

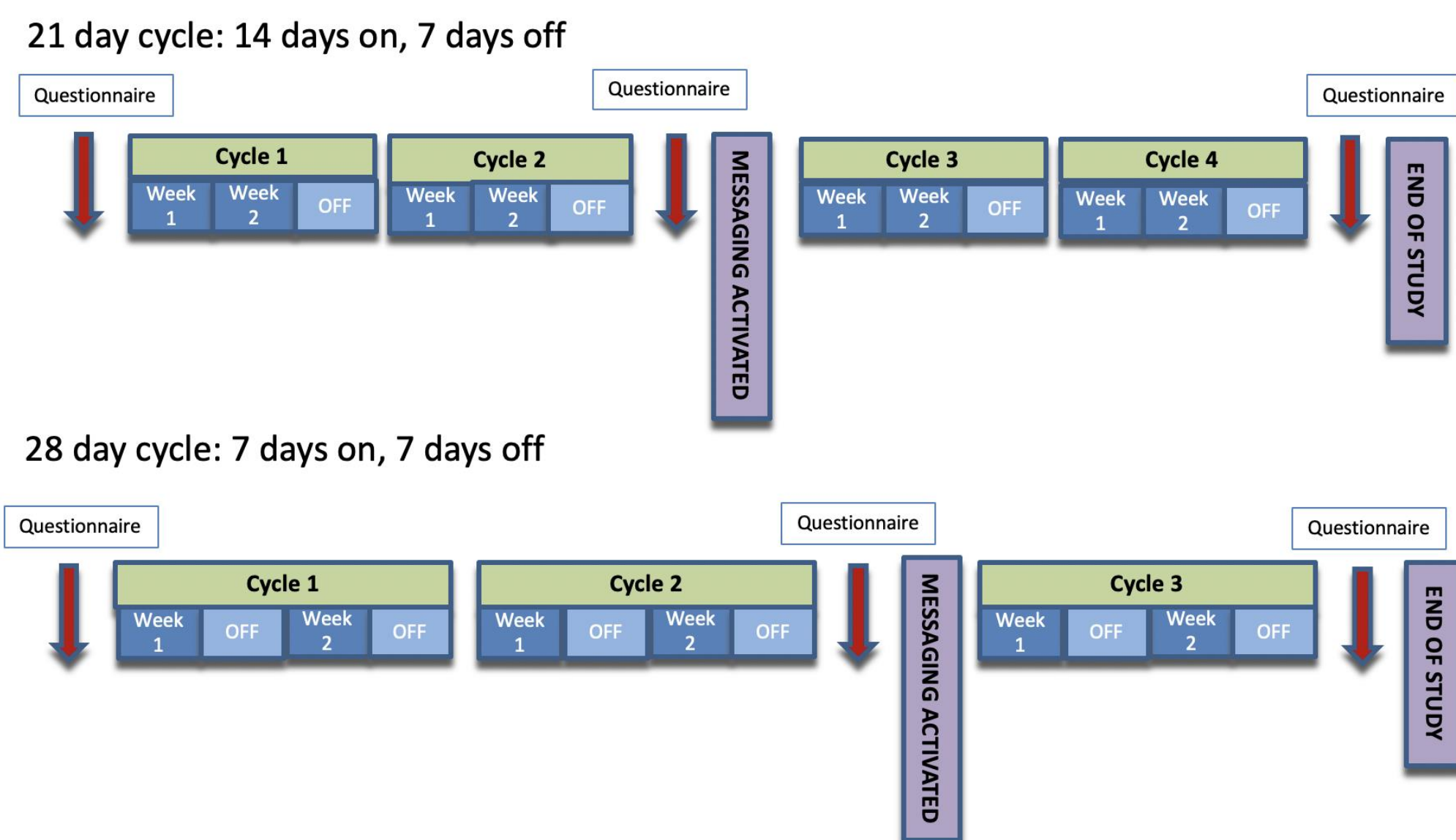
Background

- Non-adherence is an important issue in cancer care
- Accurately measuring adherence is challenging
- Nomi “smart” bottles record real-time medication taking behavior via changes in weight of bottle contents
- Nomi sends adherence data to providers via an interactive dashboard, and can send text messages to patients in cases of non-adherence
- **Aim:** Assess the functionality of Nomi in monitoring capecitabine adherence & intervening with text notifications

