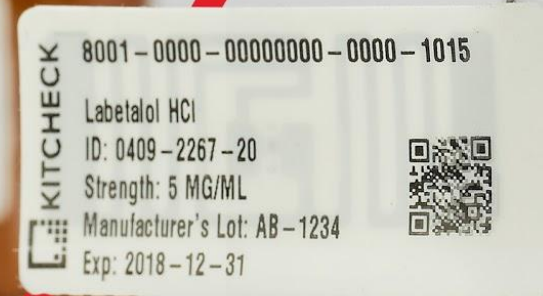


Intelligent Labels for Pharmaceutical & Healthcare

RFID Pharmaceutical & Health
Avery Dennison, Intelligent Labels



We are...

in the business
of unlocking
new possibilities
by opening our
eyes and minds.

an enabler that
threads through
the entire smart
supply chain from
source to home.

intent on
inspiring
and building
(through partnership)
a better tomorrow.

At Avery Dennison



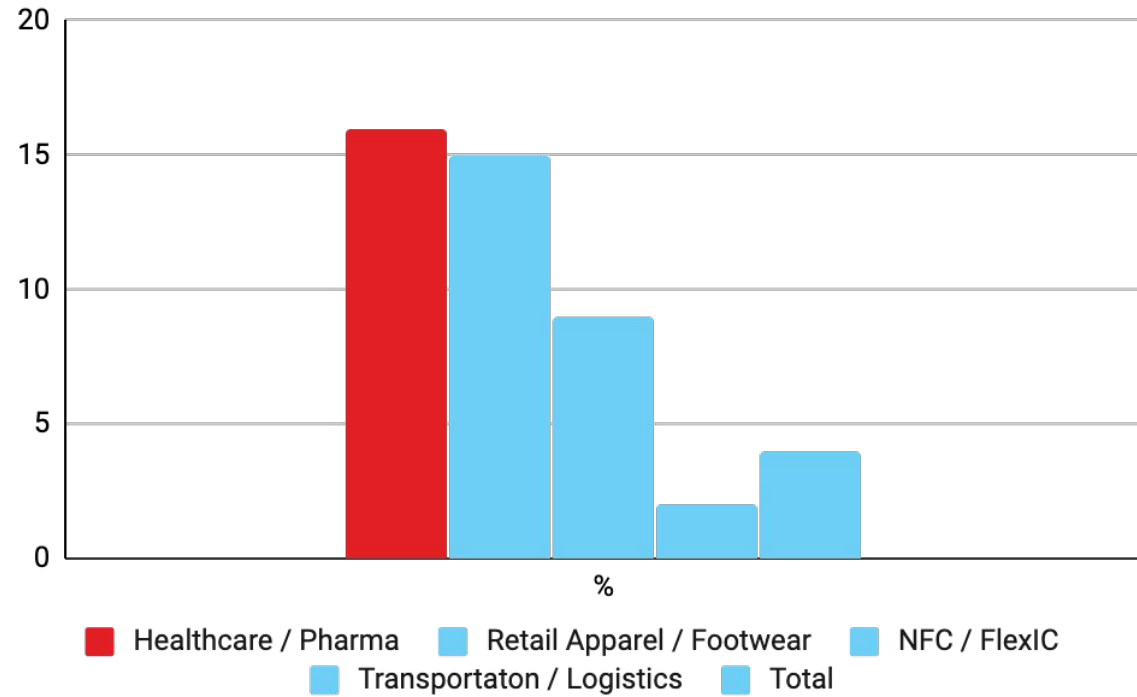
We recognise there are problems in the world where technology has the potential to solve them.

To this end, we consider ourselves a **solutions enabler**. Where we don't believe in technology for the sake of it... but in technology for everyone's sake.

Technology and invention – for us – is about creating new possibilities with a clear sense of purpose. To fix and improve things. To create a world that can be better connected, better harmonized and more in-sync.

Drivers of Global Growth

RFID Tag Growth Rates



The global pharmaceutical label market is expected to reach an estimated **\$6.5 billion** by 2024 with a CAGR of **5.7%** from 2019 to 2024.

Source: PR News Wire

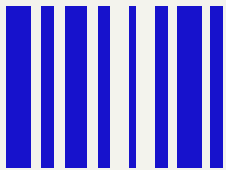


Our Progressive Family

We describe our technology solutions as a progressive family; flexible, adaptive, ever expanding...



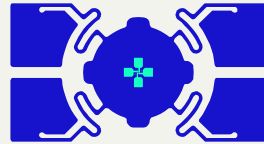
Intelligent Labels



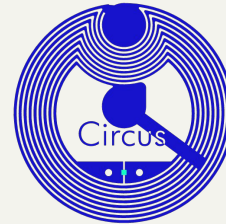
Bar Code



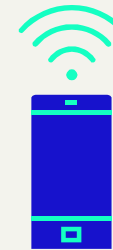
QR Code



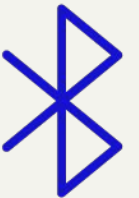
UHF / RAIN RFID



NFC / HF



Printed Electronics



Passive Bluetooth

A progressive family, that will continue to progress...

