Achieving Cost Reduction and Operational Efficiency through Electronic Inventory Management Automation

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Presented By: Kevin Delaski
President/CEO
Kestrel Software, LLC

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The History of Inventory Management

Ancient Civilizations

- The concept of inventory management can be traced back to ancient civilizations like Mesopotamia and Egypt, whose records where kept on clay tablets to track agriculture and other resources.

The History of Inventory Management

Middle Ages

- Then in the Middle Ages, merchants and traders in Europe used basic inventory control methods to manage goods and keep track of stock levels.

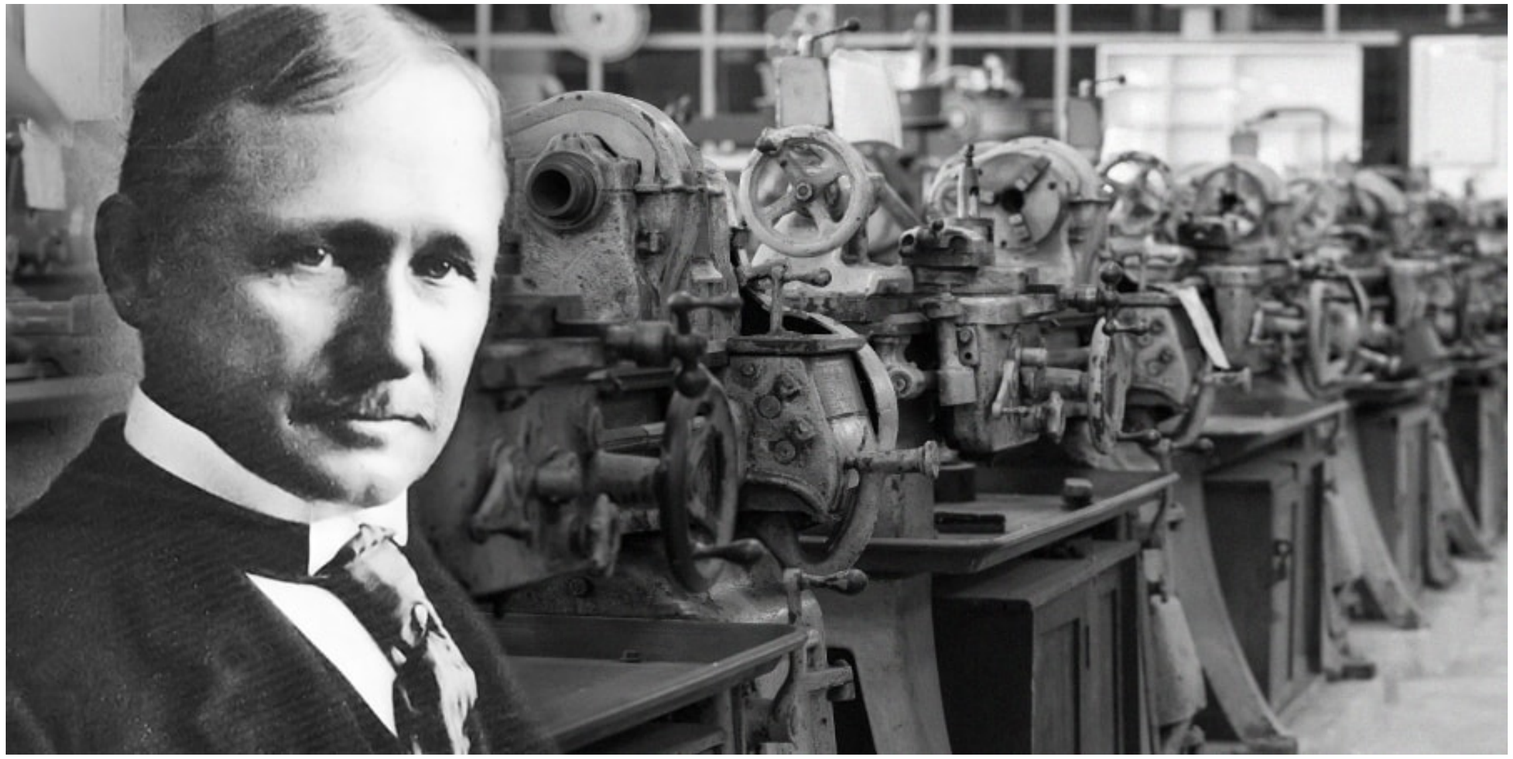
- These methods were often rudimentary and involved manual record-keeping.

The History of Inventory Management

Industrial Revolution (18th & 19th centuries

- The Industrial Revolution marked a significant shift in inventory management.
- With the advent of factories and mass production, businesses needed more sophisticated inventory control methods.
- Early manufacturing companies started implementing basic inventory tracking systems.

The History of Inventory Management



Scientific Management (Early 20th century):

- The principles of scientific management, introduced by Frederick W. Taylor and others, emphasized efficiency and the use of scientific methods to optimize processes.

- Taylor's focus on eliminating waste extends to the management of resources, including inventory.

