Building & Maintaining Drug Dictionaries: Exploring Two Common Methods

Introduction

When comparing prescription verification methods it is necessary to understand that the manufacturer bar code does not contain the complete expanded 11-digit NDC number. At most it contains the 10-digit FDA assigned NDC number. Also, the bar code usually contains other characters that have nothing to do with the NDC number. This means that some method must be used to get from the manufacturer bar code data to the expanded 11-digit NDC number in order to compare it to the NDC number on file in the patient record. The two conversion methods used to achieve this are the NDC Bar Code Conversion Method and the Database Conversion Method.

A standard off the shelf barcode scanner will not output a drug manufacturer's barcode, containing its 10 digit NDC number, in the format that your pharmacy or medical/hospital information system will commonly accept. The most common format is the expanded 11 digit NDC number. A standard barcode scanner also cannot selectively find and output the lot number and expiration date when they are included in the barcode.

NDC Barcode Conversion Method

This method uses a series of algorithms (rules) to convert the manufacturer bar code and the information it contains into the 11-digit NDC number. This method automatically converts over 99.9 % of all new name brand and generic medications, dosage forms, and container sizes released the moment the manufacturer ships them. This NDC number can then be compared to the patients NDC number bar code printed on the label or receipt to verify the correct selection of the medication.

The NDC Bar Code Conversion Method does not allow a prescription to be verified as correct when the NDC numbers do not match. In the small number of cases where the scanner cannot automatically make the conversion to the NDC number without a software update the scanner will give an error message when that item should be a match.

Typically this method is hand scanner based and allows the user to take their Prescription Verification to where the prescriptions are being prepared. When the user chooses to, the scanner can collect the prescription verification data for archiving and later review. Also, it allows a prescription to be verified as

many times as needed. If someone is interrupted when filling a prescription and had not finished counting the medication and returns to find the manufacturer container gone they retrieve it and just verify the prescription again.

The NDC Bar Code Conversion Method scanner will also warn of "size mismatches". This is when the correct medication has been chosen, however, the container size in the patient record does not match the manufacturer container size the medication is being dispensed from. PC based systems can do this also.

It will stop the user from dispensing two different brands of the correct medication because it requires that the patient and manufacturer container NDC numbers match. This can not be over come as is possible with the database conversion method. This protects against billing and record keeping errors concerning which manufacturer's medication was actually dispensed. The NDC Bar Code Conversion Method requires users to change the medication NDC in the patient prescription record, reprint the patient NDC bar code and scan again to get a positive verification.

Database Conversion Method

The database conversion method requires a record of the raw bar code data, and a "database conversion" to its matching NDC number or Drug Name. This means that a database conversion has to be made for each new name brand and generic medication, dosage form, and container size released and then dispensed from your pharmacy. Theoretically this file will contain 10's of thousands of database conversions to cover all the medications available.

The database conversion method leaves an opening at each pharmacy for the possibility that pharmacy personnel may convert the manufacturer bar code into an incorrect NDC number.
They can also accidentally change a correct conversion into an incorrect conversion.

This means that when a prescription is verified the system can return a medication match when actually it is not a correct match because the database conversion was set up incorrectly.

Although these errors should be caught when a master conversion data file is updated, dispensing errors may occur between updates. This also assumes that there are no errors in the master conversion database, which must

contain tens of thousands of conversions since it will be distributed to a large number of pharmacies with unique inventories.

The database conversion method is typically PC based and does not allow the user to take their Prescription Verification to where prescriptions are being prepared. As pharmacists, we can all think of the busy days when someone had to go by the back sink to fill prescriptions.

Also, this typically only verifies a prescription once. If someone is interrupted after verifying the medication, walks away and then returns to find the manufacturer container gone, when they retrieve it they can not verify the prescription again.

Identifying NDC numbers is a challenging in healthcare environments. *NDC Translator is the bridge between the barcode scanner and your drug database.*

About RxScan

For over 15 years RxScan has been providing healthcare facilities with solutions to assist in the preparation, administration and dispensing of medications. Our products are used across the entire country including Puerto Rico. Over the past several years, we conservatively estimate that several billion medications have been scanned using our solutions.

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