

Implementation of electronic patient-reported outcomes for symptom monitoring in a large multi-site community oncology practice: Dancing the Texas Two-Step through a global pandemic.

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Background

Among patients receiving chemotherapy, symptomatic adverse event monitoring with electronic patient-reported outcomes (ePRO) is associated with improved clinical outcomes, satisfaction, and compliance with therapy. ePROs have been shown to improve duration of cancer therapy and overall survival in the PRO-CTCAE trial at a large academic cancer center. (Basch E, 2017). Standard approaches for ePRO implementation are not established warranting evaluation in community cancer practices.

Community oncology clinics pose unique opportunities for patient symptom management. They are usually smaller clinics with 1-10 doctors in a location close to patients' homes. Their staffing models, patient workflow, and infrastructure support are different from large academic cancer centers.

This Texas Two-Step study, a two-part (hybrid) implementation-effectiveness evaluation of Navigating Cancer's ePRO digital monitoring tool with a stepped-wedge design, will assess both patient and organization-level outcomes at Texas Oncology, a large community oncology practice, according to the RE-AIM framework -reach, effectiveness, adoption, implementation, and maintenance. (Glasgow R.E., 2019). As step 1 of the Texas Two-Step study, we describe the implementation findings.

TAKEAWAYS:

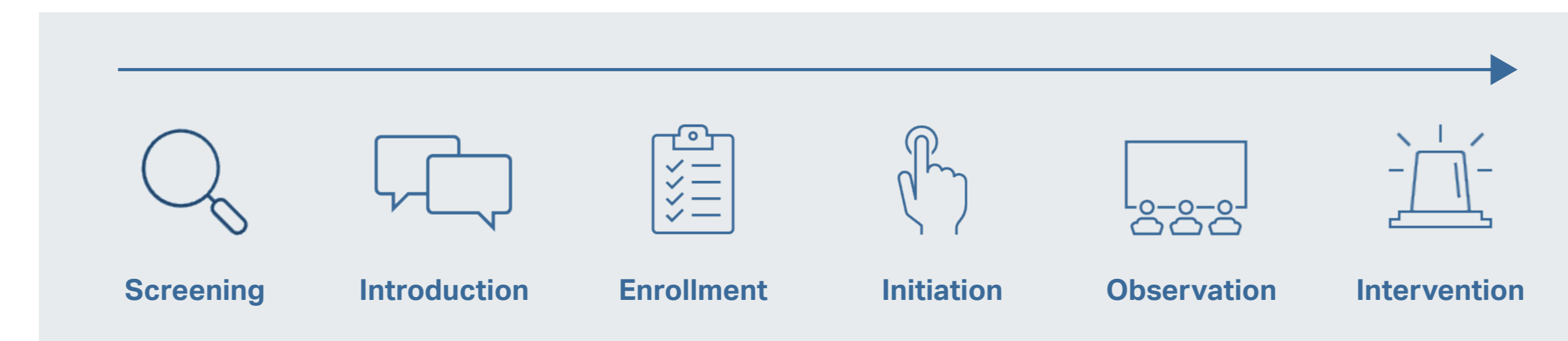
Although the COVID-19 pandemic introduced barriers to implementation, it also accelerated the need for modernization of communication between patients and clinicians.

Utilization of real-time clinical informatics and digital healthcare tools can help provide just-in-time symptom management.

Implementation of ePROs for symptom monitoring across a large multi-site statewide cancer practice is feasible and our findings support the inclusion of ePROs in routine clinical care.

For more information on this research: NavigatingCancer.com/Publications

Methods



- Patient eligibility:** Patients initiating any new systemic therapy for a cancer diagnosis were invited to enroll in the Navigating Cancer ePRO platform.
- Patient training:** Introduction to the digital monitoring program was provided by the clinical team with educational materials. Additional guidance was provided through electronic interface once patient authorized enrollment.
- Organizational training:** Navigating Cancer's Implementation specialists worked with organizational operational leaders to develop a training and rollout plan, who then managed education to clinical teams at each site preceding rollout. All training was provided through recorded virtual sessions due to the COVID-19 pandemic and made available to staff for future use.
- Implementation:** Clustered stepped-wedge design (see above) of 7 Texas regions, with 1 pilot site to implement 210 sites of services. See Figure 1.

