#11168 Effect of real-time data-driven physician engagement on appropriate precision oncology testing

Diaceutics
Better Testing, Better Treatment®

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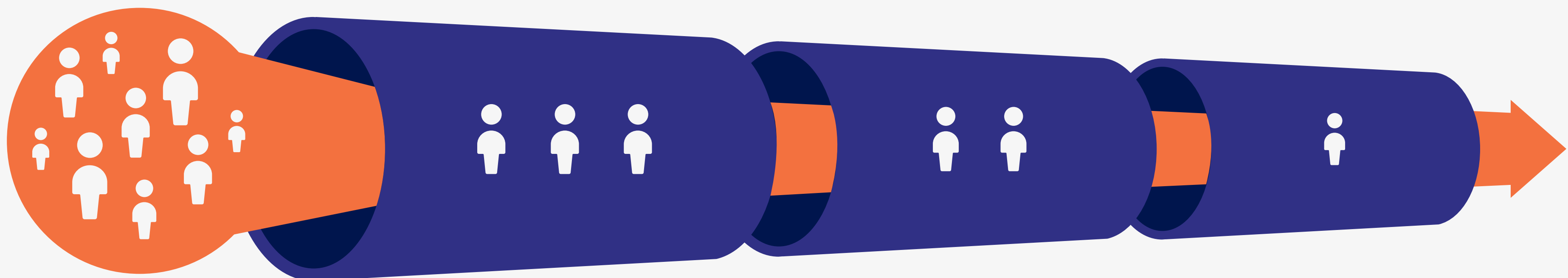
Background

Precision medicine is a paradigm shift in healthcare: In 2023, 24% of all FDA approvals are precision medicines, with 67% of new approvals relying on companion testing or companion diagnostics prior to clinical use.

However, a recent publication indicates that approximately 64% of potentially eligible patients could be lost due to various clinical practice gaps along the patient journey (Sadik et al., JCO 2022, Figure 1).

One significant factor contributing to missed treatment opportunities is the low prevalence of biomarker testing, possibly linked to inadequate physician awareness.

Figure 1: Impact of clinical practice gaps on the delivery of precision oncology for aNSCLC

(Sadik et al., Impact of Clinical Practice gaps on the implementation of personalized medicine in advanced non–small-cell lung cancer, JCO, 2022)

Testing Practice Gaps	1	2	3	4	5	6	7
	Biopsy referral	Biospecimen collection	Biospecimen evaluation	Biomarker test ordering	Biomarker test performance	Biomarker test result reporting	Treatment decision
Patient leakage	6.6%	14.6%	1.7%	**18.1%**	18.4%	4%	**29.2%**

Potential Influencer Physician

The increasingly advanced machine learning (ML) and natural language processing (NLP)-based ability to label, analyze, and segment data can be utilized to monitor and influence testing behavior in real-time.

We hypothesize that a real-time data-driven physician-targeted digital engagement can increase biomarker testing rates. This, in turn could lead to improved identification of patients who could benefit from precision therapies.

