



Conquering New Vaccine Challenges through Better Supply Chains

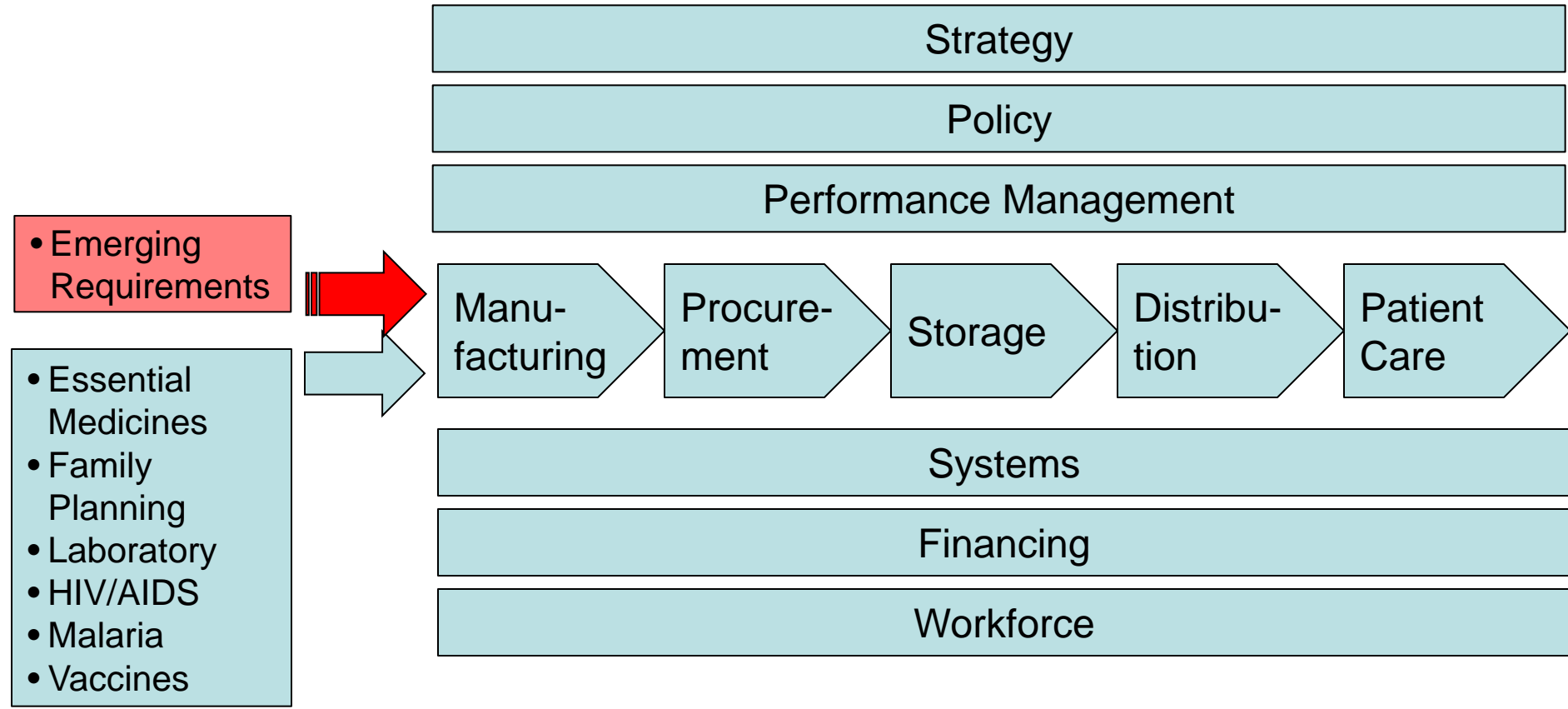
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Supply chains are an essential link between patients and manufacturers.

