

# TOPIC: SUPPLY CHAIN DISRUPTIONS AND RELATED INFLATION

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# PRESENTERS



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# AGENDA

- The supply chain shock
- Product price inflation
- What can you be doing?



# SPOILER ALERT

- There will be continued supply chain disruptions
- Wage and product costs aren't going back to 2019 levels



# WHAT HAPPENED?



Businesses started closing



Supply chain disruption

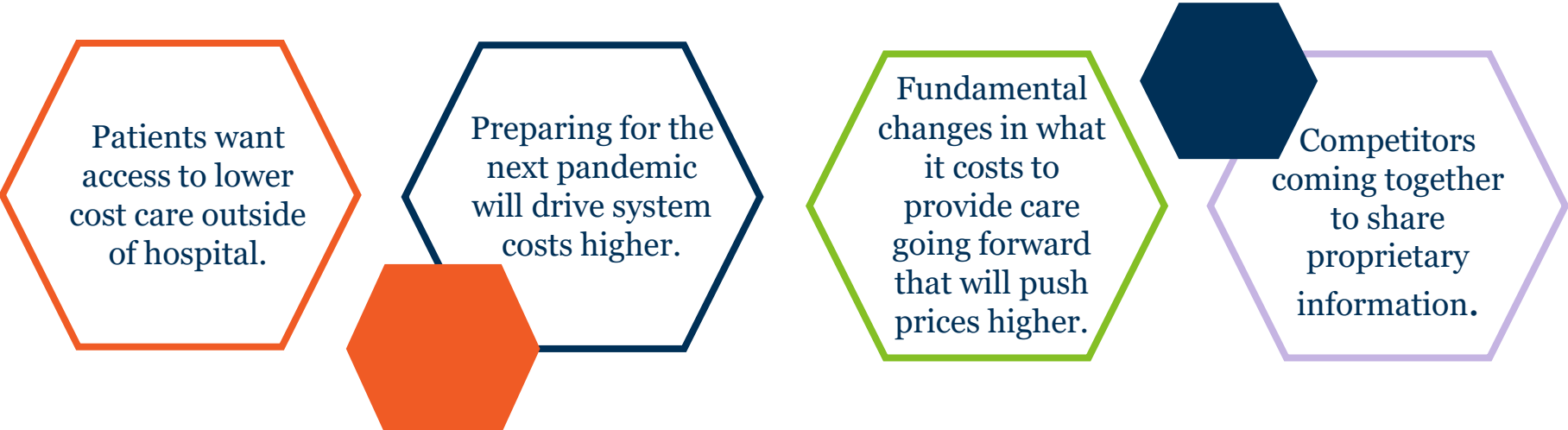


Product price increased



COVID patients kept showing up

# TAKE “INVENTORY” OF COVID-19



Patients want access to lower cost care outside of hospital.

Preparing for the next pandemic will drive system costs higher.

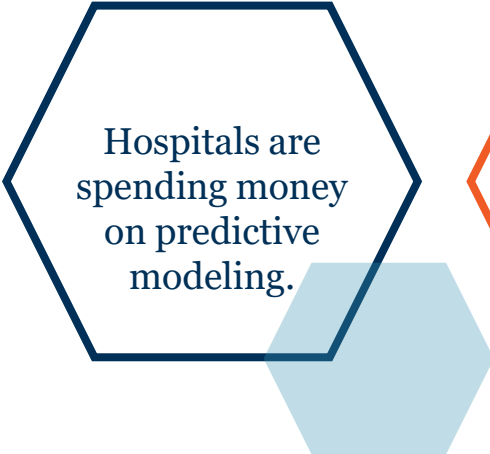
Fundamental changes in what it costs to provide care going forward that will push prices higher.

Competitors coming together to share proprietary information.




Reduce fixed asset investment, enable offsite access.

Supplier diversification  
82% of hospitals will increase domestic sourcing where possible.