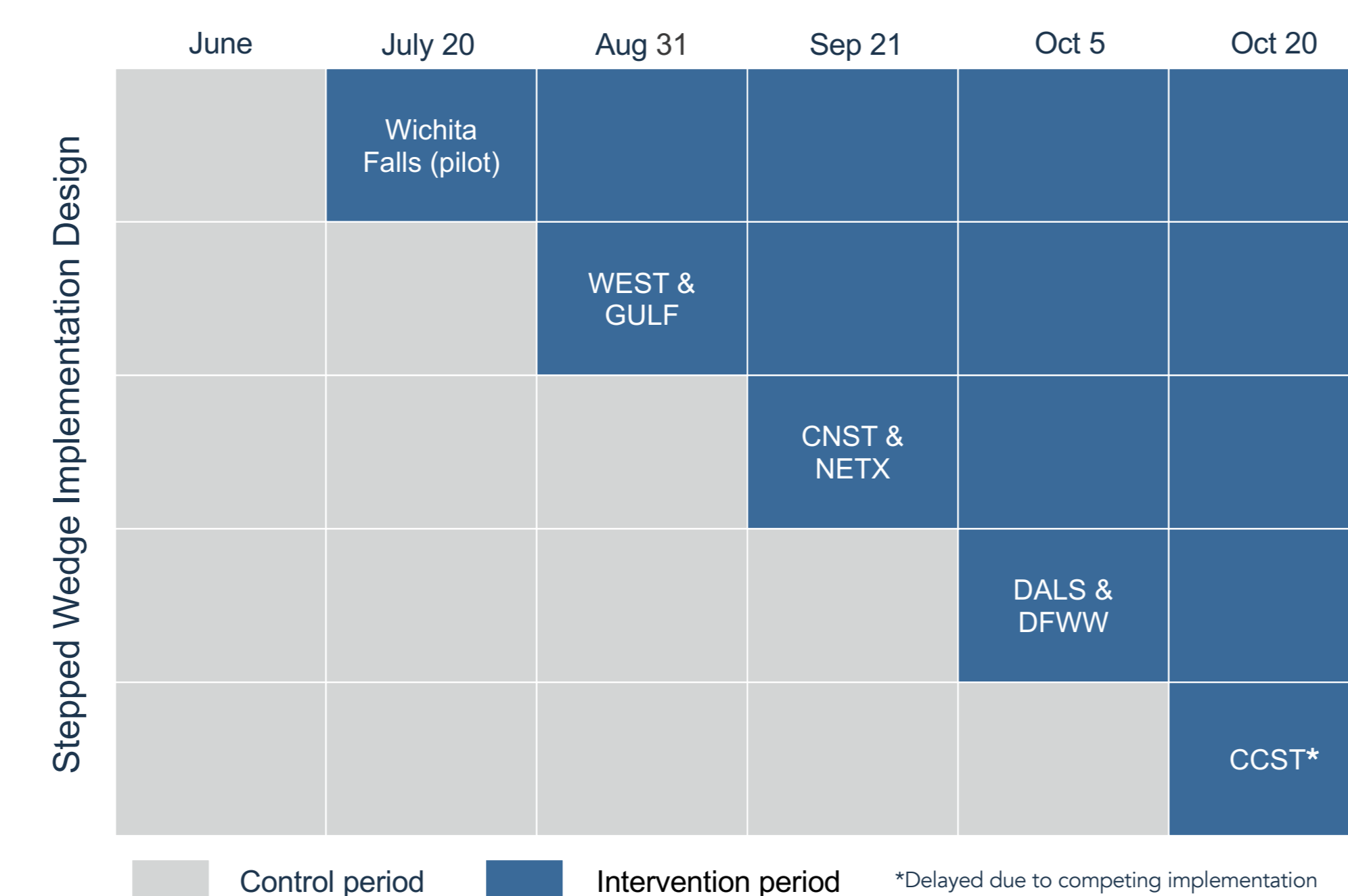


Figure 1: Stepped-Wedge Implementation

Health Tracker: PRO Instrument

Modified PRO-CTCAE symptom instrument includes 14 of the most common cancer-related symptoms.