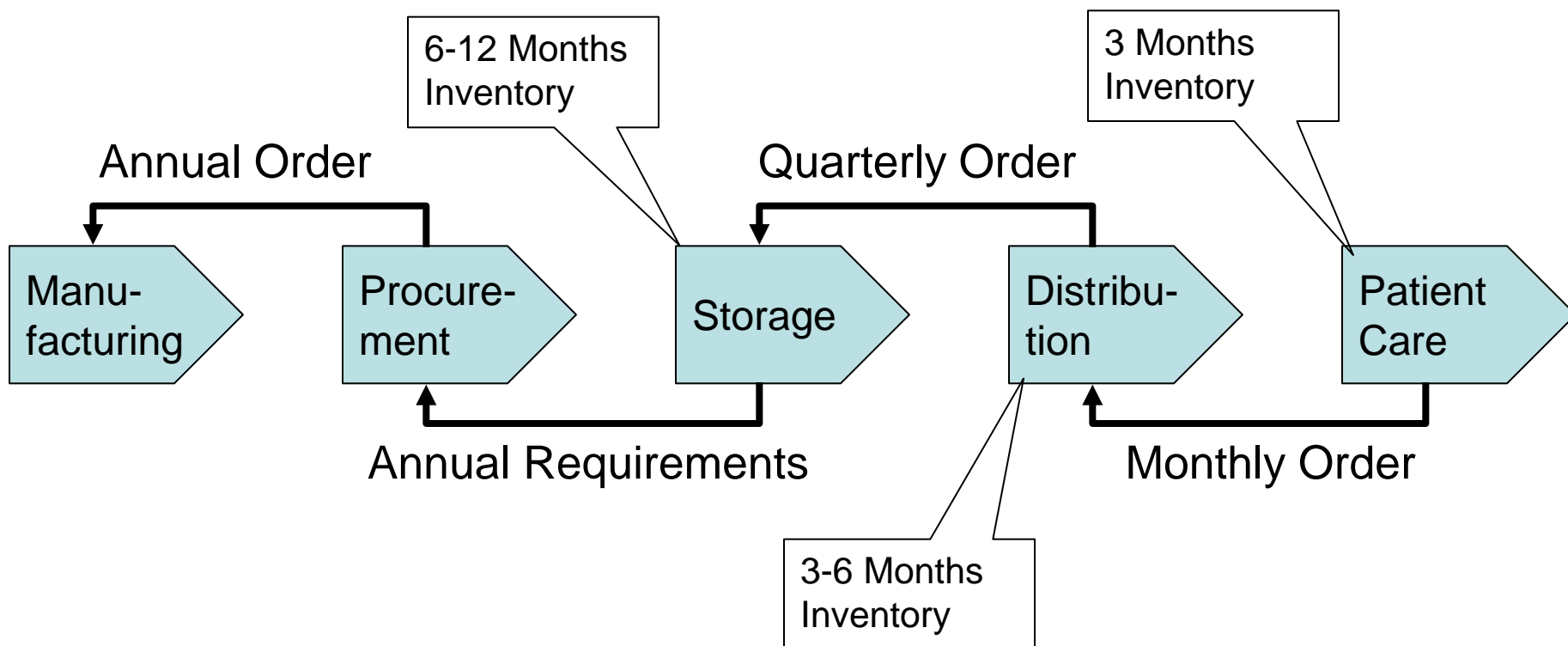
Current Supply Chain Operations





Many health supply chains are managed based on heuristics rather than data.

Notional Supply Chain Operations



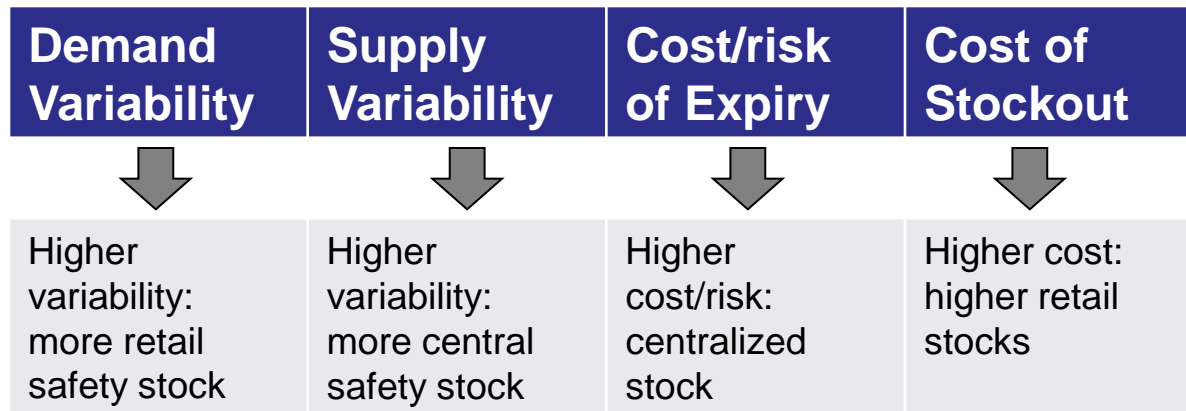


Segmentation recognizes the inherent differences in commodities.

