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# Dose Health Case Study

Change is good.  
Med passing is hard.

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Hammer Residences

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# Introduction

In this case study, we are going to take a good hard look at medication passing issues that have plagued the group home, caregiving field for years

**Change is good.**

**Medication passing the old way is difficult, time-consuming, expensive**

Direct Care Professionals (DSPs) have traditionally prepared and administered all medications provided to the individuals in group homes.

In 2019, Hammer Residences ran a pilot utilizing medication passing technology in eight of its group homes. The goal of the pilot was to see if changing to an automated system for staff to administer medications would result in a decrease in medication errors, staff time, cost, and staff turn-over.

Hammer staff conservatively administer approximately 1,300,000 individual pills a year.

***“Medication errors are preventable events due to inappropriate use of medications” - Mayo Clinic Consumer Health.***

DSPs (the frontline caregivers at the homes) are becoming harder to find. The Minnesota government has estimated there are roughly 9000 open DSP positions statewide.

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Using staff time effectively to ensure the individuals we support are living their lives as independently as possible is a priority for Hammer Residences.

Enter Dose Health and their Dose Flip electronic pill organizer mediset.

Born from the desire to tackle the hidden epidemic of medication non-adherence, Dose Health has created an electronic mediset, the Dose Flip.

The Dose Flip solves problems that plagued electronic medisets in the past:

- Ease of use
- Portability
- Durability
- Back office data
- Alert systems (alarms that ring when the is ready to be taken)
- Connectivity

In April 2019, Alaina Gallagher, Dose Health CMO, approached Sean Henderson, our tech guru at Hammer, with a simple question...

***“Can this be used in your group homes, to decrease med errors, increase independence and save time?”***

With that simple question, the 2019 Hammer Dose Flip pilot was set in motion.

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Before going live with the trial, the Hammer nursing team put together a list of barriers associated with passing medications. These would be our data points to help test our hypothesis.

### List of barriers associated with passing medications

<b>Staff Time</b>	<b>Number of Passes/Day</b>
<b>Medication Errors</b>	<b>Amount of Time/Pass</b>
<b>Cost/Expense (explained later)</b>	<b>Decrease number of Staff</b>
<b>House Distractions</b>	<b>Increase in # of Medications Administered</b>
<b>Training on eMAR</b>	<b>Number of Pills to Punch Out</b>
<b>Documentation of Medication Passing</b>	<b>Seven rights/Checking three times</b>
<b>Consequences of Medication Errors</b>	<b>Safely Completing medication pass with English as your second/third language</b>

Looking at this list of barriers, the Hammer nursing team knew something needed to be done.

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# Challenge

## The old way medications were passed:

- Log in into the computer
- Pull out approximately 1-15 medications
- Match each medication label to the electronic medication record
- Punch each medication into a medication cup
- Triple check the accuracy of medications in the cup
- Administer the medications to the correct person
- Document on the computer and medication cards

Staff members would complete this process for four individuals, three times a day.

This process would take anywhere from 45-75 minutes per medication passing time, which equates to roughly 3-4 hours, of staff time was previously spent administering medication, per day.

***“Punching out each medication from the bubble pack,  
was frustrating and time-consuming”- Hammer  
Program Manager***

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## Medication Errors

Medication errors have always been an issue when passing medications. The chart below reflects the amount of errors at our pilot homes prior to starting Dose Flip.

	House	# of Errors
		Jan-Aug (9 mon)
	Jordan	31
	McGlinch	22
	Merrimac	3
	Queensland	32
	Cedarwood	4
	14th	2
	Wentworth	7
	Jersey	0
Total		101

### Medication reconciliation takes a lot of time and money

#### Medication error process:

- Direct Care Staff find error, complete incident report and notify nursing staff
- Nursing time involved in the medication error process
- Discuss details of medication error with direct care staff
- Calling poison control
- Calling pharmacist to discuss error
- Faxing/Calling prescriber to determine next steps

#### Program Manager (PM) time

- Calling the house to determine staff working at time of med error
- Notifying Program Director
- Notifying family of individual involved with medication error

#### Director time

- Calling in Vulnerable Adult Report as needed
- Discussing details of error with nurse and PM

## Cost of Doing Business

### Current way to pass meds/old way- Across Hammer (160 individuals living in Waiver/ICF homes)

Average medication pass was 10-15 minutes/person/med pass

On average Hammer individuals take medications 3 times/day

Looking at the math- 12.5min/med pass \* 3 med passes/day \* 340 days/year (average billable days at Hammer) = 12750 min/year

12750 min/year ÷ 60 min/hour = 212 staff hours/year/person supported by Hammer spent passing medications

212 hours/year \* \$12.50/hour average DSP wage= \$2650/person/year spent on medication administration

160 Individuals living in Group Homes \* \$2650/year/staff = **\$425000/year spent on medication administration**

Minutes/Person/Pass	12.50
Medication Passes/Day	3
Time to administer/person/day	37.50
Time to admin/person/year	12,750
People with med passes	160
Time to admin/org/day	6,000
Average Billable Days	340
Time to admin/org/year	2,040,000
In Hours	34,000
Hourly Pay of DSPs	\$12.50
Cost/year	\$425,000
Cost/person	\$2,656.25

**\$425000/year  
spent on  
medication  
administration**

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# Solution

## Enter Dose Health and their product Dose Flip

A simple, easy-to-use, data and alert focused mediset that is affordable.