The History of Inventory Management

Just-in-Time (JIT) inventory

- Developed by the Japanese automobile manufacturer Toyota in the 1950s and 1960s engineer Shigeo Shingo

- Goal it to minimize the amount of inventory held at at any given time, by having inventory arrive "just in time" for use in the production process.

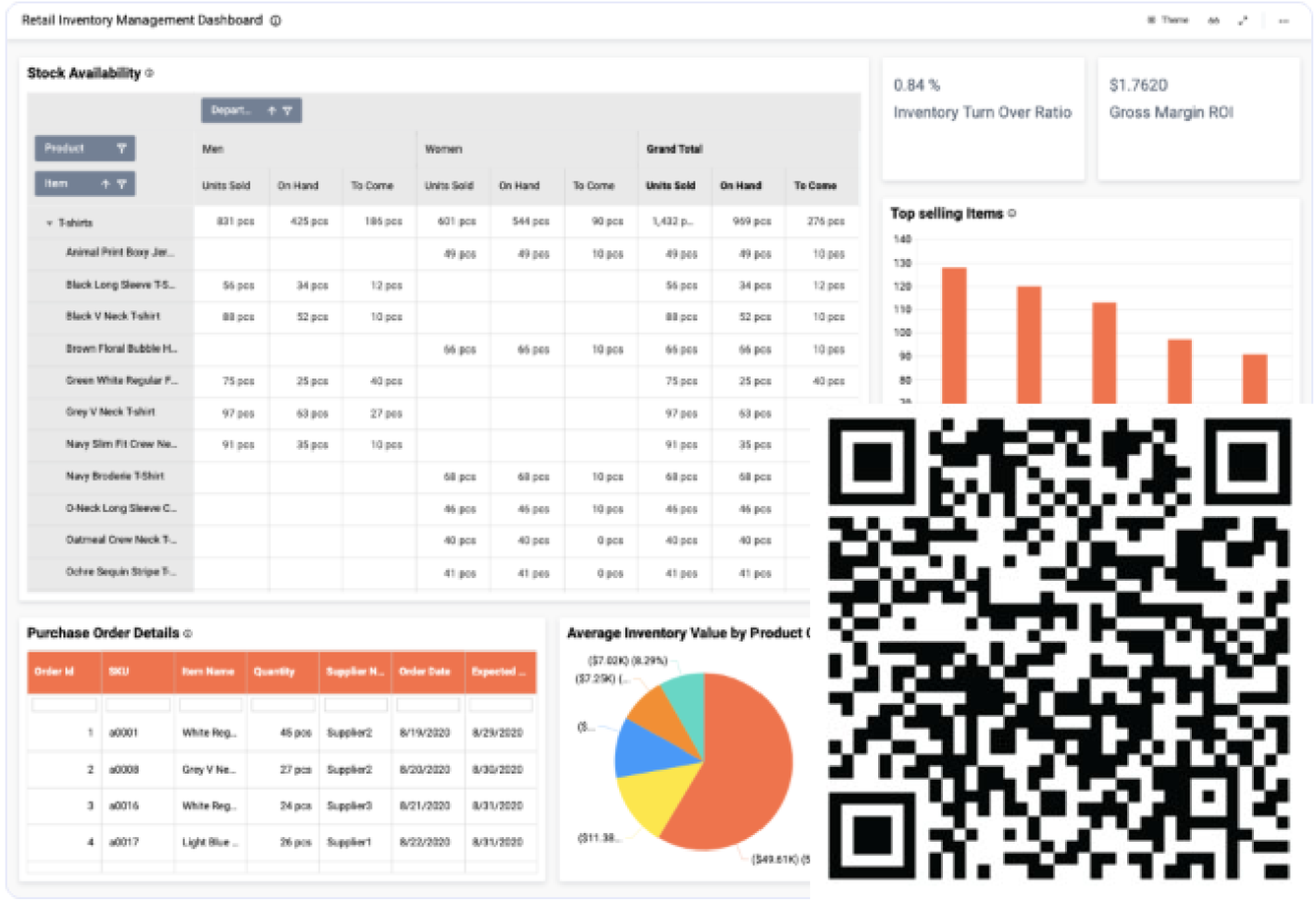
- When stock levels are tightly managed, Toyota was able to keep minimum stock levels and greatly reduce reduce capital expenses.

The History of Inventory Management

Introduction of the barcode (1980's):

- The barcode changed everything when it came to inventory management. Not only did it uniquely identify every item, but scanning barcodes reduced human error and greatly increased increased the speed of inventory management.

The History of Inventory Management



Inventory Automation (21st Century):

- Demand forecasting and Business intelligence tools have increased the ability to forecast inventory movement.
- RFID tags allow items to be tracked when they exit a storage area.
- 2D barcodes enable more data to be held in a single barcode.
- Cloud-based inventory management provides scalable solutions for managing inventory across multiple locations & platforms.