Methods

- **Data collection:** Unstructured real-world, real-time biomarker testing reports were gathered from 494 US labs through the DXRX platform.
- **Data processing:** These testing reports underwent curation, labeling, and extraction using ML and NLP technologies, enabling data analysis to reveal physician testing behavior.
- **Physician selection:** We analyzed the processed data to identify physicians exhibiting suboptimal testing behavior, defined as those who haven't requisitioned the selected novel biomarker as part of diagnostic workups.
- **Digital engagement:** Personalized digital engagement was provided to selected physicians. The goal of this engagement was to raise clinical awareness towards testing of the novel biomarker.
- **Outcome assessment:** Subsequent testing behavior was re-evaluated using lab reports collected 26 weeks after the initial engagement.
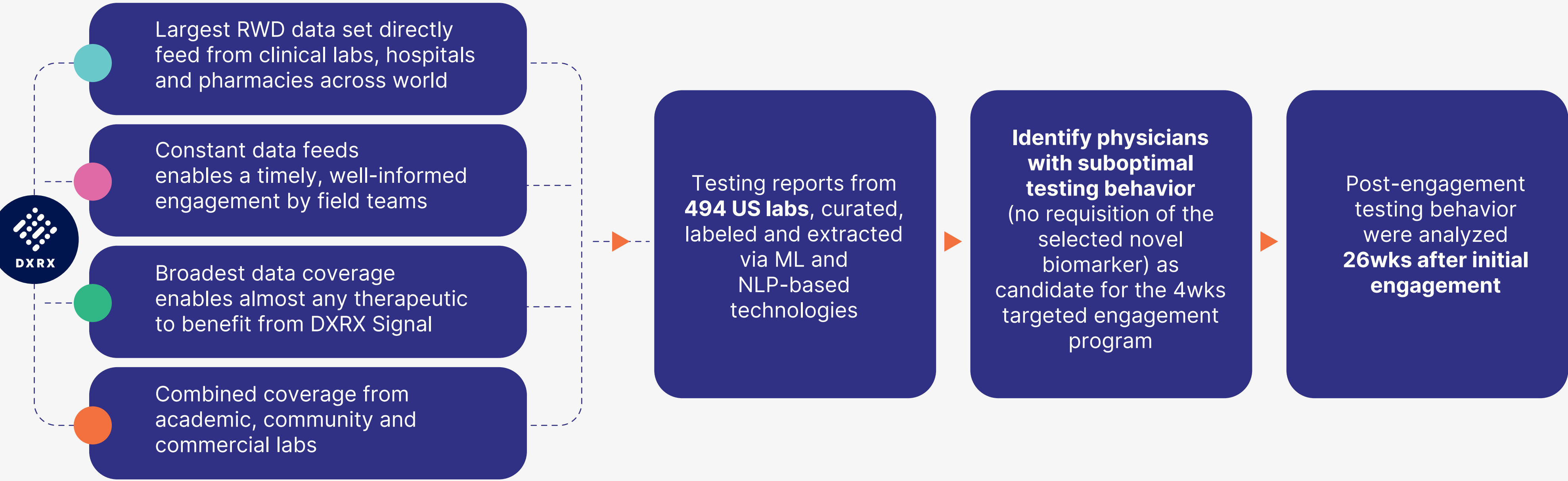

Figure 2: Workflow for real-time, data-informed physician engagement

Real-time data-informed physician engagement improves patient identification for precision therapies

> Utilizing real-world data (RWD) to guide digital engagement strategies targeting physicians, effectively addressing **clinical practice gaps**

> **81 eligible patients**, who might otherwise be overlooked in routine clinical practice, were identified for follow-up precision treatment prescription

Results

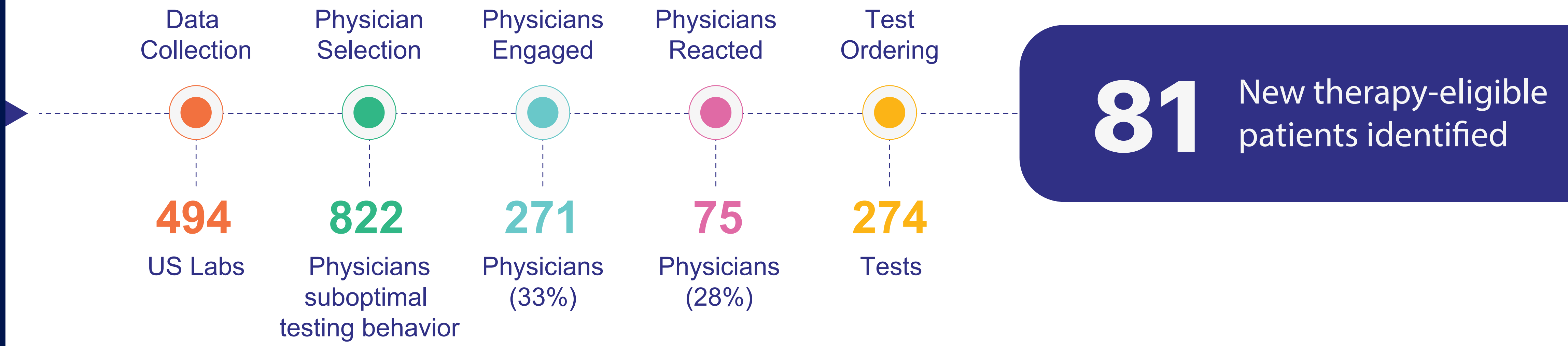| Data Collection	Physician Selection	Physicians Engaged	Physicians Reacted	Test Ordering
494 US Labs	**822** Physicians suboptimal testing behavior	**271** Physicians (33%)	**75** Physicians (28%)	**274** Tests