Now with the Dose Flips, the house nurse fills the Dose Flip ahead of time on a bi-weekly to monthly basis. The streamlined medication process is:

- Staff logs in to the computer
- Press Dispense on Dose Flip
- Dose Flip opens to pre-filled medication slot
- Individual pours medications out
- Individual takes medications
- Staff documents on the computer

It now takes staff approximately 10 minutes to administer medications to 4 individuals in a house at each medication passing time, which ends up being roughly 30 minutes of staff time per day.

**Change is good.**

**Medication passing the old way is difficult, time-consuming, expensive**

With this extra time, staff can focus more on each individual.

***We have more free time now to spend with the individuals, versus sitting there punching out pills.” – Hammer Direct Care Professional***

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# Benefit

We started a pilot at 8 of our group homes in September 2019

Below you will see data on the amount of time and money spent on medication passing before and after starting Dose Flip

## Pilot w/o Dose Flip (33 individuals)

Average medication pass was 10-15 minutes/person/med pass

On average Hammer individuals take medications 3 times/day

Math- 12.5min/med pass \* 3 med passes/day \* 340 days/year (average billable days at Hammer) = 12750 min/year

12750 min/year ÷ 60 min/hour = 212 staff hours/year/person spent passing medications

212 hours/year \* \$12.50/hour= \$2650/person/year spent on medication administration

33 Individuals living in Group Homes \* \$2650/year/staff = **\$87450/year spent on medication administration**

Minutes/Person/Pass	12.50
Medication Passes/Day	3.00
Time to administer/person/day	37.50
Time to admin/person/year	12,750.00
People with med passes	33.00
Time to admin/org/day	1,237.50
Average Billable Days	340.00
Time to admin/org/year	420,750.00
In Hours	7,012.50
Hourly Pay of DSPs	\$12.50
Cost/year	\$87,656.25
Cost/person	\$2,656.25

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## Pilot with Dose Flip (33 individuals)

Average medication pass with Dose Flip it takes 1-3 minutes/person/med pass

The majority of Hammer individuals take medications 3 times/day

Math- 2 min/med pass \* 3 med passes/day \* 340 days/year (average billable days at Hammer) = 2040 min/year

2040 min/year ÷ 60 min/hour = 34 hours/year/person spent passing medications

34 hours/year \* \$12.50/hour= \$425/person/year spent on medication administration

33 Individuals living in Group Homes \* \$425/year/staff = **\$14025/year spent on medication administration**

Minutes/Person/Pass	2.00
Med Passes/Day	3.00
Time to administer/person/day	6.00
Time to admin/person/year	2,040.00
People with med passes	33.00
Time to admin/org/day	198.00
Average Billable Days	340.00
Time to admin/org/year	67,320.00
In Hours	1,122.00
Hourly Pay of DSPs	\$12.50
Cost/year	\$14,025.00
Cost/person	\$425.00

**Conclusion: in the pilot we will save \$73425 in staff time passing medications annually**

## Objective and Subjective positives from Dose Flip trial

<i><b>Objective</b></i>	<i><b>Subjective</b></i>
The nurses are reviewing medication regimens more frequently while filling dose flips and see areas where medications can be decreased or adjusted	The nurses are in the homes more often, which is building staff rapport.
Individuals have the option to assist in taking their own meds with training and education with the goal of increased independence	Direct Care Staff morale has increased due to decreased risk of medication error.
Decrease in medication errors	Nurses have stated they feel more comfortable with the fact they know they are filling medisets with administration by direct care staff
\$60/month covered through Waiver	Support Staff/Float Staff have expressed they would like to see Dose Flip in their main house
Billing waiver 0.14hr/day for SNV nursing time to fill Dose Flip machines	DHS support has helped us communicate with the Case Managers to help with approval
Decrease amount of staff time dedicated to medication administration	Help with retention of employees

**We have seen a 50% decrease in medication errors in just the first 4 months of using Dose Flip.**

<b>Before Dose Flip</b>	<b>After Dose Flip</b>
<b>378 med errors in 36 months</b>	<b>22 med errors in 4 months</b>
<b>10.5 med errors/month</b>	<b>5.5 med errors/month</b>

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# Lessons Learned

## Hurdles we encountered along the way

Nurses filling multiple homes in one-day is difficult mentally due to the amount of time and focus it takes to fill Dose Flips. **(solved by splitting up fill days)**

Educating patients families on use of device when sent home on leave **(solved by sending home a cheat sheet on how to use)**

Staff across Hammer open the trays themselves versus waiting for the machine to open. **(solved by using the Dose Flip locking feature)**

Charging ports and having enough ports to plug the chargers in. **(solved by purchasing multi-port chargers)**

Nursing time spent filling devices and managing medication changes. **(solved by filling devices for one month at a time versus weekly, filling multiple extra trays and having staff swap them out weekly.)**

Machines not connecting to cellular due to poor connections. **(Dose Health is working on testing higher powered antennas to improve connectivity)**

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## Results (Recap)

In 2019, Hammer Residences ran a pilot for utilization of medication passing technology in eight of its group homes. The pilot goal was to see if changing to an automated system for staff to administer medications would result in a decrease in medication errors, staff time, cost, and staff turn-over.

**We started this pilot with a goal, can automated medication passing result in a decrease in medication errors, staff time, cost and turn-over**

- Dose has decreased time to pass meds from (average) 12.5min/person/med pass to 2 min/person/pass
- We are decreasing the amount of money spent on medication passing at our pilot homes from \$87000/year to \$14000/year due to reducing staff time.
- Medication errors are decreasing, early numbers are putting the percentage of decrease at 50%
- Decreasing staff turn-over is a longitudinal study and will take more time and a larger sample size to determine efficacy

**If you have any additional question about the Dose Flip pilot at Hammer, feel free to reach out to me.**

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