Benefits of Modern Inventory Management

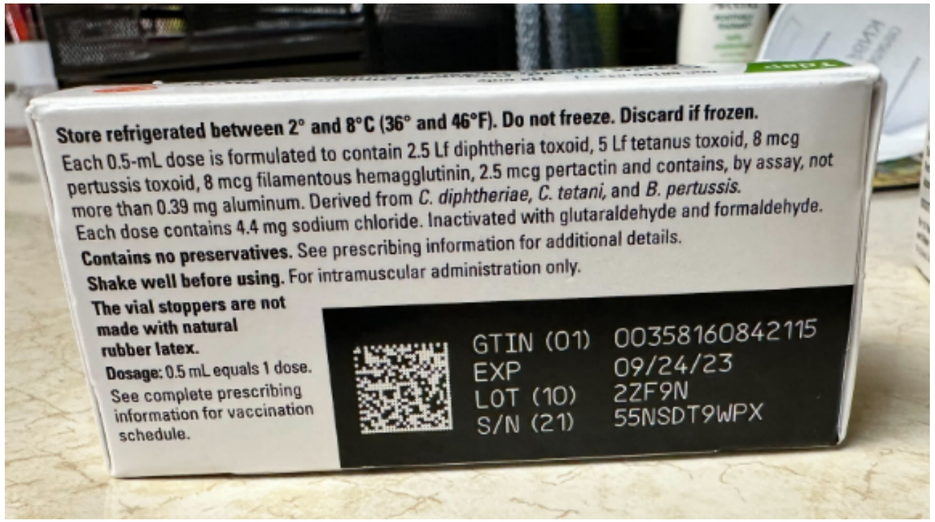
Five Benefits of Employing Modern Inventory Management

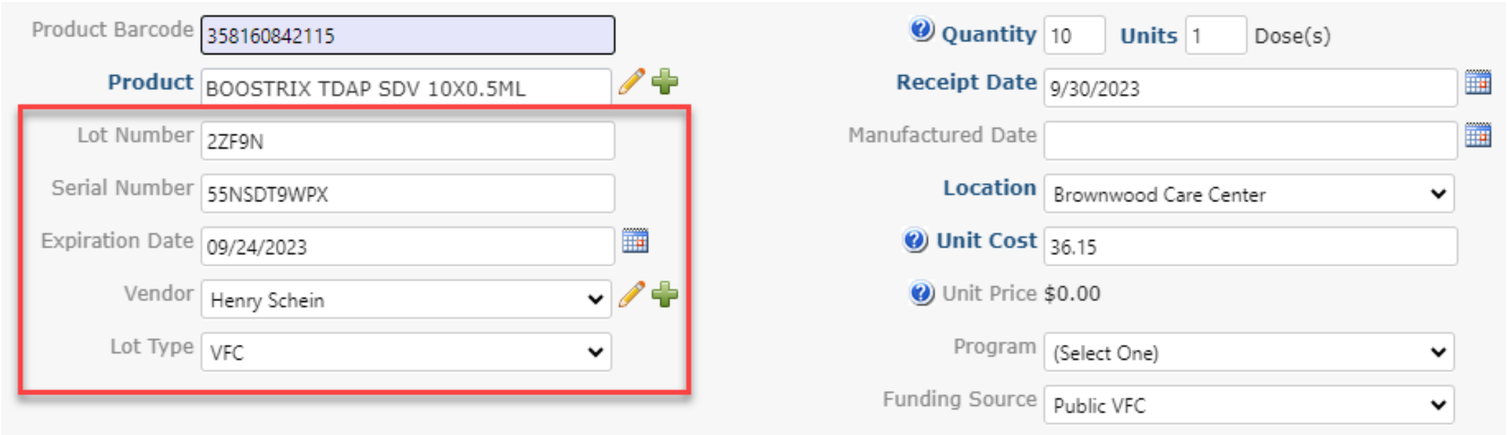
- Accuracy
- Efficiency
- Cost Savings
- Compliance
- Better Patient Care & Safety

Accuracy

- Modern inventory management systems offer significant improvements in data accuracy in comparison to manual methods.