81 New therapy-eligible patients identified

Figure 3: Physician engagement outcome assessment

- **Physician selection:** 822 physicians exhibiting suboptimal testing behavior were identified and selected (Figure 3).
- **Engaged physicians:** 271 (33%) physicians were successfully engaged shown as open and read the digital communication (Figure 3).
- **Reacted physicians:** Total 75 (28%) physicians ordered the new test at least once during the 26-week period (Figure 3).
- **Test ordering:** Total of 274 tests have been ordered (Figure 4).
- **Patient identification:** 81 new therapy-eligible patients were identified (Figure 5).
- **Impactful period:** Notably, during the initial 4 weeks of engagement, 39 out of the 75 (~52%) physicians ordered the novel biomarker test for the first time, indicating a significant impact period.
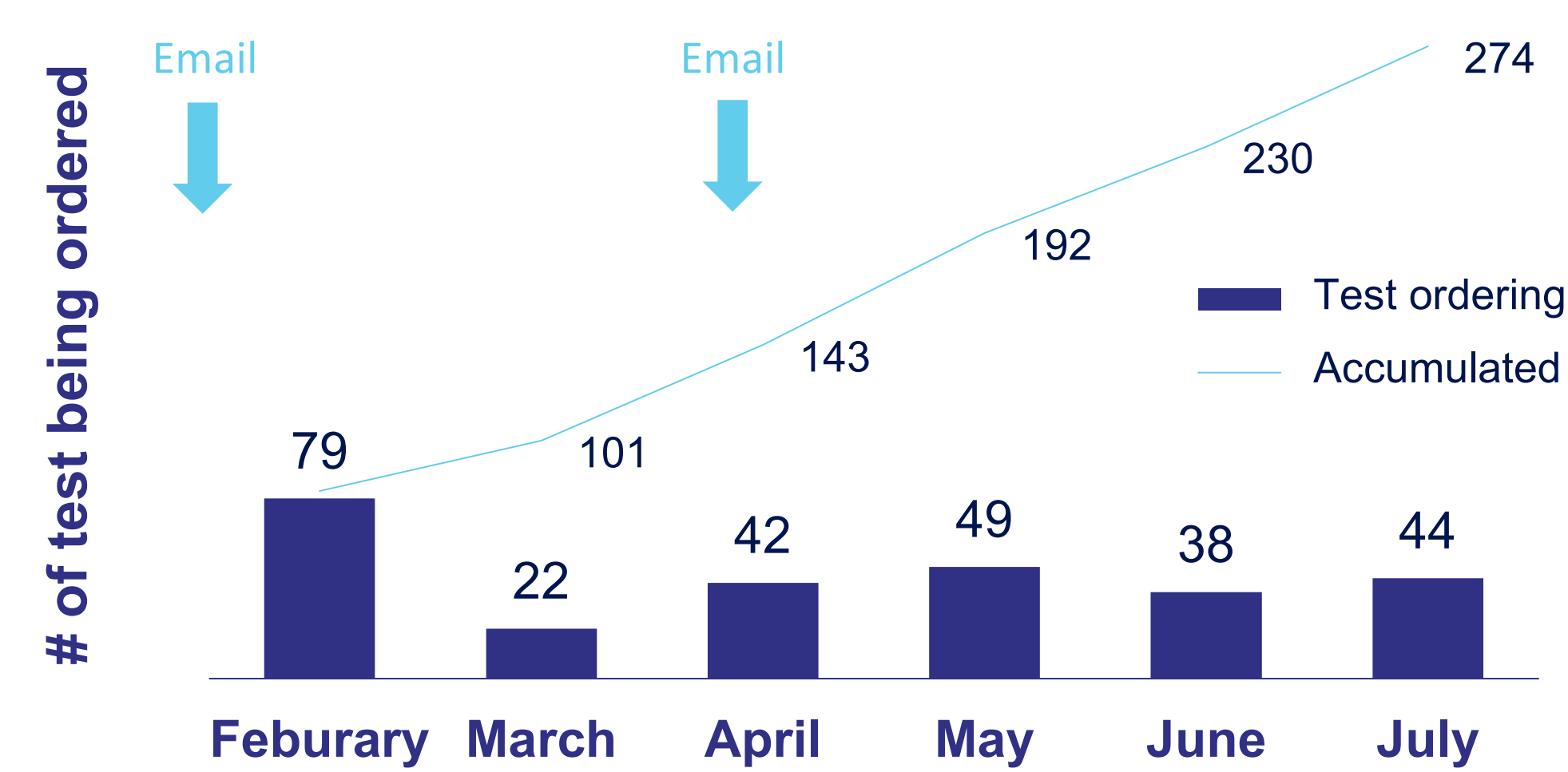