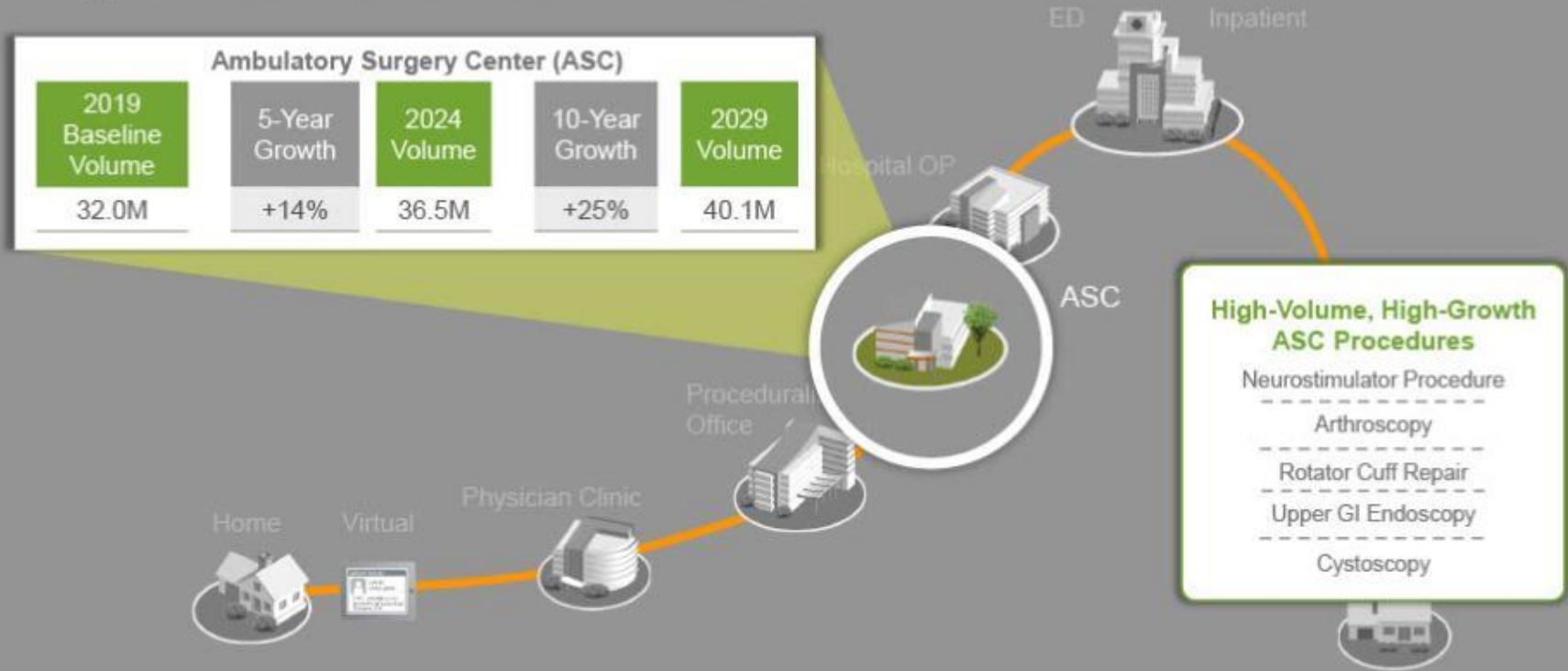


Hospitals are spending money on predictive modeling.



Providers need to rethink the patient experience.

# Surgical Volumes Shift to Lower-Cost Care Sites



Note: Analysis excludes 0-17 age group. Forecast pulled for procedures—major and endoscopy volumes only. GI = gastrointestinal. Sources: Impact of Change®, 2021; Proprietary Sg2 All-Payer Claims Data Set, 2018; The following 2018 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2021; Sg2 Analysis, 2021.