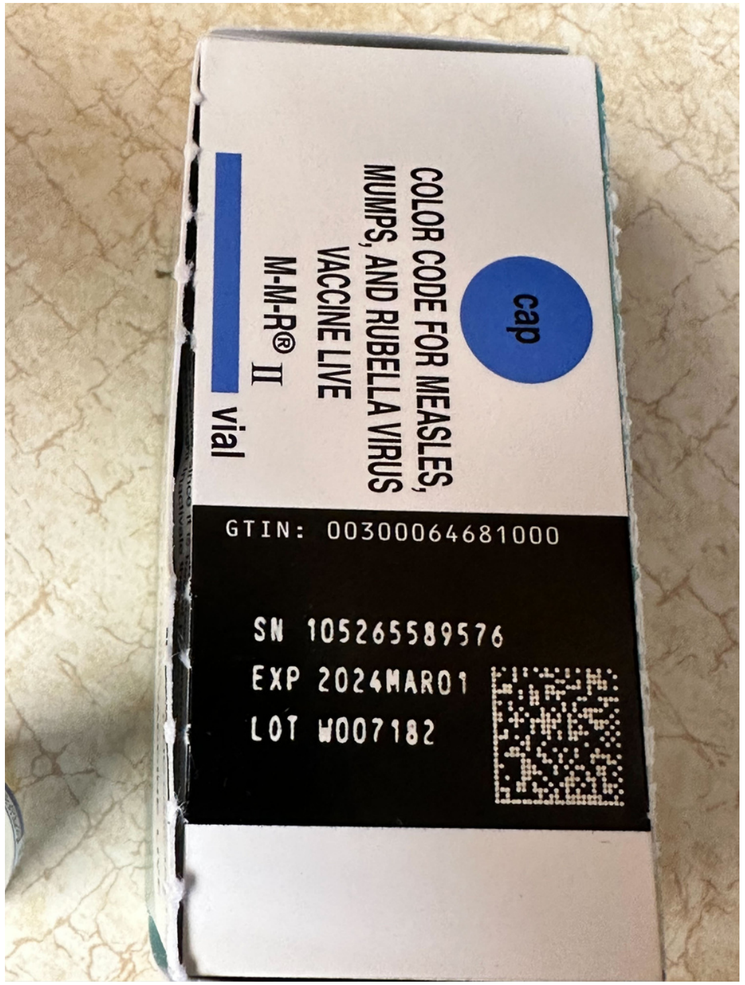
Accuracy





- With the aid of barcode scanners, Inventory systems can quickly and accurately capture and store data related to vaccines and medications directly from 2D barcode.
- With one scan the data is transmitted to the inventory systems.

Accuracy



Product	M-M-R II, SDV
Serial Number	105265589576
Lot Number	W007182
Expiration Date	03/01/2024
Patient	Brian Dean
Administration Date	09/30/2023

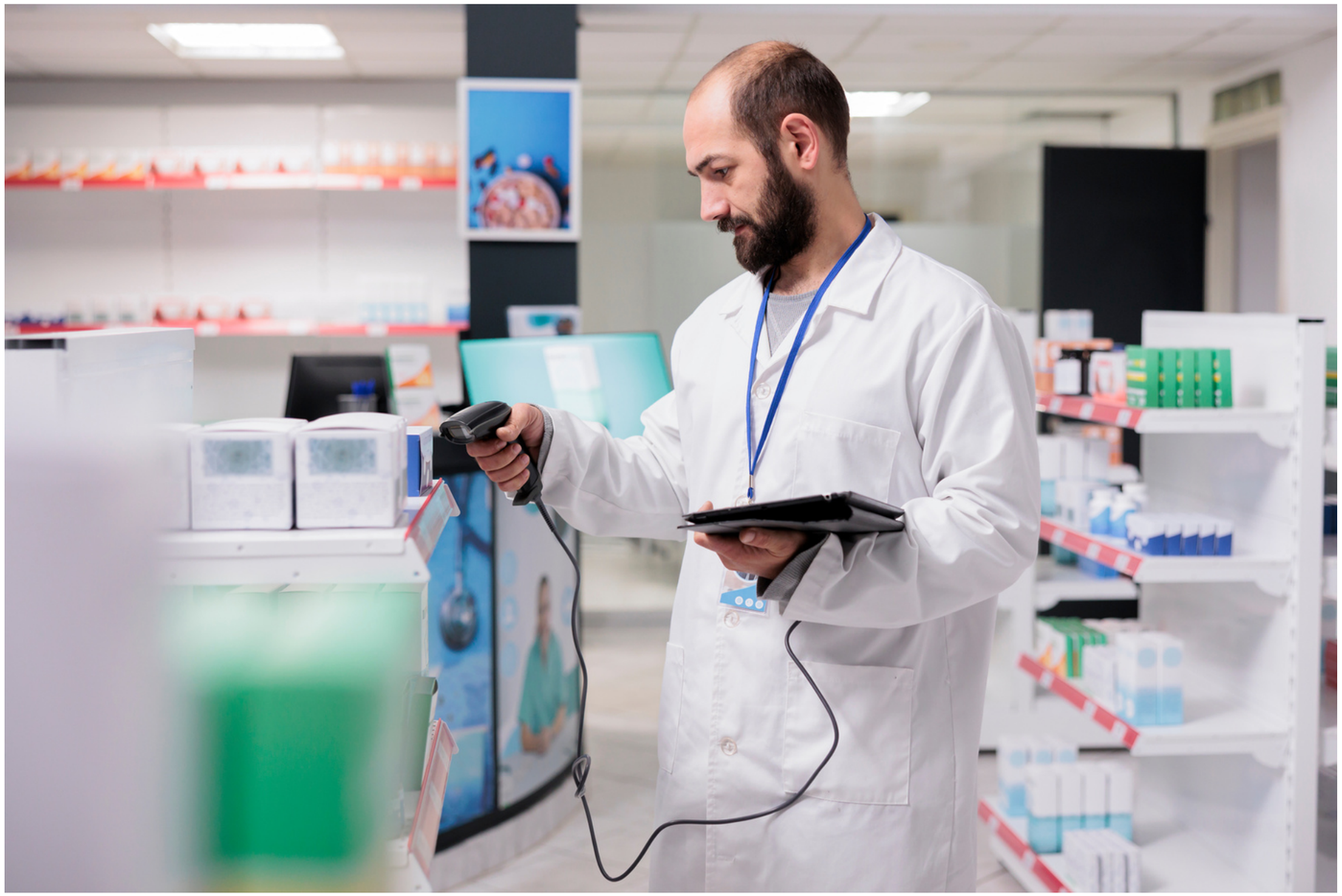
- All data related to vaccine or medication administrations are kept in the EHR and inventory management system.
- You know exactly what vaccine or medication, by lot and/or serial number, was administered to each patient, who the administering provider was and when it was administered.