Product	Demand Variability	Supply Variability	Cost/risk of Expiry	Cost of Stockout
ARV	Moderate	Moderate	Moderate	High
Reagent	Low	Low	High	Moderate
Established Vaccine	Low	Low	Low	High
Emerging Vaccine	High	High	High	Moderate
Injectable Contraceptives	Low	Moderate	Moderate	Moderate
Bed Nets	Low	Low	Low	Moderate
Emergency Response	High	Moderate	Low	High

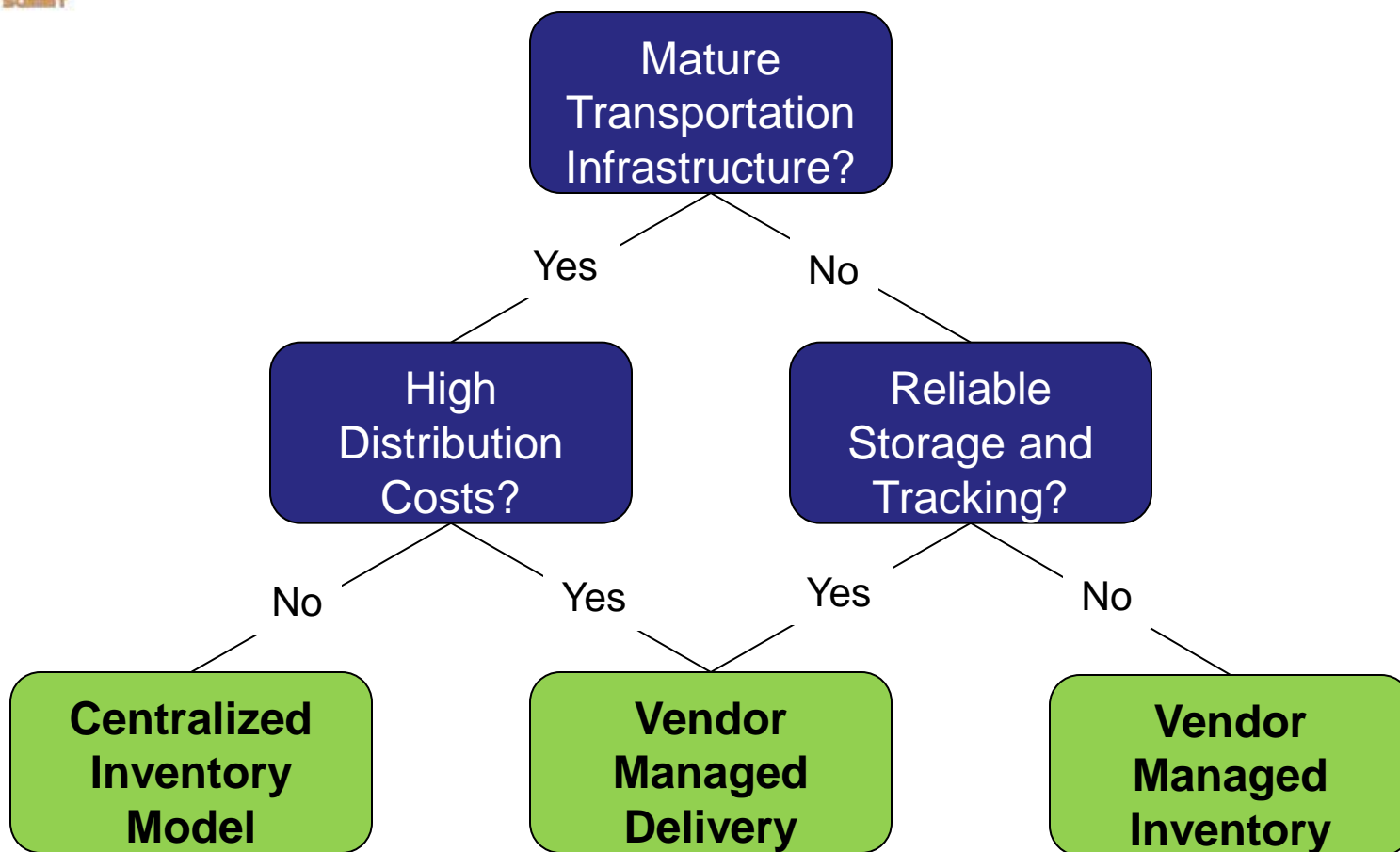


Differences in commodities drive differences in supply chain configuration





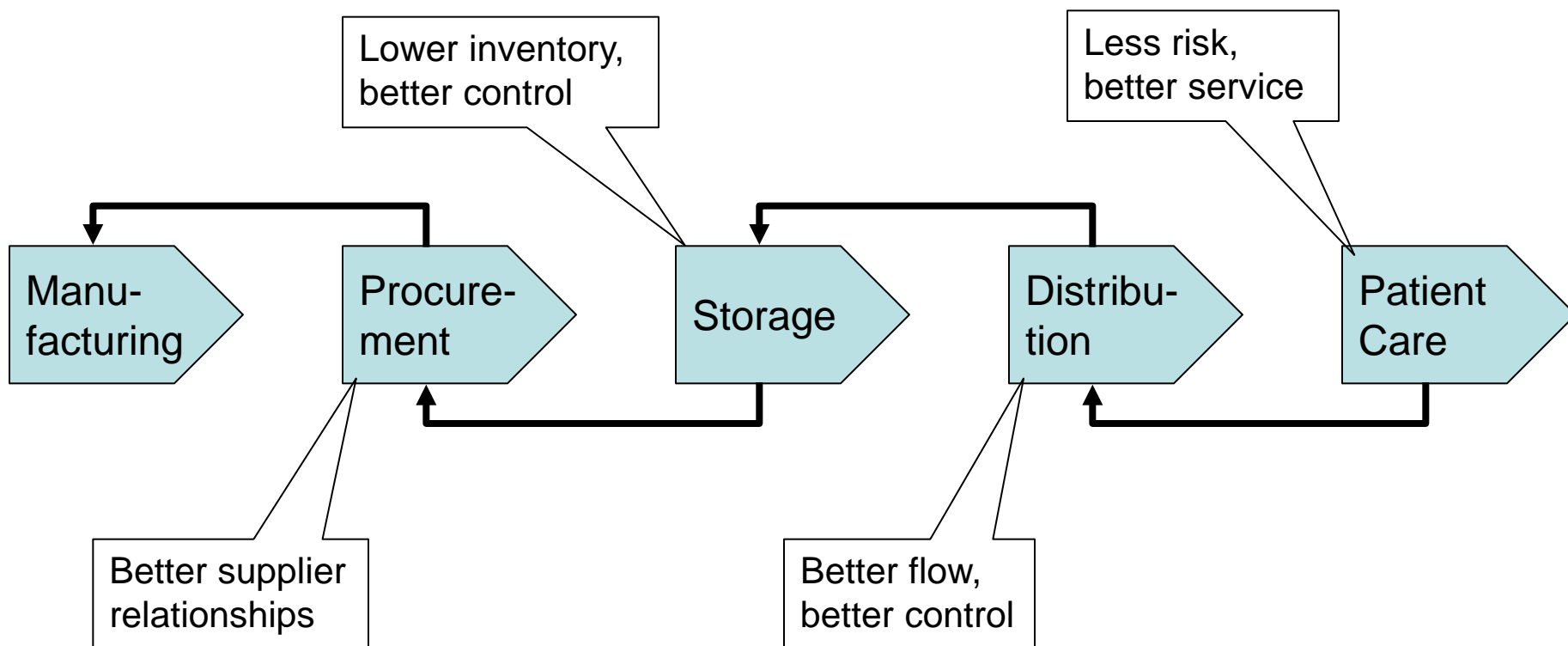
Align segmented inventory strategies with segmented distribution strategies.





Benefits of segmentation accrue across the supply chain.

Notional Supply Chain Operations





Example case: Mosquitrix and VSV-EBOV

Vaccine	Manufacturer	Stage of vaccine development	Target	Storage
Mosquitrix	GlaxoSmithKline /PATH Malaria Vaccine Initiative	Approved for use in children aged 6 weeks to 17 months in July 2015	Malaria (all strains except <i>P.falciparum</i>)	Must be stored in a refrigerator (2° C to 8° C) and is stable for 16 hours at 25° C
VSV-EBOV	Merck Sharp &Dohme	Currently in Phase II and Phase III clinical trial in Guinea	Ebola	Must be stored at -60° C to -80° C



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Segmentation recognized the inherent differences in commodities.

Product	Demand Variability	Supply Variability	Cost/risk of Expiry	Cost of Stockout
Mosquitrix	Low: population and birth rates fairly predictable	High: New production and uncertain global demand	High: more expensive and lower supply	Moderate: one of many tools for Malaria prevention, but narrow administration window
VSV-EBOV	High: likely to be used in response to outbreak, country and population unknown	High: new production and uncertain need	High: must be kept super cold and has low supply	High: availability required to control outbreak



Solutions for the new vaccines

Product	Mosquitrix	VSV-EBOV
Potential Solution	<ul style="list-style-type: none"> • Leverage existing vaccine supply chain to reach same patients • Lean toward more centralized inventory to reduce expiry and exposure risk • Work closely with supplier to time procurements with production 	<ul style="list-style-type: none"> • Centralized storage by international organization • Planned and tested distribution to maintain frozen chain • Work closely with supplier to understand inventory requirements to cover gap between need and new production capability
Discussion	<ul style="list-style-type: none"> • Availability near point of use due to short vaccination window • Inventory planning and coordination with other vaccines and malaria preventions essential 	<ul style="list-style-type: none"> • Storage with mature frozen chain capability is essential • Planned logistics is needed to ensure rapid response and deployment



Segmentation is an idea who's time has come.

- Integrated supply chains
 - More items with different characteristics stored together.
- Lower costs
 - Reduced inventory
 - Reduced expiry
 - Reduced infrastructure needs
- Improved service
 - Better control and visibility
 - Inventory optimally located
 - Better commodity flow through supply chain



Thank You

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