Patient view

Clinic view

- Self-reporting via text messaging (SMS) or email with the option for manual collection by nursing staff for patients without technology access.
- Moderate-severe symptoms trigger a real-time notification to nursing staff for immediate intervention.

Results

- Majority of patients were >65 years of age, 73% were White and 75% non-Hispanic/Latino. See Table 1.
- 73% (2534) of patients were adherent with the platform Highest participation rates in the central and west regions (see above figure). See Figure 2.
- SMS (89%) was strongly preferred over email (6%) or clinic collect (5%). SMS was also associated with the highest participation rate, 77% vs email (54%) or clinic collect (45%). See Figure 3.
- Compliance for participating patients remained consistent overall, but in week 10, compliance fell from 73% to 52%. See Figure 4.
- Higher compliance for patients on oral therapy (73%) vs. intravenous therapy (61%).

Patient Cohort	All Enrolled Patients						
Region	Total	West	Gulf	CNST	NETX	DALS	DFWW
Providers (Physicians/APPs)	436 / 126	46 / 12	49 / 9	75 / 39	61 / 18	86 / 20	86 / 20
Total Patients (n)	4375	756	487	1242	907	470	513
Age							
Median (range) age, years	65	65	65	65	66	62	64
Sex							
Female	2681 (61.3)	451 (59.7)	324 (66.5)	324 (66.5)	547 (60.3)	300 (63.8)	314 (61.2)
Race, n (%)							
White	3176 (72.6)	674 (89.2)	268 (55.0)	956 (77.0)	607 (66.9)	302 (64.3)	369 (72.0)
Black/African American	285 (6.5)	23 (3.0)	56 (11.5)	42 (3.4)	51 (5.7)	58 (12.3)	55 (10.7)
Asian	72 (1.6)	1 (0.1)	13 (2.7)	13 (1.0)	15 (1.6)	19 (4.0)	11 (2.1)
Ethnicity, n (%)							
Non-Hispanic/Latino	3264 (74.6)	527 (69.7)	385 (79.1)	739 (59.5)	770 (84.9)	396 (84.2)	447 (87.1)
Hispanic/Latino	758 (17.3)	218 (28.8)	45 (9.2)	370 (29.8)	27 (3.0)	53 (11.3)	45 (8.8)
Location, n (%)							
Distance to clinic ≥ 20 mi	1060 (24.2)	259 (34.3)	114 (23.4)	229 (18.4)	237 (26.1)	144 (30.6)	77 (15.0)
Marital Status, n (%)							
Married/Partnered	2023 (46.2)	394 (52.1)	172 (35.3)	627 (50.5)	394 (43.4)	228 (48.5)	208 (40.5)
Single	516 (11.8)	92 (12.2)	58 (11.9)	156 (12.6)	89 (9.8)	55 (11.7)	66 (12.9)
Therapy Type, n (%)							
IV	3233 (73.9)	549 (72.6)	378 (77.6)	878 (70.7)	623 (68.7)	412 (87.7)	393 (76.6)
Oral	953 (21.8)	172 (22.8)	81 (16.6)	306 (24.6)	239 (26.4)	50 (10.6)	105 (20.5)
IV + Oral	189 (4.3)	35 (4.6)	28 (5.8)	58 (4.7)	45 (4.9)	8 (1.7)	15 (2.9)