Accuracy

Product	Location	OnHand Qty	OnHand Units
BOOSTRIX TDAP SDV 10 X 0.5ML	Main Office	4	450
Energix B Hep B (Adult)	Auxiliary Office A	23	1350
MMRV 0.5 [ProQuad]	Main Office	31	2780
PFIZER COVID-19 VACCINE, BIVAL (12y)	Auxiliary Office B	45	3910

- Inventory management systems also produce much more accurate inventory tracking than manual systems.
- Not only do you know how much much of each product you have in stock in real-time, you also know how much you have at each location.

Efficiency



- Using a combination of speed and accuracy, effective inventory management can streamline the workflow of a medical practice.

- The result is a significant savings of time and resources.

Efficiency

- Inventory management involves knowing how much stock you have and being able to adjust those levels up or down when you receive new stock and dispense existing stock.

- How easy do you think that would be if you had to record all of that data manually?

Efficiency

- Every self-check out station at a grocery involves scanning items.
- What if there was no barcode scanner attached to the check-out station and you had hand type in the product to find it and enter the quantity?

Efficiency

- What if you had a cart filled to the brim like this? How fast would you be able to check out if you didn't have a scanner and had to type in the name of every product and the qty to check it out?

Efficiency

Decrementing medical inventory

- The same applies to medical inventory management with the aid of software.
- Inventory management is faster because of the automation employed.
- When vaccines or medications are administered to the patient, inventory software automatically records the transaction and decrements the inventory.

Efficiency

Receiving items into inventory

- The same applies to receiving shipments.
- If your inventory system has a PO module, when you receive in goods you simply find PO, verify the contents of the box with PO and press one button receive items into inventory.

Efficiency

Performing stock counts

- Performing stock counts with the aid of inventory management software is much faster than doing it manually.
- Updates are performed quickly in real-time.
- User barcode scanners increases accuracy and speed.

Efficiency

Product	OnHand Qty	Min Qty	Max Qty	Order Qty
BOOSTRIX TDAP SDV 10 X 0.5ML	**8**	**10**	**50**	**42**
Energix B Hep B (Adult)	15	15	35	
MMRV 0.5 [ProQuad]	10	10	55	
PFIZER COVID-19 VACCINE, BIVAL (12y)	**27**	**30**	**60**	**33**

Stock Auto-Replenishment

- Inventory systems used in tandem with PO systems save significant staff time by facilitating auto-ordering workflows.
- The system can detect when stocks reach pre-established reorder points.
- Low stock items can be auto-ordered from vendors in quantities that reestablish target stock levels, all without any human intervention.

Cost Savings

- Modern inventory management can produce significant cost savings for medical practices.

Cost Savings

Overstock

- Order too many products protect against understock

Result: wasted money; your capital is tied up in products that won't be used and will eventually have to be discarded

Cost Savings

Understock

- Order too few products in order to save money and avoid overstock

Result: Have to purchase supplies in haste because need for products is dire; lose potential potential discounts because you can’t order in volume and pay increased fees for expedited shipping

Cost Savings

- Using Just-in-Time inventory management principals, inventory software will help you keep track of your stock in real-time and order just the amount of products that are needed to cover upcoming demand.

Cost Savings

Product	Min Qty	Max Qty
BOOSTRIX TDAP SDV 10 X 0.5ML	10	50
Energix B Hep B (Adult)	15	35
MMRV 0.5 [ProQuad]	10	55
PFIZER COVID-19 VACCINE, BIVAL (12y)	30	60

Min/Max Levels

- **Min:** The lowest quantity of a particular item that a company should have in stock before it triggers a reorder or replenishment alert.
- **Max:** The upper limit or cap on the quantity of an item that an organization should keep in stock at any given time.
- Allows balance between maintaining sufficient stock to meet demand and avoiding product overstock.

Cost Savings

Product	Min Qty	Max Qty
BOOSTRIX TDAP SDV 10 X 0.5ML	10	50

Current On-hand Quantity: 10

Max Qty (Desired Stock): 50

Qty to Order at Min Qty: 40

Min/Max Levels

- **Order Quantity =**
  Max Qty - Current On-hand Qty

- However, depends on two crucial things:

  1. Rate of product movement
  2. Order lead time

Cost Savings

Product	Min Qty	Max Qty
BOOSTRIX TDAP SDV 10 X 0.5ML	10	50

Current On-hand Quantity: 10

Max Qty (Desired Stock): 50

Qty to Order at Min Qty: 40

<u>Order for 2 months</u>

Product Movement = 20 per/mo

Order Lead Time = 1 month

By the time you receive your order you will 0 products in stock!
(-10 deficit)

Min/Max Levels

- **Order Quantity =**
  Max Qty - Current On-hand Qty

- However, depends on two crucial things:

