EFFICIENT PHARMACY

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Automating with intelligence

In a previous article[1] I discussed how to properly design automation into a retail pharmacy without falling into the trap of placing the automation where the manual task is performed. Designing for automation requires that we rethink how automation (physically) fits into our dispensaries and how staff will use it.

Another common trap is automating too many products in one system and treating a robot like a tool, instead of an employee.

Consider a pharmacy where two technicians (Tom and Ron) fill 300 prescriptions a day. The manager wants Tom, the most experienced technician, to fill all prescriptions for the top 200 oral-solid products. Ron will fill all remaining prescriptions.

Tom will be swamped and will find it difficult to keep up, while Ron will have ample time to rest and relax between prescriptions. This allocation will not be conducive to an efficient and productive dispensary.

The manager now decides to purchase a robot. She places the top 200 medications in the robot and the technicians are asked to prepare the balance of the prescriptions.

This allocation of tasks didn't work before the robot was installed and won't be any better now.

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The technicians will spend some of their time waiting for the robot to complete its tasks.[2] A better use of automation is to spread the workload over multiple levels. While not intuitive, it makes sense to place your top 10 products in a lower level[3] of automation.

An alternative is to place the top 10 products in a "Cell" type system (one that counts product but does not place the counted product in a vial or label the vial), the next 150 products in a robot, the following 40 either in the "Cell" system or in a "Cassette" style system. You could then use a "Universal" counter for the balance of the countable medications.

This is a "tiered" approach to automation.

A common error in selecting products to be placed in a robot is choosing the wrong "sort" field.

The drug "movement" report to be analyzed must be sorted by the "number of prescriptions" field, rather than the "quantity of tablets/capsules dispensed."

Dispensing automation saves time in two ways: eliminating walking and reducing the count time. For example, the time it takes to fill a prescription for 30 tablets (in an average pharmacy) would be 18 seconds to retrieve the stock bottle and 16 seconds to return it to stock for a total travel time of 34 seconds, plus 18 seconds to count out the 30 tablets. The more important number when you automate this process is the reduction in travel time.

Count time is important when choosing products with similar prescription volumes. The goal should be to keep the robot as busy as possible without overloading it.

Product	Rx/hour	Cumulative Rx/Hour
1	15	15
2	13	28
3	11	39
4	9	48
5	7	55
....	....	.....
10	4	78
....	....	.....
15	2	93
20	2	103
....	....	.....
39	0.75	120
40	0.75	120.75
....	....	.....
145	0.1	156.75

Consider the accompanying product list and a robot that automates 145 products and has a capacity of 120 prescriptions/hour. In this case, choosing the top 145 products (by prescription volume) will result in a system that is overworked by 37 prescriptions/hour. One way to match the robot's capacity of 120 prescriptions/hour is restricting the number of products counted to the top 39. However a better way to handle this problem is to eliminate enough high volume products so that the capacity of the robot is reached but not exceeded. In the example, this requires elimination of only the top three items.

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REFERENCES

1. "Walk This Way", *CPharmJ* V135, N8, October 2002. Available online from www.wayne.caverly.com
2. For a further discussion of robotic process time please see "Robots for Community Pharmacy" The Efficient Pharmacy 3(3), 2000, available at www.efficientpharmacy.com
3. "Lower level" refers to an automated system that requires more manual involvement.