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Annual growth in ASCs projected at **5%** through 2024

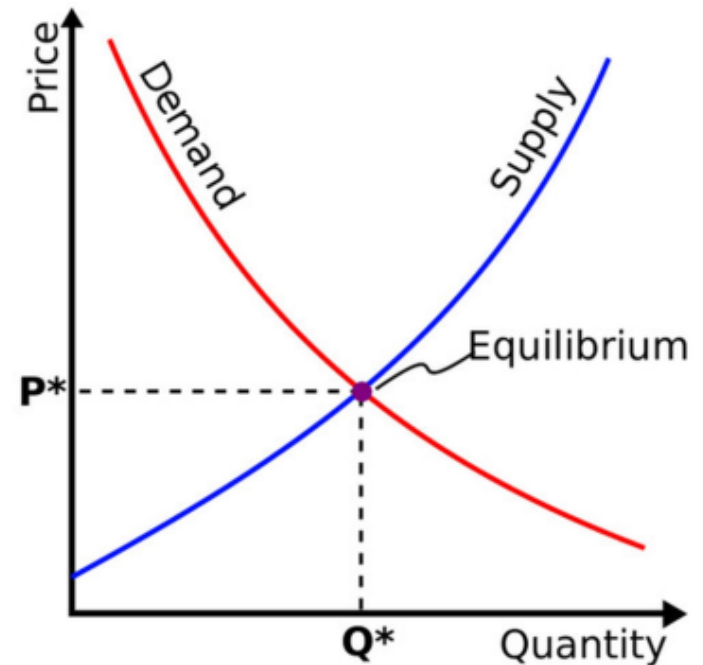
Payers incenting shift to ASCs

**+278** codes to ASC covered procedures by 2024

# ECON 101 – SUPPLY & DEMAND

The theory defines the relationship between the price of a good and the willingness of people to either buy or sell it.

- The **law of demand** says that at higher prices, buyers will demand less of a good.
- The **law of supply** says that at higher prices, sellers will supply more of a good.
- These two laws interact to determine the actual market prices and volume of goods that are traded on a market





# CURRENT STATE OF DISRUPTIONS

- **Record U.S. port congestion** due to massive consumer goods demand, exacerbated by seasonal purchasing trends
- **Record freight and transportation costs** coupled with global shipping container imbalances
- **Increased pricing and lack of raw materials availability** for manufacturers, including semiconductors and plastic resins
- Emerging domestic and international **natural disasters**
- Ongoing **national labor challenges** across industries, which is making it harder to find long-haul drivers and staffing at ports and warehouses
- The continuing **energy crisis in China**, which is disrupting manufacturing in several industries; similar energy-related reports coming from India



# WHAT IS THE INDUSTRY DOING?

- Building relationships with suppliers
- Diversifying suppliers
- Forecasting products and materials
- Adjusting timelines
- Monitoring global events
- Managing inventories
- Sourcing domestic supplies
- Looking deeper into the supply chain
- Anticipate supply chain trends
- Guaranteed supply
- Owned stockpile
- Group purchasing organization



# ECON 101 - WHAT DRIVES INFLATION



Inflation is an increase in the overall price level. The official inflation rate is tracked by calculating changes in a measure called the **consumer price index (CPI)**. The CPI tracks changes in the cost of living over time.



## *Three main theories of inflation:*

- **The Quantity Theory** – Inflation is caused by too much money in the economy.
- **Demand-Pull Theory** – Inflation happens when the demand for goods and services exceeds existing supply.
- **Cost-Push Theory** – Inflation occurs when the cost of producing goods and services rise and that cost gets passed on to the consumer through higher prices.

# PRICE INDEXES



## Consumer Price Index

Consumer price index	One-month change, %	Three-month change, %	12-month change, %	Three-year change, %	Forecast – 6 months	Forecast – 12 months
Consumer price index urban	0.6	2.8	8.3	13.1	↑	→
Consumer price index urban: less food and energy	0.5	1.7	6.2	10.9	↑	→

Data derived from consumer price index.

## Producer Price Index

Market fundamentals moving prices	Upward price pressure		Downward price pressure			
Final demand	<ul style="list-style-type: none"> <li>The elevated price of fuel, logistics, and higher labor costs will continue to put pressure on pricing of final products</li> </ul>		<ul style="list-style-type: none"> <li>Slowing consumer demand related to high inflation and The Federal Reserve increasing in interest rates will lead to slowing demand</li> </ul>			
Processed goods for intermediate demand	<ul style="list-style-type: none"> <li>The continuation of elevated raw material prices; and the rising cost of labor and logistics could sustain an upward impact on prices</li> </ul>		<ul style="list-style-type: none"> <li>Portions of the inflation in 2021 and early 2022 were based on the spike in raw material prices. Most raw material prices have leveled out, or will soon, and begin a steady decline later in 2022</li> </ul>			
Producer price index	One-month change, %	Three-month change, %	12-month change, %	Three-year change, %	Forecast 6-months	Forecast 12-months
Final demand	0.6	3.7	11.0	16.5	↑	↑
Processed goods for intermediate demand	1.9	6.0	21.9	33.7	↑	→

