

The concept of using a separate cell to house each individual drug to be dispensed in automatically filling a script has been around for well over a decade. There are, however, a few new wrinkles in how these cells are employed and all pharmacies should be aware of them. The cell concepts all start with emptying drug supply bottles into the cell so that the pills can be dispensed from the cell on demand. The first potential problem is that the wrong drug could be loaded into a cell. Most manufacturers use bar code technology to solve this problem by verifying that the NDC Code on the supply bottle matches the NDC Code on the cell (similar to drug verification for a script).

From here things start to diverge. Some cells contain pill moving mechanisms and counting devices. These cells are capable of counting pills out directly into a customers vial in order to fill a script. Some of the newer designs are capable of counting the pills into an intermediate holding chamber, from which they will be dispensed into the customers vial. This means that multiple scripts can be filled at the same time. However, they must be picked up in series in order to prevent mismatching drug and script. Many designs are now available that use these technologies and have the labeled customers vial brought to the individual cell by a pharmacist or an aid. The cell that has the drug to be dispensed is identified to the user by visual means (usually a blinking LED). All of these cells have one very positive characteristic, they are inherently non-cross contaminating as the drugs go directly from the dedicated cell into the customers vial.

These same technologies are used in larger machines which incorporate robotics to replace the human that handles the vial when picking up the cell outputs. The robotics usually involves a robotic arm, with a pseudo hand attached, which is moved in an x – y motion. The robot moves to a station to pick up an appropriate vial (usually a choice of one of 2 or 3 vials), it then moves to a labeling station for the customers label, and then on to the required cell to pick up the drug. It then delivers the vial of counted drugs to an output station. Verification may be performed to see that the customers label calls for the drug in the cell the robot has selected.

There are robots that use circular motion (azimuth) and y motion to fetch a non-counting cell that contains the required drug (previously loaded from a supply bottle) and deliver it to a common counting station in order to fill a script. This type of unit could be a cross contaminator depending upon the geometry of the counter. If the drugs come into contact with common surfaces cross contamination can be a serious problem. Generic drugs that powder easily can block optical paths to the point that counting mistakes are made.

The parallel cell units eliminate leg work by eliminating the task of walking to the supply bottle storage shelves and back for each script, and replace it with less frequent trips to the same location in order to load the cells as they require. How much time does this save? It varies depending upon; the tablet capacity of the cell (which varies with the size and shape of the pill to be stored), how much inventory of the drug the pharmacy is willing to carry (usually not a factor because only the most popular drugs are done this way), how the drug storage is arranged (if the most popular drugs are stored at or near the pill counting work station very little time can be saved), how often do the cells have to be cleaned and how long does cleaning take, how often do pill jams or mechanical failures take a cell offline and how long to get a spare in and functioning, etc.

The parallel cell units eliminate the pill counting task completely, and most do it with zero cross contamination. The pill counting is accurate if the cells are kept clean and in good working order, and fast enough to satisfy most pharmacies.

The robotic versions eliminate all of the work save for filling the cells, replenishing the vial supply, and restocking the label printer. All of the robotic versions link to the Pharmacy Management System. Alas and alack, they are only economically justifiable for the most popular drugs. The largest units do about 200 drugs, the smaller ones about 60 drugs. Most units have drug exclusions (drugs they can't handle or count). All this and you still need help with the majority of your formulary. Consider pill counting by weight, the new systems are both fast and accurate, and they count everything without the need for any manual counting.