Table 1: Baseline characteristics of enrolled patients

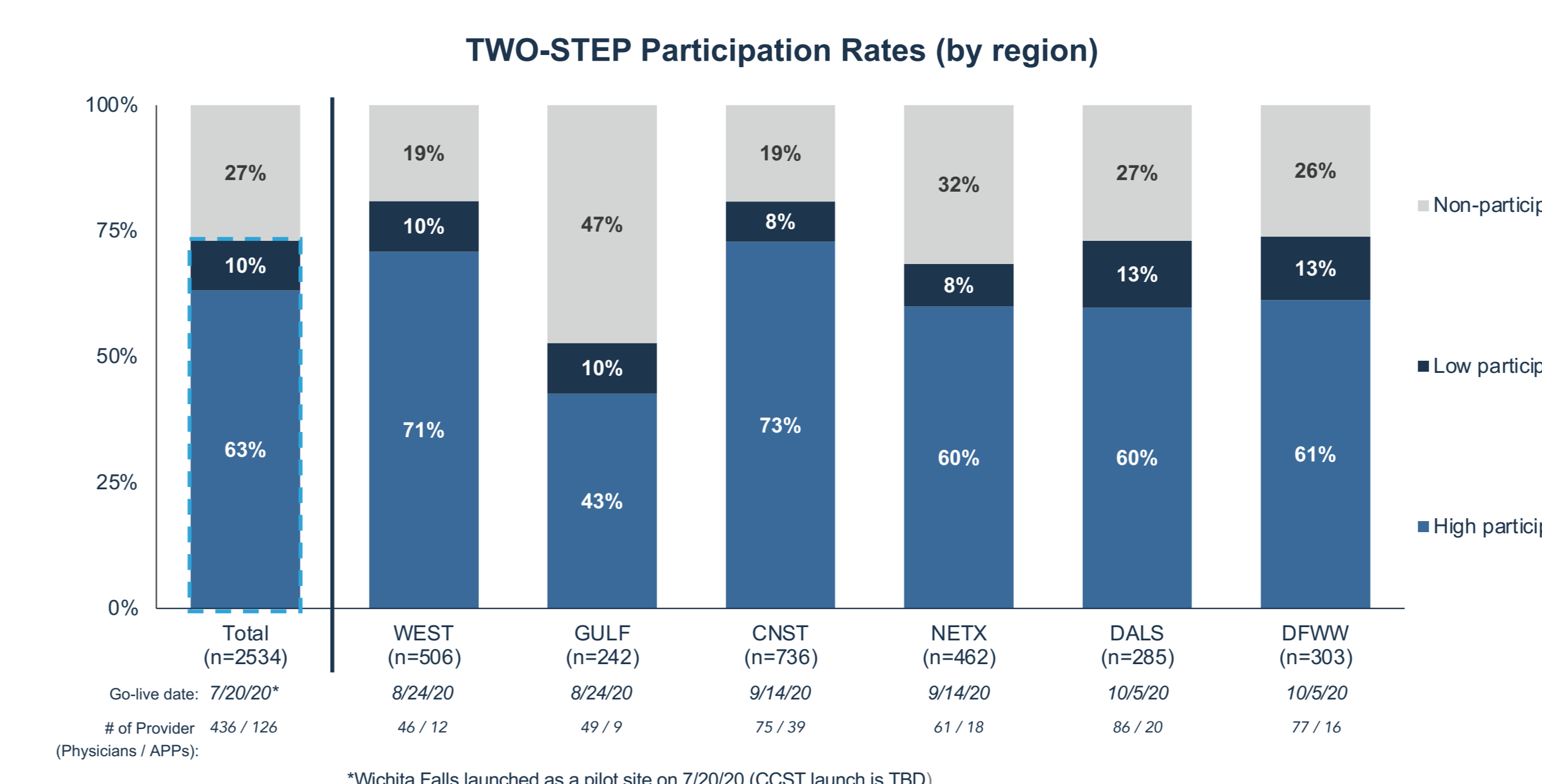


Figure 2: Patient participation by region (# of active patients completing ≥ 1 check-in / # of active patients)