Why RFID (Radio Frequency Identification)?

RFID technology helps you to better manage inventory, increase efficiencies, and ensure the wellbeing of patients. It enables itemizing and sorting of stock to ensure quality and prevent waste – and helps to save lives by giving clinicians key information.

RFID inlays and technologies provide end-to-end inventory and item tracking solutions for increased accuracy, visibility, and security, starting at the point of manufacture.



Inventory Accuracy

- Faster Stock checks
- Eliminates manual paperwork
- Easy to identify near expiration medication
- Reduces processing time

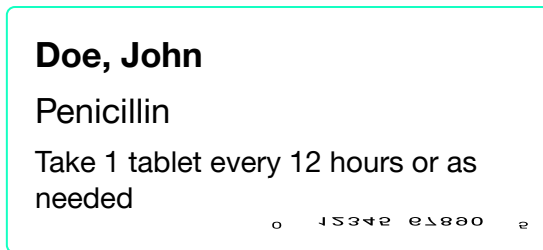


Reduced Medical Errors

- Eliminates human error
- Ensures all medication is correct and safe to use

Label Construction with RFID

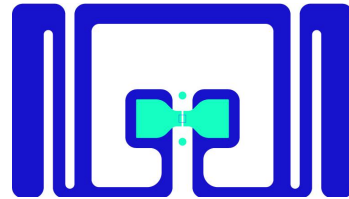
Pharma RX Label



Printed Information
Labels designed for
pharmaceutical applications
3-12 months change protection



RFID Inlay



Antenna
Microchip



Pharma RFID Label



Printed Information
Printed Barcode
Electronically Stores
Unique Number

RFID Inlay = Chip +
Antenna + Carrier

RFID Tag = finished
label encasing the
Chip and Antenna

RFID “inlays” are often deployed as part of a traditional pressure sensitive construction (insertion)

Healthcare Segment - Overview



Primary Care

- Patient Identification
- Medical Equipment - Location, Maintenance Status
- Medical Supplies - Inventory (Consumables, Consignment), Sterilization Status, Expiration Date Management
- OR efficiency
- Vital Sign Management



Pharmaceutical

- Anti-counterfeit
- Expiration Date Management
- Anti-diversion
- Drug Dispensing / Prescription Filling
- Supply Chain Management



Medical Devices

- Authentication
- Life Cycle Management
- Leasing Model



Laboratory / Auxiliary Services

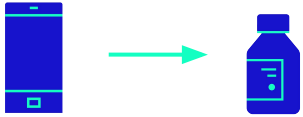
- Specimen/Tissues Tracking
- Lab Equipment - Calibration Management
- Controlled substance & hazardous material
- Blood Bags Management
- Work Order Management
- Insurance Document Security
- Diagnostic Kit Security



Secondary Care

- Patient Identification / location tracking (wandering system)
- Drug Dispensing
- Smart Diapers

Market Trends



E- Pharmacy & Connected Patient

Drivers

- Increased demand for patient convenience
- Rise in number of internet users and aging population
- Interactive designs & patient engagement
- Customization

Opportunity/ Impact on Labels & Packaging

- Enhanced brand protection
- Interactive labels -- RFID
- Inventory Management
- Improving efficiency tracking



Serialization Security

Drivers

- Counterfeit drugs are a \$200 billion yearly industry
- Maintaining identifications for visibility in the supply chain - Drug Supply Chain Security Act (DSCSA)

Opportunity/ Impact on Labels & Packaging

- Smart packaging -- RFID

Supply Chain Transparency

- Drug integrity and patient safety is a top priority for pharmaceutical companies.
 - Manufacturers want to provide the right drug and one that hasn't been tampered with.
- Counterfeit drugs are a \$200 billion market, making them the largest fraudulent market in the world.
 - Roughly 1 million people die annually from taking counterfeit drugs.
- Pharmaceutical companies are also cognizant of their reputation and work hard to protect their brand.
- Lost or stolen medical equipment costs the healthcare industry millions each year
 - Locating equipment quickly can save lives.



