Effect of a "Smart Pill-Bottle" on Medication Adherence in Patients who have Multiple Myeloma and are new to Lenalidomide Therapy: Interim Analysis

Avella

Introduction

- According to the Network for Excellence in Health Innovation (NEHI),   in the United States poor medication adherence alone accounts for $290 billion of the annual $750 billion wasted healthcare spend[1]
- In 2015, majority of the medications that were approved were oral oncolytics[2]
- Medication non-adherence with complex oral oncolytic regimens that patients take from home can lead to ineffective treatments, hospitalizations, and unnecessary disease progression

Objectives

- **Primary**: Determine the difference in adherence rates between the intervention group and control group
- **Secondary**:
  - Evaluate the significance of real-time interventions (Intervention Group Only)
  - Determine the Incremental Cost-Effectiveness Ratio (ICER)
 - Evaluate patient satisfaction and likeliness to use a smart pill-bottle

Methods

- Prospective, randomized, single-blind, controlled study
- The intervention group (N=20) received a pill bottle with activated lights, noise alerts, and text message reminders plus pharmacist follow up for weekly adherence rates <85%
- The control group (N=20) received an identical pill bottle with all alerts deactivated and no additional pharmacist follow up
- Using real-time data from individual pill bottles adherence rates between the intervention group and control group were compared using Mann-Whitney U test

Patient inclusion Criteria:

- New to lenalidomide therapy
- Have access to a cellular phone
- Able to unscrew a child safety cap
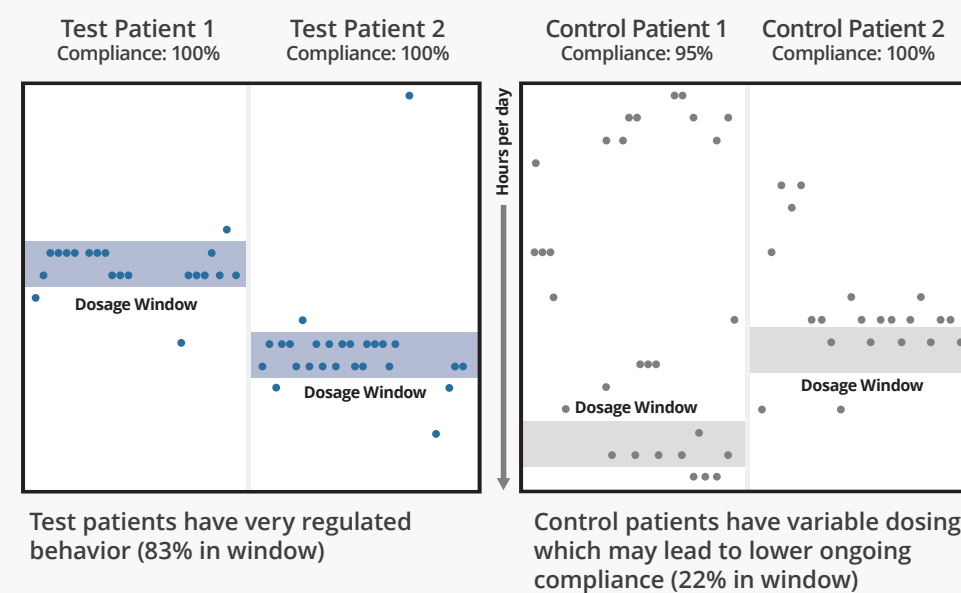- Able to transfer medications from one pill bottle to another

Results

Adherence rate of lenalidomide patients (median)