Data derived from producer price index

# IS IT TRANSITORY OR NOT?

## Commodity prices driven by transitory shock:

- Raw materials
- Energy

## Prices with Recent Transitory Shocks

Prices	Permanent	Transitory
<i>Energy</i>		
Henry Hub Natural Gas	0%	96%
Cushing WTI Crude Oil	5%	89%
<i>Resins</i>		
High Density Polyethylene	2%	86%
ABS Injection Grade	0%	93%
Polypropylene	5%	89%
Polystyrene	16%	78%
<i>Raw Materials Manufacturing</i>		
Producer Price Index – Aluminum Sheet & Strip	17%	75%
Producer Price Index – Wood Pulp	5%	88%
Producer Price Index – Plastic and Resin Manufacturing	30%	65%

## Some price increases appear more permanent:

- Labor costs
- Domestic transportation costs

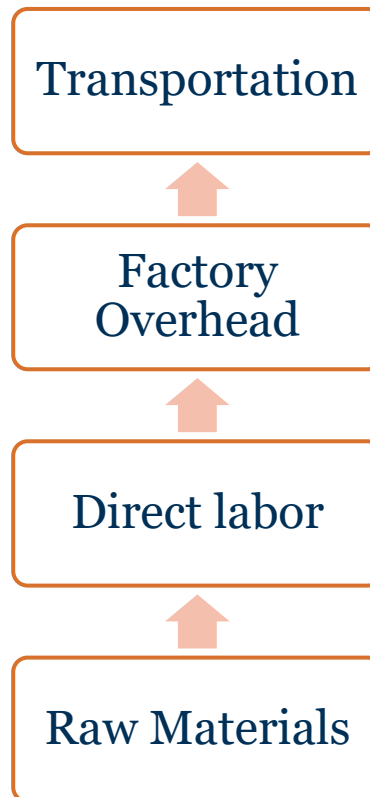
## Prices with Recent Permanent Shocks

Prices	Permanent	Transitory
<i>Aggregate Output</i>		
Consumer Price Index - All Urban	96%	4%
Producer Price Index - Final Demand	90%	10%
<i>Labor</i>		
Hourly Earnings, Private Sector	97%	2%
<i>Domestic Transportation</i>		
Producer Price Index – Deep Sea Freight	71%	24%
Producer Price Index – Freight Trucking	84%	16%

*Inflation is here to stay. Forecast CPI - 4% & PPI - 3.7%*

# ECON 101 – SETTING PRICE FOR GOODS

To **maximize profits**, the **pricing** model is based on producing **a number of goods** at which total revenue minus total costs is at its greatest (**Revenue – Costs = Profits**).