Inventory Management: Easy Expiry Date Management

Inventory Accuracy

- Eliminate manual process
- Near perfect accuracy (99.9%)
- 12x faster than manual barcode scanning
- No line of sight required, resulting in fast and regular inventory check

Reduce Medical Error

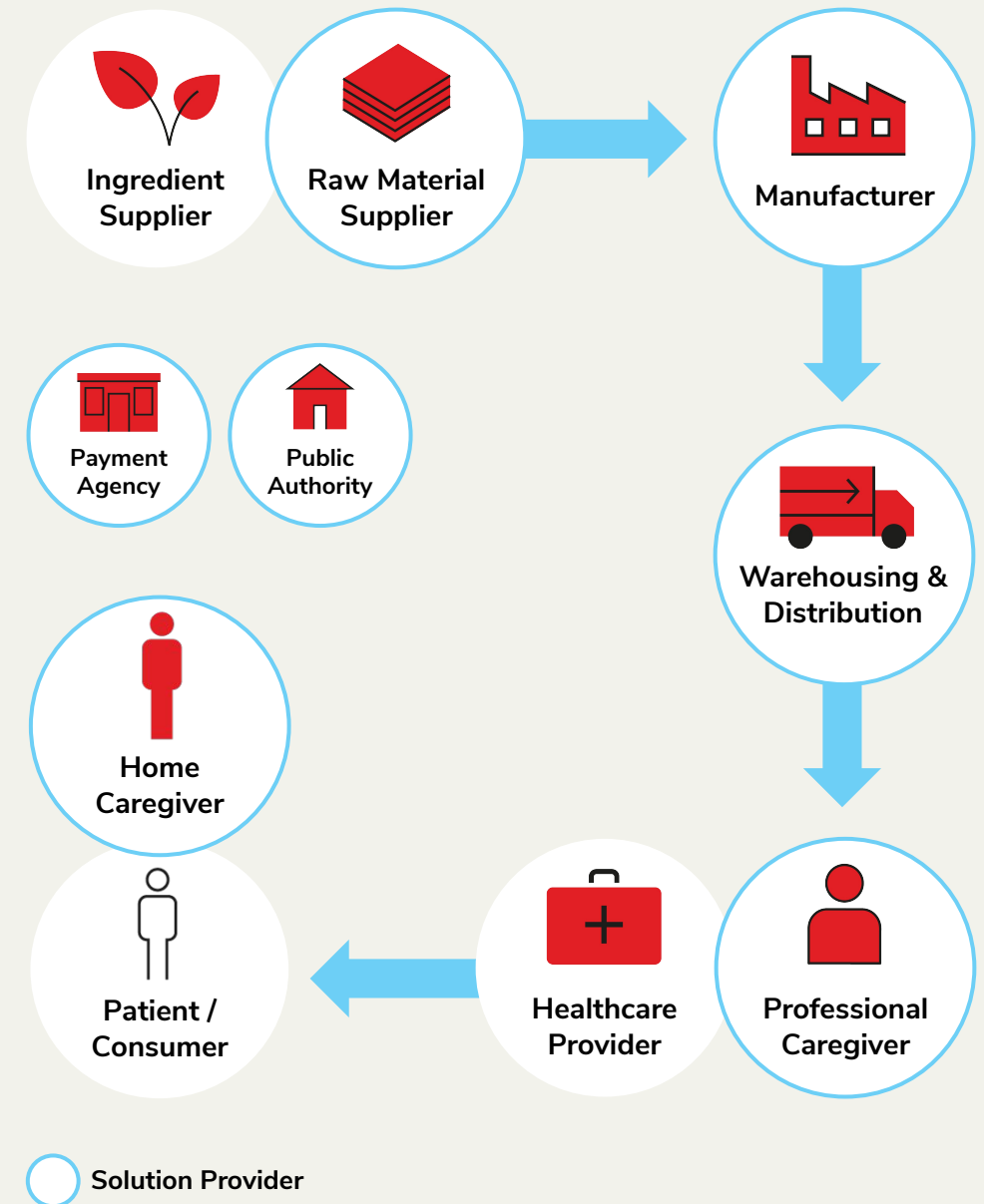
- Hospital pharmacy kits contain 10 – 20% expired or incorrect medications
- Eliminates human error, ensures every medication is correct and not expired improving patient safety



Inventory Management: Recall

- Successful recall management in the pharmaceutical industry requires an efficient process
 - Manually inputting data into a computer or on paper allows for human errors
 - A lack of interconnectivity between systems in the supply chain has hindered the drug recalls
- RFID technology coupled with the DSCSA's planned electronic, interoperable system would improve the recall process
 - Provide visibility throughout the supply chain
 - Identify counterfeit drugs
 - Increased tamper evidence

Source: Pharma Manufacturing



Case Study 1

Healthcare
Supply Chain



Hanmi Pharmaceutical

RFID Maximizes Pharma Supply Chain Efficiency

Hanmi Pharmaceutical is one of the largest pharmaceutical companies in Korea. Since 2009, the company has been demonstrating best practice in the handling of sensitive pharmaceutical products throughout the supply chain. The company uses Avery Dennison and Smartrac RAIN RFID to track more than 60 million products annually.

