

# DEMONSTRATION OF THE CLINICAL UTILITY OF A PSORIASIS PRECISION MEDICINE TOOL: FINDINGS FROM THE MATCH STUDY SHOW ALTERED PHYSICIAN BEHAVIOR LEADS TO IMPROVED PATIENT OUTCOMES

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## SYNOPSIS

Psoriasis is an immune-mediated inflammatory skin disease that affects greater than 3% of the global population.<sup>1</sup> There are currently 12 biologics available for physicians to choose from when treating patients with psoriasis. While these treatments have dramatically changed the management of patients with psoriasis, the response rate of these medications is approximately 50%, contributing to estimated healthcare costs greater than \$110 billion for disease management.<sup>2</sup> A machine learning-based test (Mind.Px™) has been validated with a greater than 91% positive predictive value at predicting effective biologic treatment.<sup>3</sup> This study (MATCH) was designed to demonstrate the clinical utility of this precision medicine tool by assessing physician behavior and the impact of this behavior change on patient outcomes.

1. Thatiparthi A, Martin A, Liu J, Egeberg A, Wu JJ. Biologic treatment algorithms for moderate-to-severe psoriasis with comorbid conditions and special populations: a review. *Am J Clin Dermatol.* 2021;22(4):425-442.
2. Pilon D, Teeple A, Zhdanova M, et al. The economic burden of psoriasis with high comorbidity among privately insured patients in the United States. *J Med Econ.* 2019;22(2):196-203.
3. Bagel J, Wang Y, Montgomery P III, et al. A machine learning-based test for predicting response to psoriasis biologics. *SKIN.* 2021;5(6):621-638.

## OBJECTIVE

- Assess the clinical utility of a machine learning-based precision medicine tool (Mind.Px) for predicting effective biologic treatments for psoriasis
- Determine if concordance with predicted treatments affected patient outcomes

## METHODS

- 210 patients diagnosed with psoriasis were enrolled in the MATCH study, shown in Figure 1
- Planned treatment with 1 of 3 biologics (IL-23 inhibitor, IL-17 inhibitor, or TNFα inhibitor)
- PASI ≥ 10 and PGA severity ≥ 3
- Dermal biomarker patch (DBP) applied to lesions and transcriptome sequenced
- Mind.Px used to recommend biologic treatment
- Randomized to informed (ie, provided Mind.Px results) or treatment as usual (TAU) groups
- PASI scoring at baseline, Week 4, Week 8, Week 12, and Week 16

## RESULTS

- Concordance, or where Mind.Px-recommended treatment and the provided treatment were the same, was 93.1% in the informed arm of the study, compared to 65.4% in the uninformed arm ( $p = 8.08 \times 10^{-7}$ , Figure 2)
- In the informed arm of the study, 79.7% of patients who reached PASI75 by Week 12 were early responders, reaching PASI75 by Week 4, compared to 53.3% of patients in the uninformed arm ( $p = 0.0057$ , Figure 3A)
- Post hoc analysis comparing the informed arm to previously collected observational data from the STAMP study found an even greater statistically significant difference in the percentage of early responders ( $p = 9.5 \times 10^{-8}$ , Figure 3B)
  - The STAMP study had similar inclusion/exclusion criteria, but physicians were not provided with Mind.Px results, minimizing the impact of any observational effect

Figure 2. Physicians Adopt Mind.Px Results

| Total patients (n = 205)    | Concordant (%) | Non-concordant (%) |
|-----------------------------|----------------|--------------------|
| Mind.Px informed* (n = 101) | 94 (93.1)      | 7 (6.9)            |
| Uninformed/TAU (n = 104)    | 68 (65.4)      | 36 (34.6)          |

\*In the informed arm, 6 of the 7 non-concordant cases were due to formulary restrictions.