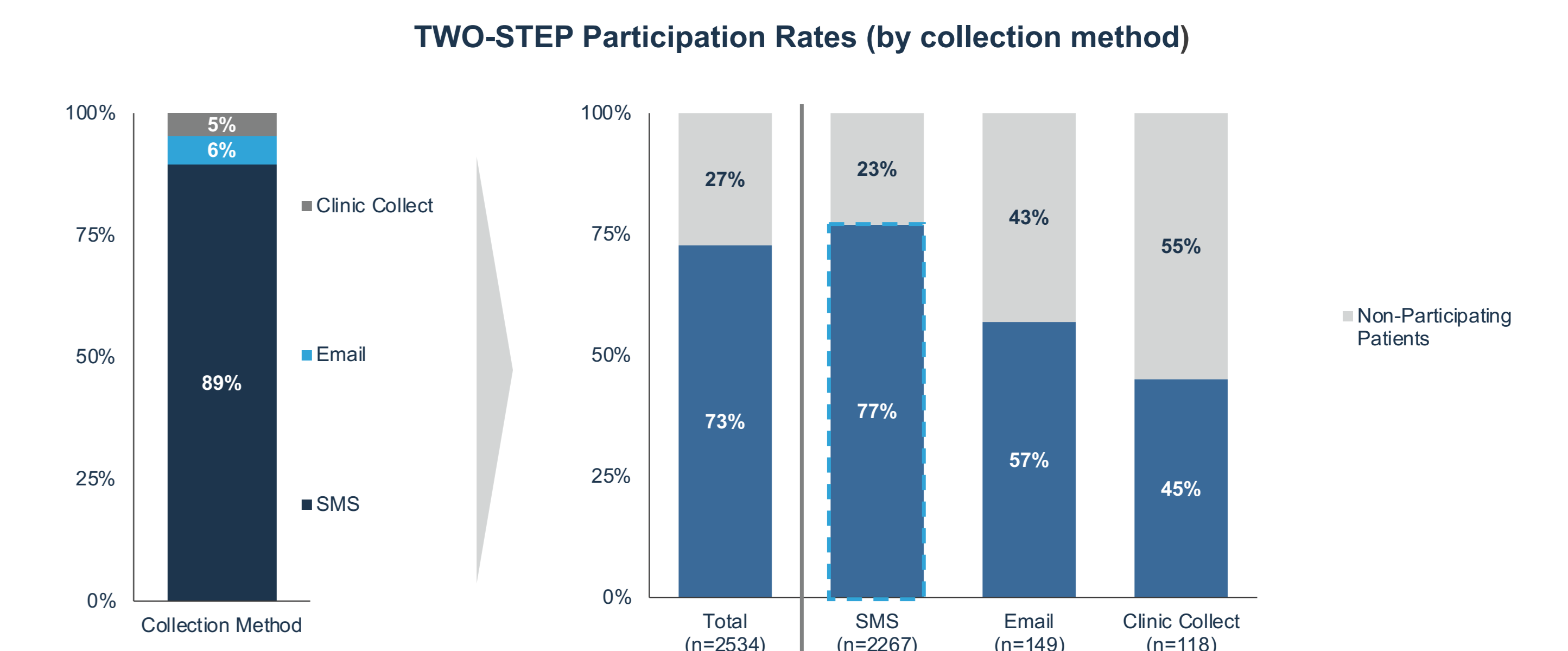


Figure 3: Participation rate by collection method

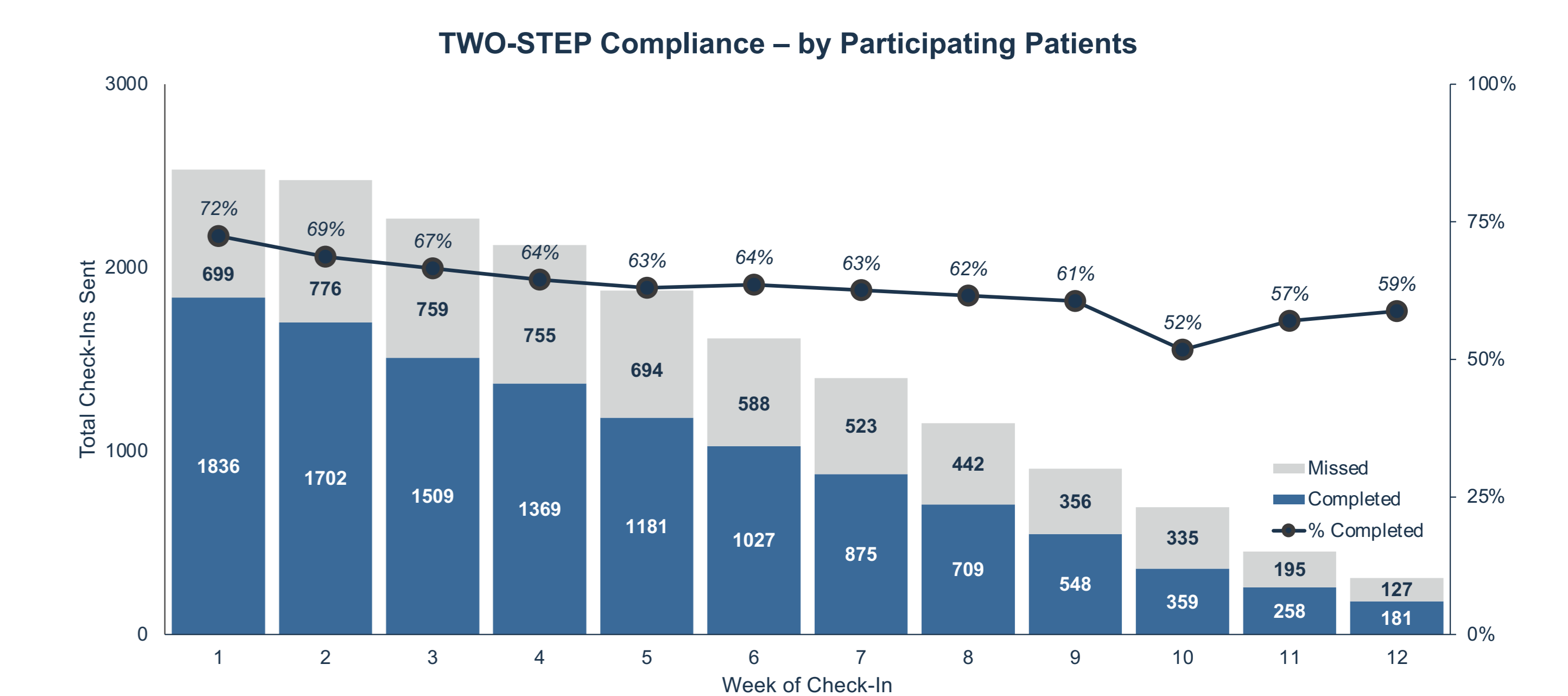


Figure 4: Compliance among participating patients through week 12 (total # of check-ins completed / # total # of check-ins sent)

Discussion

Implementation Facilitators & Barriers

- Facilitators:** patient and staff engagement, clinician reinforcement on benefits of digital monitoring program, ease of use with tool.
- Barriers:** absence of reminder text/email prompts for non-reporting patients, staff workflow changes.

COVID-19 Challenges

- Significant alteration to practice workflows and clinician burnout.
- Lack of caregiver presence.
- New Stressors of anxiety, depression, and other mental health concerns.

Opportunities

- Further analysis within different populations of cancer patients to further optimize the program.
- Enhancements to symptom alerting algorithms to improve patient engagement and decrease fatigue among staff.
- Planned effectiveness analysis (part 2 of this hybrid evaluation) to evaluate outcomes of healthcare resource utilization, time on therapy, and symptom control.