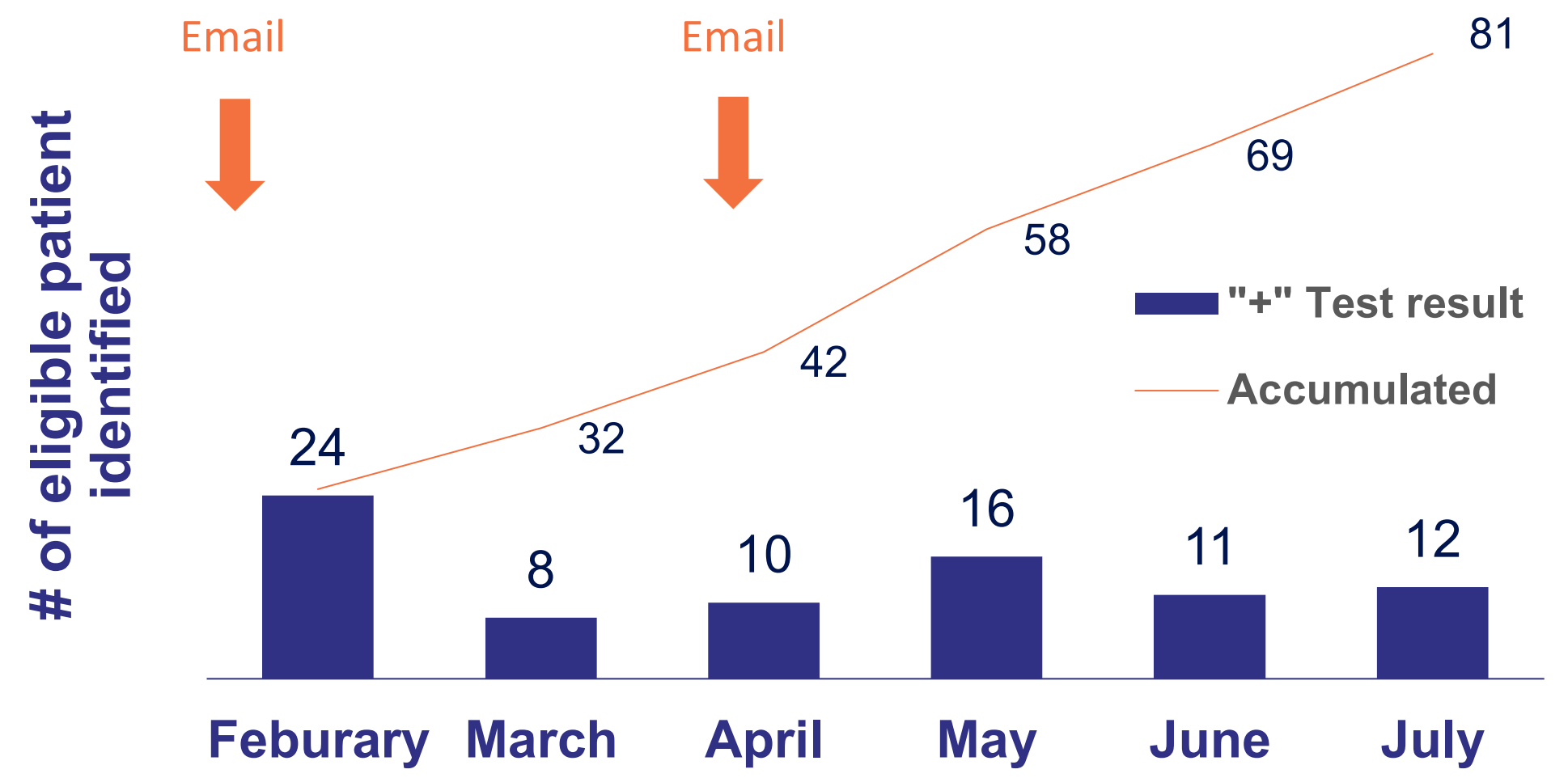**Figure 4:** Novel biomarker test ordered and performed in respond response to the digital engagement

Figure 5: New therapy-eligible patient identified in respond to the digital engagement

Future Directions

Expand the scope of the current study to include:

- An observation of the percentage of newly identified patients who reach the endpoint of receiving the precision therapies
- The clinical trial recruitment process

Extend the current study period to incorporate multiple engagement attempts, with tailored messages and content aimed at those who are already engaged vs. those who have not yet been successfully engaged.

Broaden the current study to cover more therapeutic areas.