  1. Rate of product movement
  2. Order lead time

Cost Savings

Better Vendor Management

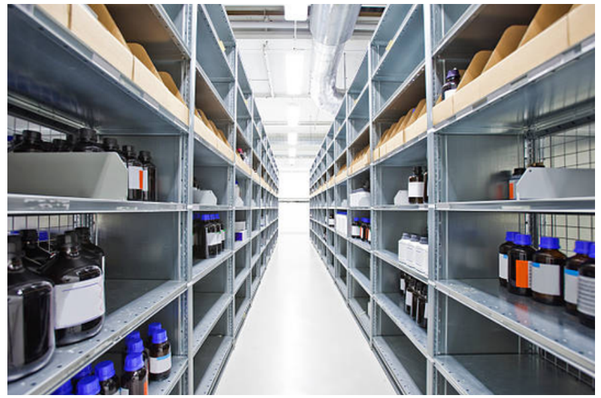
- Medical practices rely on suppliers to deliver the necessary supplies on time and at a reasonable cost.

- With effective inventory management, practices can better track supplier performance and negotiate better pricing.

Cost Savings

Location A

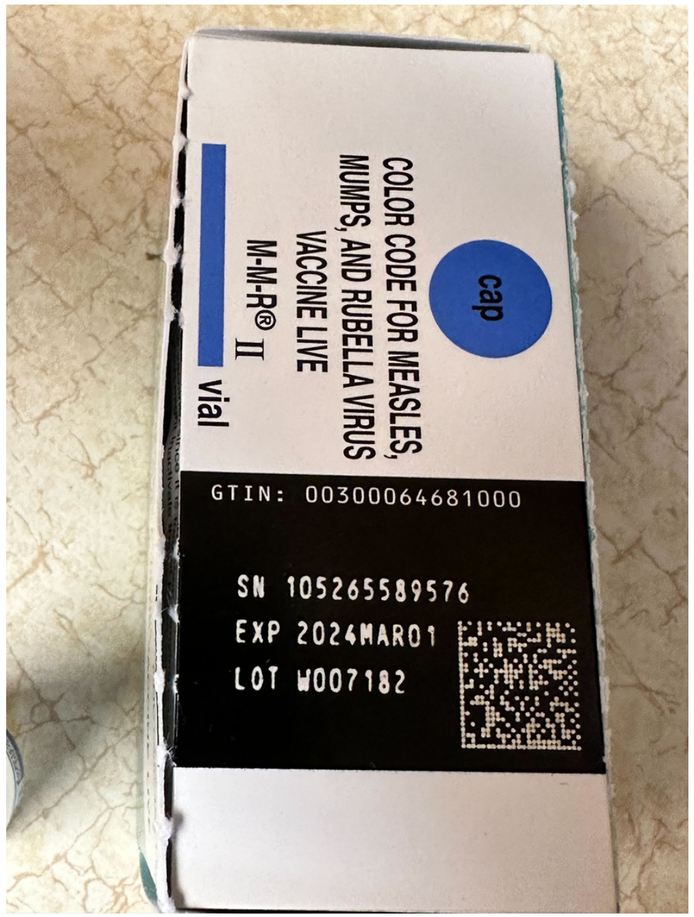
Location B



Transferring Inventory based on product movement

- Incredible cost savings can be achieved by transferring inventory from one location to another.
- Important due to expiration dates on vaccines and meds
- Transfer items from one location where items move slower to another location where they are moving faster.

Cost Savings



Example:

- It is **January 2024** and have large stock of M-M-R vaccines in one location
- The vaccines will expire **March 1, 2024.** There is little use of the M-M-R vaccines at the location where they are stored. However, another location has a need for them.

Choice:

Discard the vaccines when they expire, while the other location buys new M-M-R vaccines

OR

Transfer the vaccines to where they are needed. No need to buy new vaccines.

Compliance

- Public health agencies must comply with numerous regulations regarding the storage, handling, and disposal of medical supplies.
- Effective inventory management can help ensure that the practice remains compliant with these regulations.

Compliance

340B Medication Tracking

- FlexScanMD allows you comply with 340B medication ordering requirements.
- It specifically allows you to separate 340B inventory from private inventory, tracking the receipt of the different inventory groups as well as the dispensation of the different inventory categories.

