Impact of a Specialty Pharmacy-Based **Oral Chemotherapy Adherence Program** on Patient Adherence

Background

- When patient's taking a tyrosine kinase inhibitor (TKI) oral therapy, adherence rates are < 80% major molecular responses do not occur and < 90% complete molecular responses do not happen in chronic myeloid leukemia (CMLI).[1-4]
- A study by Hirsch showed that patients with pharmacist interventions had 22.1% higher medication adherence rates.[5]
- Vervloet showed that Real Time Medication Monitoring (RTMM) with receipt of short message service (SMS) reminders vs. patients monitored only vs. no intervention showed a higher adherence rate difference of 10.1% at 1 year and 12.0% after 2 years.[6]
- Huang evaluated the use of SMS reminders vs. no intervention with the SMS group showing an improvement in incidence of missed doses of 32.4%.[7]
- The Glowcap adherence program RTMM electronic tool and consists of a cap on a regular pill bottle and a reminder light/base/cell frequency transmitter. Reminder light flashes orange at time to take medication. If 1 hour elapses and lid isn't opened, a ringtone plays. After the second hour, if lid still isn't opened, a reminder is sent via email/SMS. If the weekly adherence rate is <85%, a call is placed and an intervention is made by the pharmacist.[8]

Objective

To compare adherence rates in patients taking oral chemotherapy medications from Avella Specialty pharmacy using the Glowcap adherence RTMM intervention versus no added intervention.

Methods

- **Design**: Retrospective cohort study using data extracted from Avella Specialty Pharmacy electronic patient charts.
- **Inclusion criteria**: Used one of the study medications for an FDA-approved indication only:
- Tasigna (nilotinib) is approved in adult patients (≥ 18 years old) for CML.
- Gleevec (imatinib) is approved in patients for CML, acute lymphoblastic leukemia (ALL), myelodysplastic syndrome (MDS), aggressive systemic mastocytosis (ASM), hypereosinophilic syndrome (HES), dermafibrosarcoma protuberans (DFSP), and gastrointestinal stromal tumors (GIST)
- Date of service between August 2011 and April 2015.
- **Exclusion criteria**: Patient must not be enrolled in a federal or state government subsidized healthcare program that covers prescription drugs.
- **Data Analysis**: Results included mean medication possession ratio (MPR) as a measure of patient medication adherence.

$$\text{MPR} = \frac{\text{Total days' supply in time period}}{\text{Last fill date} - \text{First fill date} + \text{Last fill Day's supply}}$$

Results

Table 1. Characteristics of Study Participants

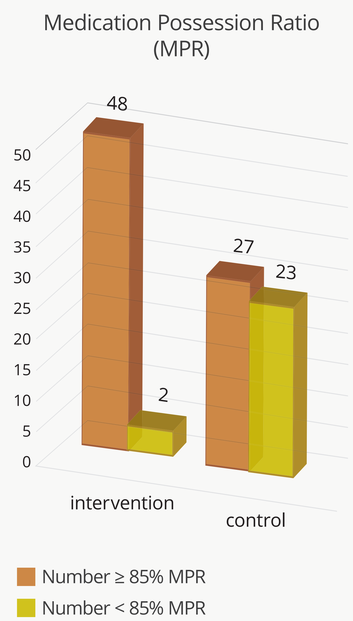
Characteristic	Intervention	Control	p-value
N	50	50	1.00
Age ($\bar{X}$, SD)	63.9 (0.1)	60.5 (3.3)	0.85
Female, Age ($\bar{X}$, SD)	63.8 (0.1)	62.8 (1.6)	0.85
Male, Age ($\bar{X}$, SD)	63.9 (0.0)	58.1 (1.7)	0.85
Gender (N, % male)	25 (50%)	25 (50%)	1.00
Gender (N, % female	25 (50%)	25 (50%)	1.00
Imatinib (N, %)	25 (50%)	25 (50%)	1.00
Nilotinib (N, %)	25 (50%)	25 (50%)	1.00
CML (N, %)	28 (56%)	36 (72%)	0.10
GIST (N, %)	17 (34%)	9 (18%)	0.10
Other (N, %)	5 (10%)	5 (10%)	1.00

Table 2: MPR Comparison Between Groups

Group	*# of Fills*	*Avg # of Fills*	*# of Days*	*Days of Meds*	*Avg MPR*	*F Avg MPR*	*F Avg MPR*
Intervention	1100	22.0	31,415	30,364	0.9665	0.9773	0.9554
Controls	1075	21.5	37,003	29,978	0.8101	0.7803	0.8307

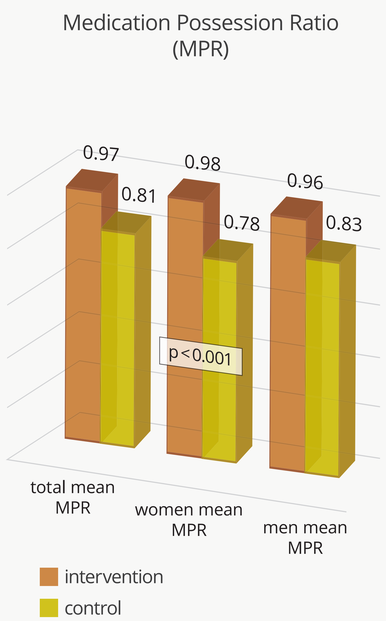
Figure 1 & 2: Adherence Intervention vs Control for Medication Possession Ratios

Figure 1



Yates' chi-square 21.3 ($p < 0.001$) *[Fig 1]*

Figure 2



Yates' chi-square 1.13 ($p < 0.29$) *[Fig 2]*

Conclusions

- A greater percentage of intervention group patients had a higher MPR than the control group (97% vs.81.0%, SD = 0.01 vs 0.04 respectively, $p < 0.29$) as shown in Table 2 and Graph 2.
- In the intervention group only 4% of the group had a mean MPR < 85%, however, 46% of the control group had a mean MPR of < 85% (≥ 85% or < 85%: SD = 32.5 vs. 2.8, respectively, $p < 0.001$).
- Female patients received the most benefit from the intervention with a 20% increase in the mean MPR vs. male patients whose mean MPR increased only 13% with the intervention.
- As pharmacists, we can play an important role in improving clinical outcomes through counseling and providing tools to increase adherence.
- Further research is needed to determine subsets of the population that may benefit more from this intervention.
- Future research measuring clinical markers to determine efficacy would further validate RTMM adherence tools.

References

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Disclosures

Authors of this presentation have the following to disclose: Kathy Russell, Marion Slack, Janet Cooley, Kelly Mathews: nothing to disclose

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