

The most popular method for counting pills in a pharmacy is the good old counting tray with a tongue depressor for pushing the pills. It is inexpensive in terms of the equipment required, but inefficient for counting out a month's supply of drugs that are taken twice or more per day. It is easy to understand and operate, but requires frequent cleaning to avoid cross contamination as the pills being counted are poured directly on to the hard counting surface. Pills are usually poured by hand directly from the supply bottle in sufficient quantity to assure that the desired count can be reached, and then swept into a collection groove in small quantities (like five at a time) until the required count is reached. The counting is done in the operators head.

This OK for small quantities, but becomes tedious for large counts and can lead to errors. It is also slow for large counts. After the proper count has been swept into the groove on the customer's side, the excess pills are swept into a groove on the opposite side and returned to the supply bottle, the customers pills are poured into the customers vial. No extra goodies here.

The next technique in terms of cost and simplicity is to count pills by virtue of their uniformity of pill weight (not to be confused with their dosage weight which only relates to the weigh of the active ingredient). Since the pill ingredients are very well blended (homogenized) the pill weight can be used to control the dosage weight once the pill weight that delivers the required dosage weight is established. So pill weight is used as one of the production controls in manufacturing a drug, and all of the pills in a common production lot are held within tight weight tolerances. This technique most commonly involves the operator pouring the drug directly from the supply bottle into the actual vial that will be delivered to the customer. If the drug has not been weighed before to establish a sample unit weight, the operator will be required to pour a small quantity of pills into the vial (after zeroing out the vial weight), usually 10 or 30 pills, to accurately establish a unit pill weight which is stored in the scales memory cross referenced to the drug's ID number. The operator can then continue pouring to fill the prescription. There is some skill involved in cutting off the pouring operation in such a way that the exact count is reached without any excess pills going into the vial. The better scales provide cutoff feedback information that greatly aids in achieving perfect cutoff (a count down to zero display or, in one case, a non-linear analog cutoff meter display). Some scales use bar code scanners to get information from the label pack. Some perform verification by comparing the bar code label on the supply bottle with one on the label pack. One reminds the operator to keep the unit weight table up to date, and will store the lot number associated with the sample weight.

The other popular technique is to actually count the pills incrementally, usually by using electronic photo-optics. These counters usually send the pills from a hopper down a chute where they are aligned for counting by one or multiple photo-detectors. Some are more sophisticated and use target identification techniques in elaborate software algorithms to count the pills as they rapidly move by on their way to a collection chute. The collection chute usually has a diverting mechanism which activates when the correct count is achieved and sends the excess pills into a separate bin for return to the supply bottle. The customer's pills may go into a bin for collection and dispensing into the customer's vial or directly into the customer's vial. These systems vary greatly in the mechanical and electronic techniques used. They all have a common problem, namely cross contamination. The hoppers and bins are relatively easy to keep clean and can be cleaned frequently. The counting chute can be an absolute bear to clean and very time consuming because it may require a partial disassembly of the machine. As a result many of these machines only get cleaned once a day, which is poor practice in a busy pharmacy where different anti-biotics may be dispensed many times in a single day. Some of these machines offer many features in addition to counting, such as verification, pictures of the drug and its shape, a view of the drug in the customer's vial, and more. They vary in price and capability over a wide range. The counting speed on the better units which use the combination of optics and software is quite high and the cutoff at the correct count is automatic (no operator skill required), with the excess pills going to a separate bin.

The highest throughput rate is hard to determine because it varies with the quantity being counted and how much time is spent cleaning to prevent cross contamination. The best bang for the buck and easiest to maintain and understand is the scale. The scale is fast but requires some operator skills for fast cutoff. The photo-optic units offer the most features, are the most automatic, are fast (but require the most cleaning), are the most expensive.