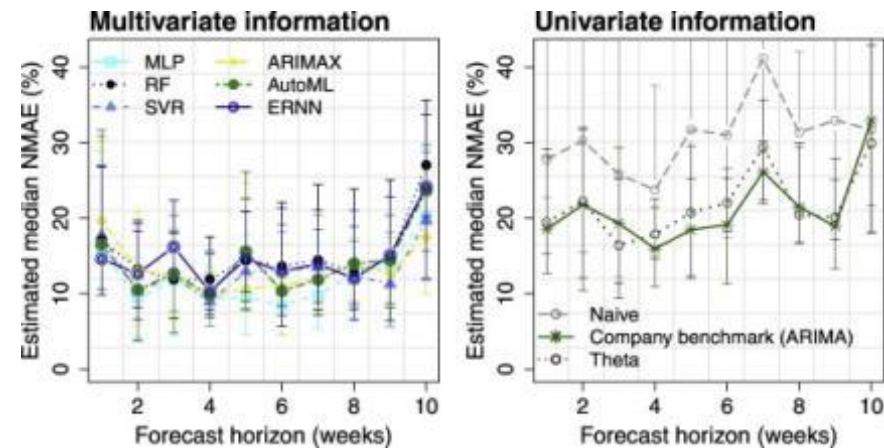
# A LOOK INSIDE THE MANUFACTURING WORLD

# Demand Planning through Supply Chain Disruptions and Inflation

GOAL: ENABLE FINANCIAL SCENARIO PLANNING FOR PRODUCTS BY IDENTIFYING DRIVERS AND RELATED ACTIONS ACROSS DEMAND, SUPPLY, COST, AND PRICE VERTICALS TO IMPROVE ACCESS OF CRITICAL PRODUCTS TO OUR CUSTOMERS

## We needed to change our approach...

- Foundational Demand planning financial capability aligned to unit level traditional demand planning activity did not adequately predict market fluctuations and price elasticity
- Traditional – univariate demand planning (time horizon)
- Univariate approach offered minimal correlation and data was either noisy/unavailable
  - Customer win/loss
  - Order attributes/types/patterns
  - Safety stock consumption and lead time changes
- Less than 50% accurate during pandemic

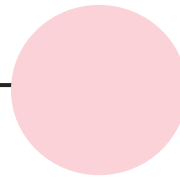
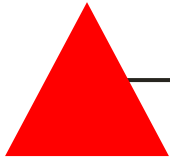




# Demand Planning through Supply Chain Disruptions and Inflation – Forecast Maturity

Where are Health  
Industry  
Manufacturing  
Companies?

Where do we think  
we are?



## Univariate Demand planning

- time phase horizon
- standard stat forecasting models
- measure standard KPIs (FA, Error, Bias)
- observations are manually entered

## Multivariate Demand planning

- ability to gather qualitative variable
- test variables and provide constant Feedback into performance
- industry strives to plan using multivariable
- needs data scientists c

## AugIntel/Machine Learning

- data consolidation
- cost variables, inflation
- connect to financial planning systems

# Demand Planning through Supply Chain Disruptions and Inflation

## EVOLUTION TO MULTIVARIATE DEMAND PLANNING AND FEEDBACK TO THE CUSTOMER

### Where we were...



### What is next...

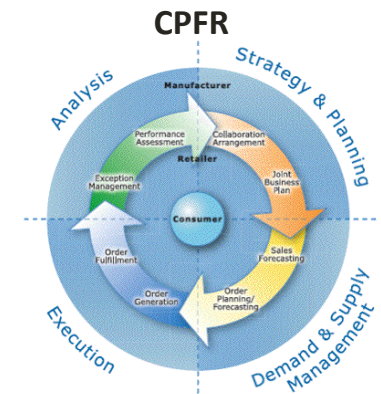


### Approach...



### Incorporate:

1. demand sensing
2. analytics
3. purchasing
4. deployment



# Demand Planning through Supply Chain Disruptions and Inflation – Case Study



**3.7MIL TEXTURED FINGERTIPS**  
**9.5" LENGTH**  
**4.2MIL THICKNESS**

The Cardinal Health™ Powder-Free, Non-sterile FLEXAL™ Nitrile Gloves are made with 3.7mil textured finger tips to create a sure grip for better handling.