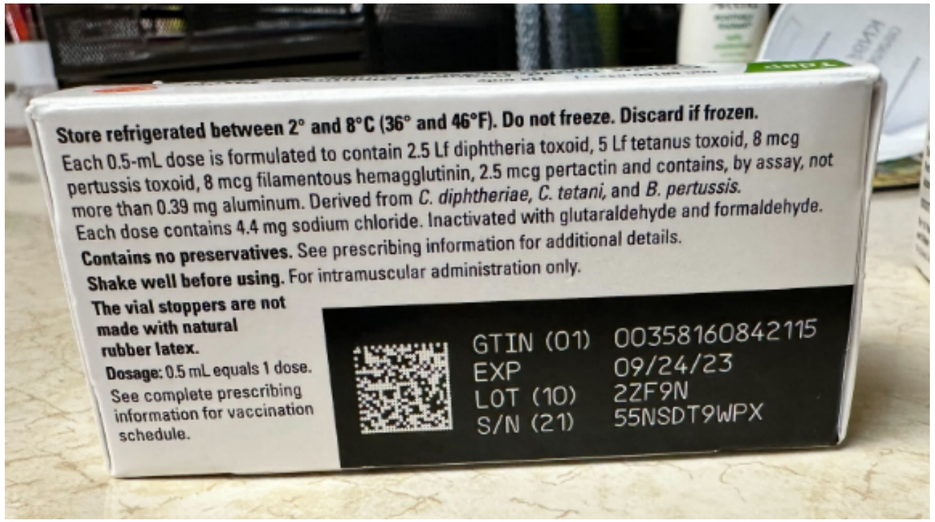
Compliance

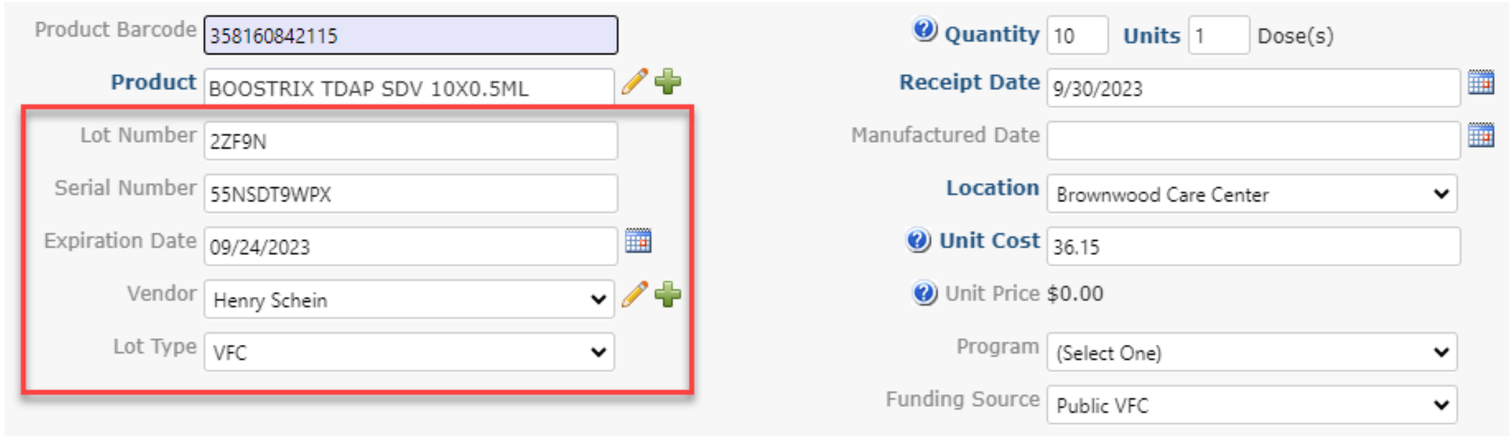
State Vaccine Administration Requirements

There are compliance requirements connected with the administration of state provided vaccines. These include:

- Transferring expiring vaccines
- Maintaining vaccine logs (lot number, expiry, type, doses received/administered)
- Inventory counts required when ordering

Compliance





Inventory systems can automatically capture and store this data from the vaccine's 2D barcode. The data captured includes:

- Barcode
- Product
- Lot Number
- Serial Number
- Expiration Date

Compliance

FDA U.S. FOOD & DRUG ADMINISTRATION

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Pharmacists: Utilize DSCSA Requirements to Protect Your Patients

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Drug Supply Chain Security Act (DSCSA)

Drug Supply Chain Security Act Law and Policies

Drug Supply Chain Security Act Public-Private Partnership

The Drug Supply Chain Security Act (DSCSA) Waivers, Exceptions, and Exemptions

Pharmacists, or "dispensers" under the Drug Supply Chain Security Act, need to know their responsibilities under the DSCSA to protect patients from receiving harmful drug products. The DSCSA includes requirements that pharmacies must follow to protect patients from receiving harmful drugs, such as counterfeit or other illegitimate drugs.

Content current as of:
01/19/2022

The DSCSA was enacted in 2013 to further secure our nation's drug supply. It creates a tighter, closed prescription drug distribution system to **prevent** harmful drugs from entering the supply chain, **detect** harmful drugs if they do enter the supply chain, and enable rapid **response** when such drugs are found.

- Flyer: Protect Your Patients: Know your responsibilities under the DSCSA
- FDA offers a free 45-minute continuing education course for pharmacists to help explain DSCSA requirements.

Drug Supply Chain Security Act

- Drug log components of this act go into effect November 27, 2023.
- Applies to Pharmacists or "dispensers of medications

Compliance

Receive, store, and provide product tracing documentation

The law requires drugs to be traced as they move through the supply chain, and pharmacies must:

- Only accept prescription drugs that are accompanied by three pieces of product tracing documentation – transaction information, transaction history, and transaction statement. If the trading partner you purchased the drugs from does not provide all this documentation, work with them to promptly get it.
- Store the product tracing documentation you receive in paper or electronic format for six years.
- Generate and provide all product tracing documentation with the transaction if you sell a prescription drug to a trading partner. You do not need to provide this information when you dispense a prescription drug to a patient or if you sell to a pharmacy for dispensing to a specific patient.