Intervention Arm (n = 16): 100
Control Arm (n = 16): 90.75
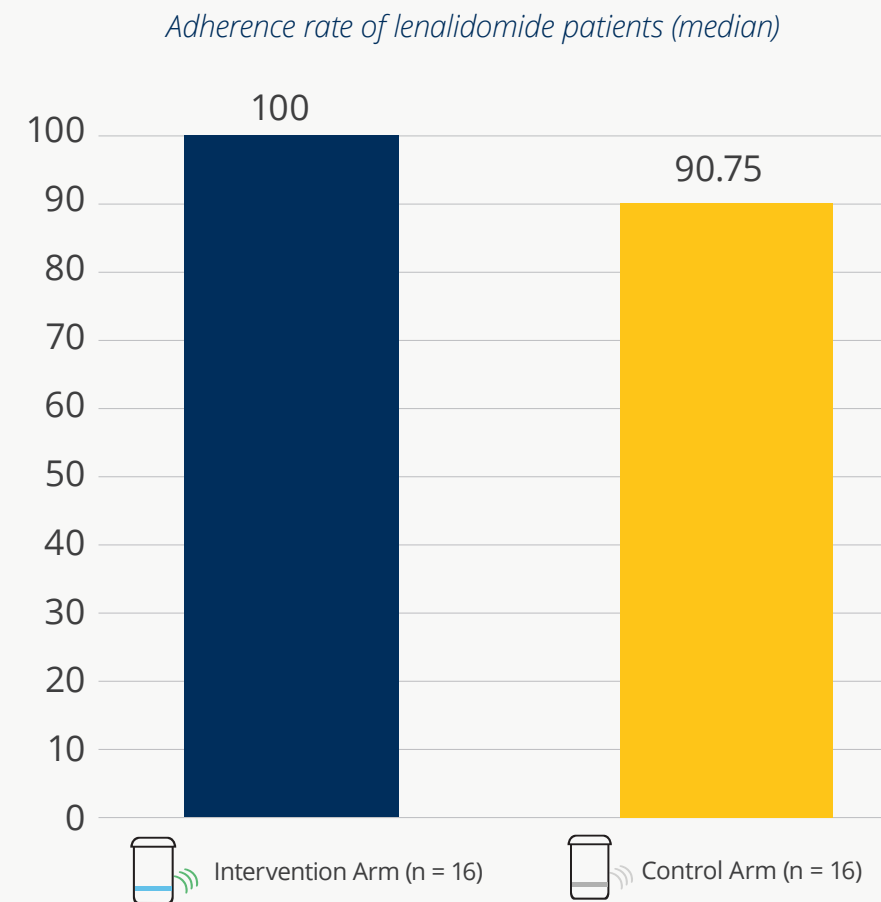
Reasons for Discontinuation:

- Lost signal (1)
- Inappropriate use (2)
- Every other day dosing (1)
- Transferred out (1)
- Deceased (1)
- Held during first cycle (2)

Daily dosage timing for patients with high compliance (>95%)

Test Patient 1
Compliance: 100%

Test Patient 2
Compliance: 100%

Control Patient 1
Compliance: 95%

Control Patient 2
Compliance: 100%

Hours per day

Dosage Window

Test patients have very regulated behavior (83% in window)

Control patients have variable dosing, which may lead to lower ongoing compliance (22% in window)

Secondary Results

- Significance of real-time interventions
  - Intervention Group – 1 intervention made for one patient
  - Control Group – 10 potential interventions for seven different patients
- ICER ~ $11,000 per year to gain one adherent patient
  - Estimated cost per year per patient - $1,000
  - Improved adherence = 9.25%

Implications

- Smart pill-bottle significantly improved patients adherence
- Longer use may lead to improved medication persistence and clinical outcomes
- Very expensive; viable option in select patient population
- Positive feedback from intervention group

References

1. Viswanathan M, Golin CE, Jones CD. Interventions to improve adherence to self-administered medications for chronic diseases in the United States: a systematic review. Ann Intern Med. 2012 Dec 4;157(11):785-95
2. http://www.centerwatch.com/drug-information/fda-approved-drugs/year/2015

Disclosures / Contact

Authors of this presentation have the following to disclose: Joseph Mauro, Kelly Mathews, Eric Sredzinski: Nothing to Disclose

For more information please contact:
Joseph A. Mauro, PharmD
Avella Specialty Pharmacy
joseph.mauro@avella.com
877-546-5779