How it Works

Hanmi has developed its own fully Automated Picking System (APS). Using (in some cases customized) Avery Dennison and Smartrac RFID tags and inlays enable Hanmi to automatically identify items, and to then collect, box and ship those items without the need of human intervention.

In addition the Avery Dennison and Smartrac RFID products enable all companies in the supply chain to improve their inventory management, the use of expiry dates and comply with governmental regulations concerning quality management systems.

Benefits



Increased Efficiency



Monitor Product Movements



Improve Inventory Management



Use of Expiry Dates



100% Reliable



Prevent Theft, Fraud and Counterfeiting



Compliant to Regulated Quality Management Government

Hanmi Pharmaceutical



Case Study 2

Healthcare
Patient Safety



Kit Check™

With the use of RFID, Kit Check brings absolute visibility to medication inventory tracking and automated tray processing in more than 500 hospitals in the U.S. and Canada.

How it Works

- When a used pharmacy kit is placed in the Kit Check scanning station, all RFID tags are scanned and a report is quickly generated. The report contains:
 - Items missing
 - Items expiring
 - Incorrect items
- A technician can then restock the kit and scan it again.
- If everything is correct, the report is marked as complete and the pharmacy kit can be sent back out.

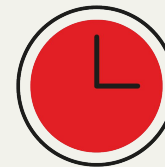
Advantages



100% Accuracy
with RFID Enabled
Automation



Improving
Inventory Count



Reduce Handling
Time



Decreased
Costs

Case Study 3

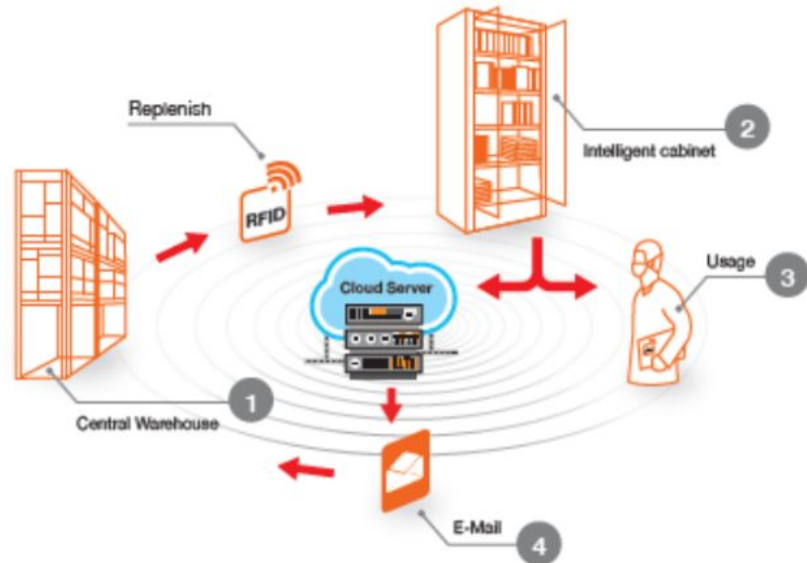
Healthcare
Inventory Management



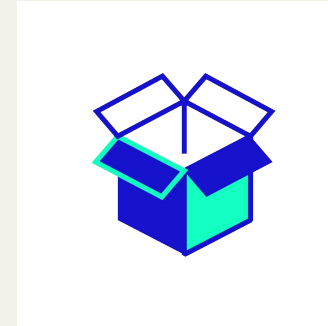
Intelligent Cabinets by Identify RFID

Identify RFID is an intelligent cabinet provider focusing on solutions to help hospitals manage inventory. They work with large pharmaceutical companies that supplies medicine and consumables to hospitals on consignment basis. Due to the high value of inventory located at the hospitals, pharmaceutical companies have an undeniable need to gain full visibility of their inventory at any one time.

How it Works



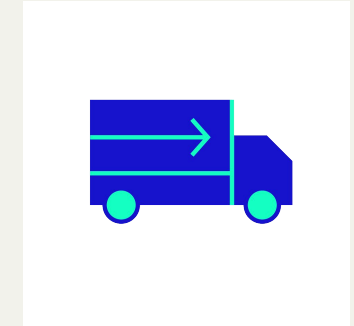
Benefits



Prevent Stock-out



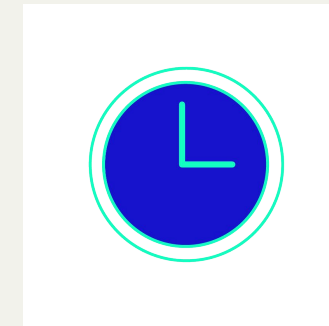
Proactive Alerts on Almost-Expired Items



Dynamic Auto Replenishment



Real Time Inventory Level



Accurate and Timely Billing



Understand Consumption Patterns

Q

&

A