# A LOOK INSIDE THE GPO WORLD



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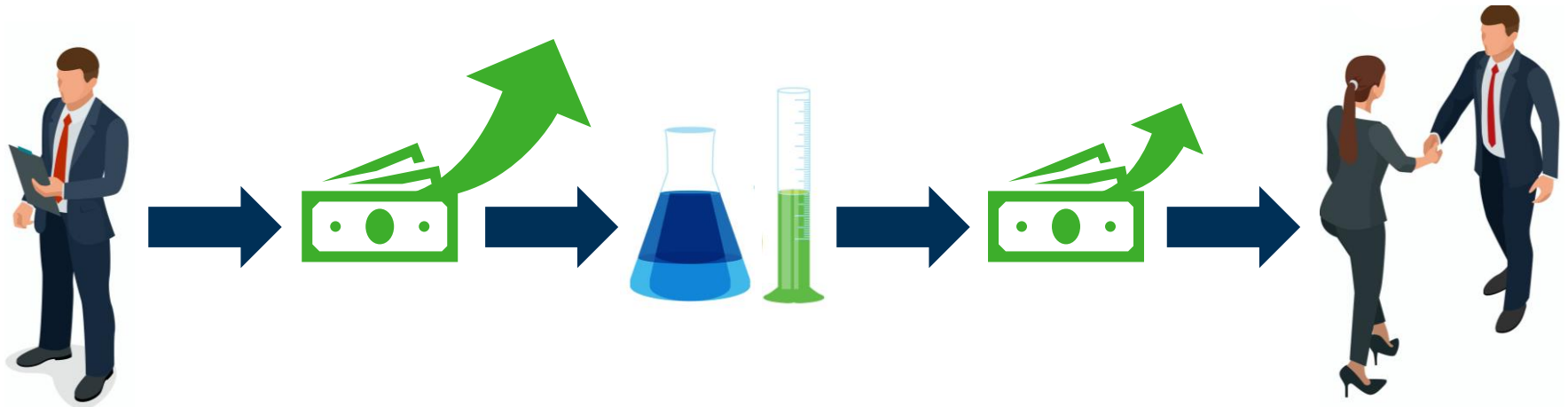
# A GPO'S RESPONSE



Dive deep into the components of product pricing and current trends

- Evaluate supplier price increases to help better gauge the ask
  - Understand the raw materials
  - Labor and transportation used in a product
- GPO needs to work with suppliers rather than against them

# A GPO'S RESPONSE - EXAMPLE



# EVOLVING SOLUTIONS FOR SUPPLY ASSURANCE

## Supply Chain Insights

regularly published market insights

- Economist and product engineer
- Understand cost indexes
- Monthly publications and webinars
- Incident monitoring

## Supply Access

rigorous sourcing strategies and strategic programs

- MFG facility locations
- Location and distribution redundancy
- Increase days on hand
- Supplier transparency and 24/7 event monitoring
- Failure to supply
- Made in USA portfolio
- NovaPlus expansion

## Supply Chain Enablement

actionable how-to's from our experts

- Vet alternative suppliers
- Product substitutes
- Conversion recommendations
- Update cross references
- Share best practices

## Advocacy and Collaboration

voice of the membership represented in outreach

- Maximize your network
- Attend association meetings

# NOVAPLUS – VIZIENT PRIVATE LABEL PROGRAM

## Branded Non-Contract

- No therapeutic alternatives – nearly all customers pay same price

## Branded Contract

- Therapeutic alternatives motivate suppliers to protect/grow market share

## Generic Injectables

- Several players with exact equivalents create a highly competitive market
- Segment hit hard by drug shortages
- *Vizient: created a shortage mitigation program*

## Generic Non-Injectables

- >5k generic orals, topicals, etc.



# NOVAPLUS<sup>®</sup> MITIGATES DRUG SHORTAGES

novaplus+



- Supply guarantee based on your usage
- Impact standardization/quarterly rebates
- **80%** compliance threshold

**190** drugs  
760+ NDCs

novaplus+

Enhanced Supply

- **Up to 6 months of additional inventory of product**
- **Essential Medications** (>211 drugs identified)
- **Pooled inventory** based on Vizion members total historical purchases
- Includes all of pharmacy spend (GPO, 340B and WAC)
- All inventory warehoused in U.S. by manufacturer

**104**  
**Million**  
vials available  
306+ NDCs

Launching in 2022!

novaplus+

Enhanced Supply Reserve

- **Dedicated inventory (member-specific)**
- Higher incremental rebates (4-5%)
- Expanded Failure-to-Supply terms
- **90%** compliance threshold

**2** suppliers  
180+ NDCs

# MY RUN IN WITH DISRUPTIONS



# SO WHAT DO YOU DO?

## Considerations

- Further develop relationships with Suppliers
- Work with your GPO
- Diversify suppliers
- Unique inventory disruption mitigation programs (Novaplus)
- Track inventory levels more closely (software)
- Embrace virtual work models to minimize internal admin resource disruption
- Collaboration with local hospital, associations, and/or competitors
- Move technology to the cloud





**QUESTIONS?**