Methods

- N = 28 patients were prescribed capecitabine for breast, colorectal, pancreatic, or biliary cancer, with planned duration of therapy ≥ 12 weeks, 21- or 28-day cycles
- Patients were enrolled via Outpatient Pharmacy Services at Yale New Haven Health, where capecitabine was filled
- Pre-intervention: cycles 1 + 2, patients were monitored only
- Post-intervention: cycles 3 +/- 4, text messaging enabled
- Adherence = # correct doses / total prescribed doses
- Conversion: patient takes dose after text message reminder

Study Schema



Results

Patient demographics

N total	28
Female N (%)	20 (71)
Age Mean (SD)	60.6 (13.9)
Income Mean (SD)	\$73.0 k (\$28.4 k)
Malignancy N (%)	
Breast	15 (54)
Colon	9 (32)
Cholangio	4 (14)
Cycle N (%)	
21 day	11 (39)
28 day	14 (50)
Switched	3 (11)
Stage N (%)	
Metastatic	24 (86)
Localized (adjuvant)	4 (14)
Race N (%)	
Caucasian	23 (82)
Black	4 (14)
Not reported	1 (4)
Ethnicity N (%)	
Non-Hispanic	27 (96)
Not reported	1 (4)

Analyses

- We identified three categories/phenotypes of patients by examining patterns in % change in adherence from pre to post-intervention:
 - category 1 (>8%)
 - category 2 (-8% to 8%)
 - category 3 (<-8%)

Category 1

- Most demonstrated a conversion rate of >35%
- Tended to live in regions with the lowest average household income (Mean = \$58.9 k)

Category 3

- Tended to live in regions with the highest average household income (Mean = \$91.0 k)

Income and Adherence by Category

		Category 1	Category 2	Category 3	Pre-Only
PRE	N	5	15	4	4
	Income (\$)	58.9k (29.7k)	77.5 (25.9)	91.0k (34.1k)	57.0k (23.3k)
	Post-Pre Adherence (%)	16 (12)	-1 (4)	-12 (3)	75 (14)
	Total Overall Adherence (%)	74 (12)	89 (9)	83 (12)	75 (12)
	Total Adherence (%)	72 (14)	93 (6)	95 (3)	79 (9)
POST	AM Adherence (%)	72 (16)	92 (8)	93 (5)	72 (15)
	PM Adherence (%)	73 (14)	95 (6)	97 (3)	77 (13)
	Weekday Adherence (%)	71 (17)	93 (7)	96 (2)	72 (11)
	Weekend Adherence (%)	75 (9)	95 (5)	93 (7)	N/A
	Total Adherence (%)	89 (4)	92 (5)	83 (4)	N/A
POST	AM Adherence (%)	91 (3)	92 (7)	83 (9)	N/A
	PM Adherence (%)	87 (6)	92 (6)	84 (6)	N/A
	Weekday Adherence (%)	91 (6)	91 (7)	91 (5)	N/A
	Weekend Adherence (%)	81 (15)	96 (6)	64 (22)	N/A

Patient feedback/Technical considerations

- 60% of feedback survey respondents indicated desire to continue using Nomi
- 80% indicated that they would recommend it to others
- Bottle was difficult to open and close for some participants
- Incorrect timing of texts after shift in cycle/dosage change
- Bottle connectivity was poor in some regions
- Bottle ran out of battery for some patients; replacement needed to be sent

Limitations

- Confounds of hospitalizations, disease progression, medication toxicity.
- Technical difficulties with bottle
- Difficult to elicit feedback from patients during the study

Conclusions

- Nomi can monitor and intervene in real-time for patients taking capecitabine
- Adherence overall was high, and some patients appeared to benefit more from text message interventions
- Future work should focus on patients deemed high risk for non-adherence (“Category 1” patients)

Pre vs. Post Adherence by Patient

