact supply availability**

- Leveraged existing business continuity plans, particularly companies that had been affected by serious catastrophes in the past
- Emphasized use of analytics to manage the risk and continue to provide high service levels
- Developed new supply strategies by talking to non-traditional partners (e.g., alternative suppliers for components)

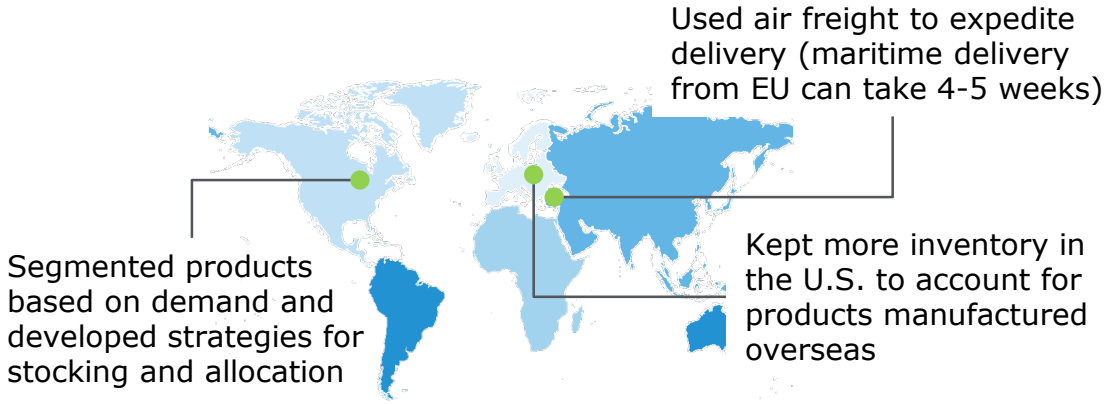
Proactive Communication and Data Transparency

Manufacturers and distributors **proactively engaged** to understand market trends and **shared supply insights**



Proactive Inventory Management

Manufacturers segmented products by critical need and used inventory controls to **maintain higher safety stock levels**

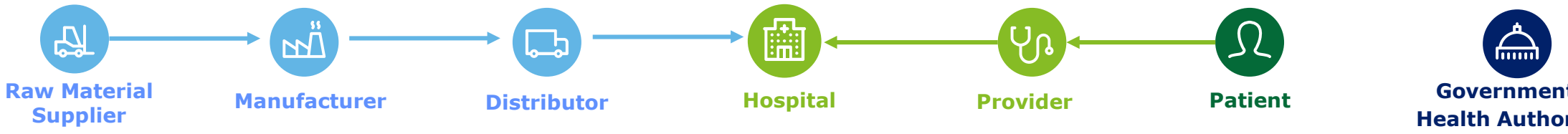


Sources: Freightos, Deloitte Analysis

Enhancing resilience to future challenges:

The pandemic uncovered several steps that the finished goods supply chain stakeholders can take to enhance resilience to future disruptions

Respond | **Recover** | **Thrive**



MANAGE SUPPLY RISK

1. Conduct thorough supply and supplier **risk assessments**
2. Increase supply **redundancy** through multi-source awards
3. Increase **safety stock** of critical materials
4. **Regionalize** the supply of critical materials where possible

ENHANCE E2E VISIBILITY THROUGH DIGITIZATION

5. Develop forward-sensing abilities to improve demand prediction
6. Leverage analytics and **establish control towers** to gain greater E2E visibility
7. Increase **data sharing and transparency** with customers and partners
8. Explore opportunities to harvest cutting edge technologies

BOOST SUPPLY CHAIN AGILITY

9. **Stress-test** business continuity plans to prepare for the next crisis
10. Build **redundancy** into operations
11. Empower teams through increased **workforce flexibility**

USE A PATIENT-CENTRIC APPROACH

12. Build **digital capabilities** to support changing consumer behaviors
13. Implement **risk sensing** solutions to gain real time understanding of consumer needs and pain points

STRENGTHEN PUBLIC-PRIVATE PARTNERSHIPS

14. Identify **collaboration** opportunities with federal, state and local governments
15. Engage with the public sector to solve chronic shortages of critical products
16. Develop joint plans to distribute COVID-19 vaccine supplies safely and effectively

Sources: Deloitte analysis