Figure 3. Mind.Px Utilization Leads to Improved Clinical Outcomes

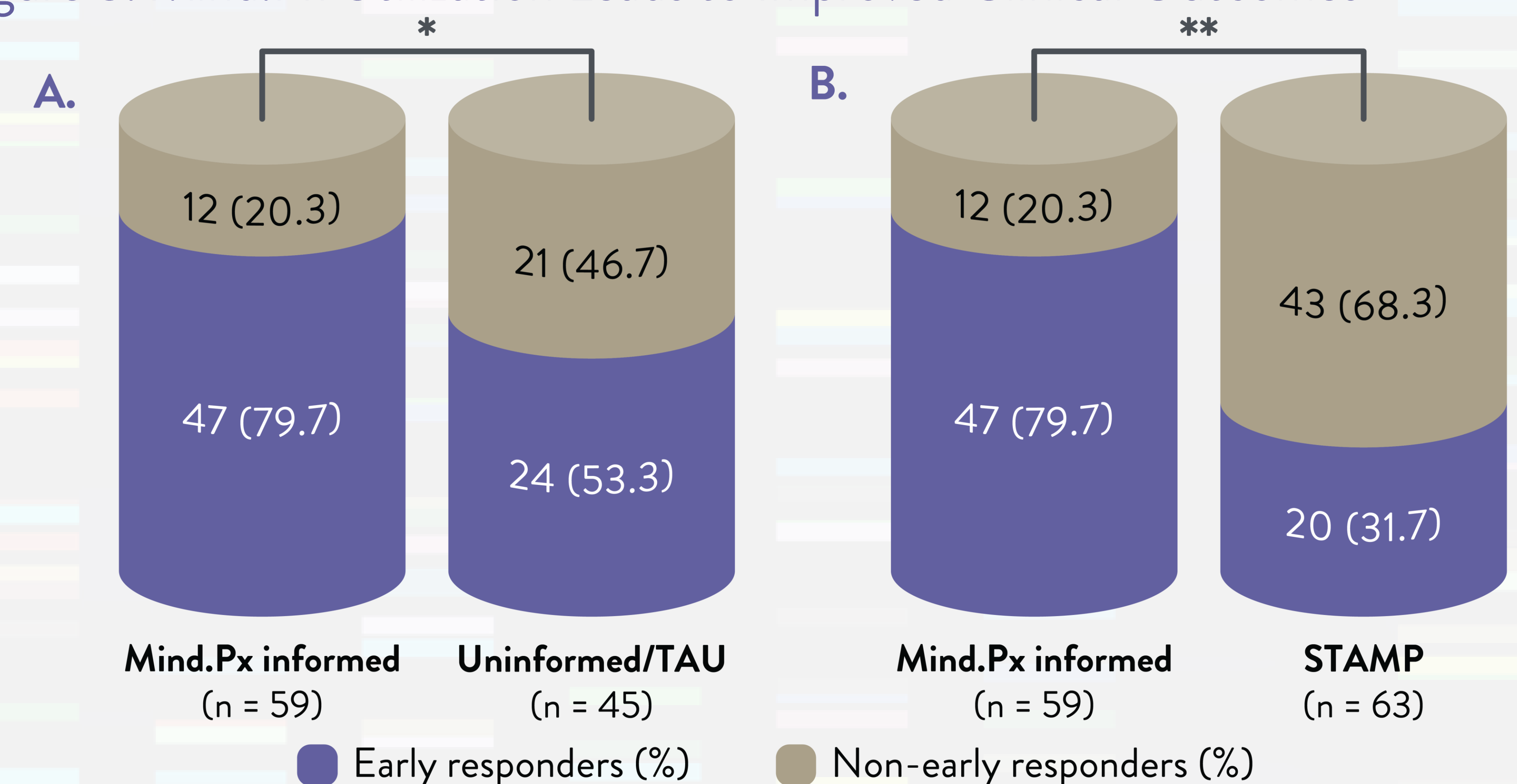
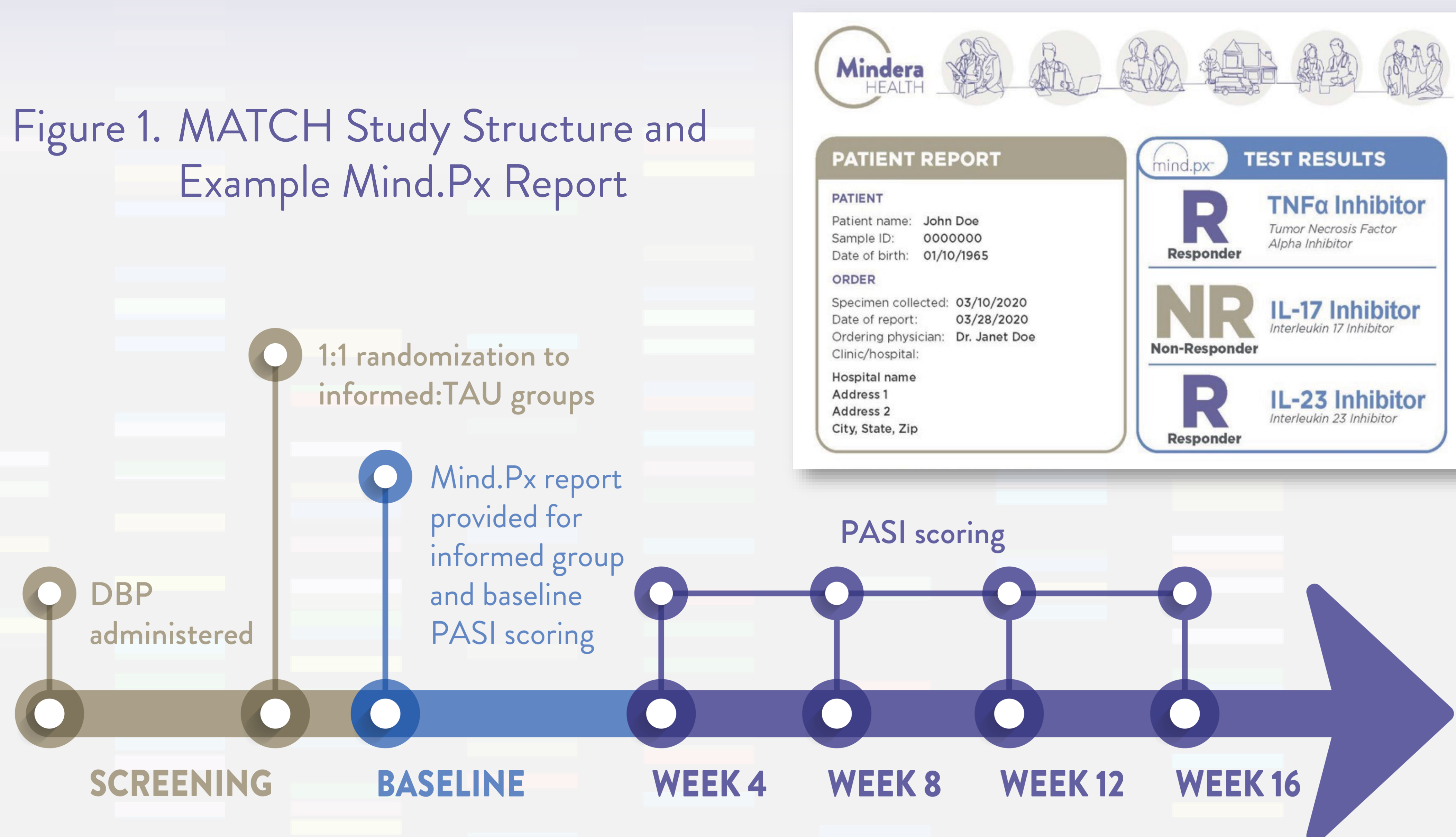


Figure 1. MATCH Study Structure and Example Mind.Px Report



## CONCLUSION

This study demonstrates the clinical utility of Mind.Px by showing that physicians will consider its recommendations when making biologic treatment decisions and that concordance with these recommendations leads to faster attainment of clinical endpoints. By prescribing patients the optimal biologic, this test can lead to improved patient outcomes while also potentially translating into tremendous cost savings for healthcare systems.