Drug Supply Chain Security Act

- Requires dispensers of medications to store documentation of the dispensed medication for 6 years.
- Including medication serial number.

Compliance

Product Tracing

Requirement: Provide, capture, and maintain information about transactions involving products distributed within the United States and the trading partners who engaged in such transactions of products. Since 2015, lot-level product tracing information including, the transaction information, transaction history, and transaction statement is required to be provided in a paper-based or electronic-based method to a subsequent purchasing trading partner. However, beginning on November 27, 2023, electronic-based approaches will be required to be used among all trading partners to meet the enhanced drug distribution security requirements, including electronic product tracing and verification of product at the package level. Certain DSCSA requirements may be the subject of compliance policies under which FDA intends to not take action to enforce such requirements until a specific date. A list of DSCSA compliance policies, along with all DSCSA guidance, can be found on our DSCSA Law and Policies web page.[3]

Drug Supply Chain Security Act

- Requirement to track products by serial number goes into effect on **November 27, 2023!**
- FDA could take action to enforce compliance to these policies.

Compliance

Date/Time	Transaction Type	Product	Quantity	User
1/12/2023 13:45:78	Product Received	BOOSTRIX TDAP SDV 10 X 0.5ML	50	JDIAZ
1/12/2023 13:56:21	Product Dispensed	BOOSTRIX TDAP SDV 10 X 0.5ML	1	RYANG
1/12/2023 13:58:34	Product Discarded	MMRV 0.5 [ProQuad]	4	BHARPER
1/12/2023 13:60:03	Product Dispensed	BOOSTRIX TDAP SDV 10 X 0.5ML	1	JKIRBY

Transaction Auditing

- Inventory systems provide transaction level auditing.
- All transactions are accompanied by timestamps, user identification and transaction descriptions.
- Reduces the chance of unauthorized transactions from occuring.

Better Patient Care and Safety

- Employing inventory management software greatly increases patient care and safety.
- It allow medical staff to spend more time doing what matters most, caring for patients.

Better Patient Care and Safety

Supply Availability

- Accurate inventory management ensures that necessary supplies are always available when needed, leading to improved patient care.

- Better supply availability of medications, vaccines and supplies occurs because of more accurate stock counting, and the ability to forecast demand with greater reliability.

Better Patient Care and Safety

Product	Expiration Date	Expired?
BOOSTRIX TDAP SDV 10 X 0.5ML	01/01/2024	
Energix B Hep B (Adult)	**09/30/2023**	**X**
MMRV 0.5 [ProQuad]	06/14/2024	
PFIZER COVID-19 VACCINE, BIVAL (12y)	10/13/2023	

Avoiding the administration of expired products

- Inventory management systems track vaccine and medication expiration dates.
- System alerts and reports are provided to show expired products or products about to expire.
- Inventory systems that manage medication dispensing prevent the administration of expired products.

Better Patient Care and Safety

Tracking recalled products

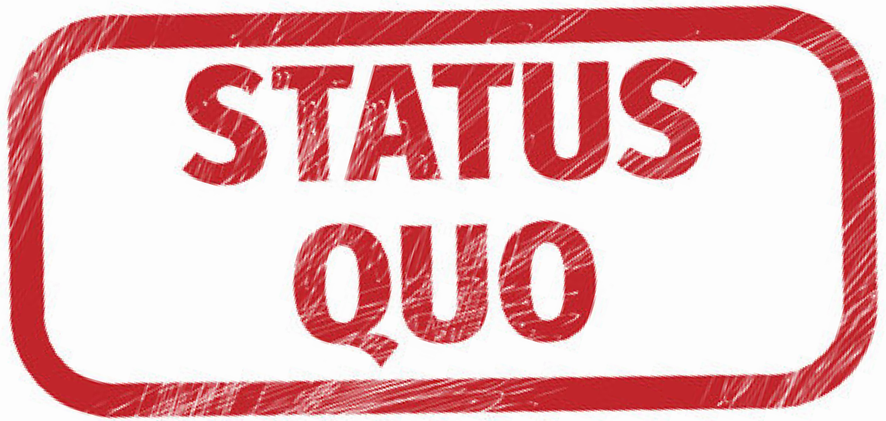
- When drug recalls occur, it is important to understand not only, what drugs have been recalled, but also what patients may have already received those drugs.
- Recalls typically occur based on a specific batch or lot of drugs processed
- Since inventory systems track vaccines and medications by lot number, specific batches can be discarded and patients informed.

Better Patient Care and Safety

Incorrect drug administration

- It is critical that patients receive the correct drug ordered by a provider.
- Inventory systems can help practices develop workflows that establish protocols designed to prevent the incorrect administration of medications.
- This ensures the right medication is always given to the correct patient.

What is the cost of maintaining the



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Preparation Saves Time in the End

- Setting up an inventory systems takes time in the beginning, but yields results in the end.

- Similar to food prep. Preparing food before cooking takes time initially, but makes the actual cooking much faster. If food is washed, seasoned and cut beforehand, all have to do is cook it.

- Results in less stress and move efficient and enjoyable cooking experience.

Questions?