Enhancing Clinical Trial Recruitment Through Integrated Provider Affiliation and Real-World Data-Driven HCP Targeting

Amanda Gunn PhD[1],
Mairi-Louise Seretinek[2],
Kyle McLean PhD[2]

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veritas[2] DATA RESEARCH norstella[1] Guiding you from pipeline to patient

Recruitment Problem

Patient-level targeting prioritizes providers based on historical encounters only - underestimates organizational reach and misses modern care delivery patterns.

We research whether **affiliation-aware targeting** optimizes for current access.

How can provider network structure and historic encounters be used together to maximise patient access with a limited number of HCPs?

Clinical Trial Cohorts

3 Therapeutic Areas (TAs) were selected to capture variation in clinical specialization and patient pathways:

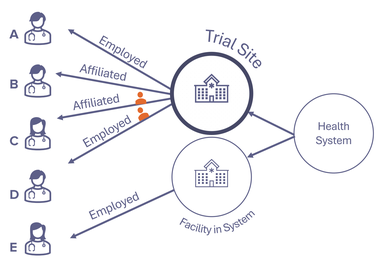
T1D — **Type 1 Diabetes Mellitus**
Primary/community care

RMS — **Relapsed Multiple Sclerosis**
Specialist longitudinal care

TNBC — **Triple Negative Breast Cancer**
Rapid escalation to specialist from community

Per TA: 10,000 randomly sampled eligible patients · HCPs with 2025 encounters & relevant specialty · Top 3 hospital trial sites by cohort encounter volume through employments

HCP Recruitment Pools



HCPs with relevant specialties and a 2025 encounter with a cohort patient are split into the following 4 pools:

(Baseline) Site Employed: A, D

Site Employed or Affiliated: A, B, C, D

System Employed: E

- Indirect connection; provider employed in a facility in the same network as trial site

Site Employed or Affiliated with Patient Encounter Overlap: C, D

Patient Encounter Overlap Present
A minimum number of patients have encountered both provider and trial site within a 12-month lookback period

Lens 1: Potential Cohort Reach

Via each HCP pool, how many more patients can be reached compared to the site-employed pool, and how many more providers are involved in accessing these?

Site Employed + Affiliated HCPs substantially increases potential cohort capture

6x T1D patients **2x** RMS patients **4x** TNBC patients

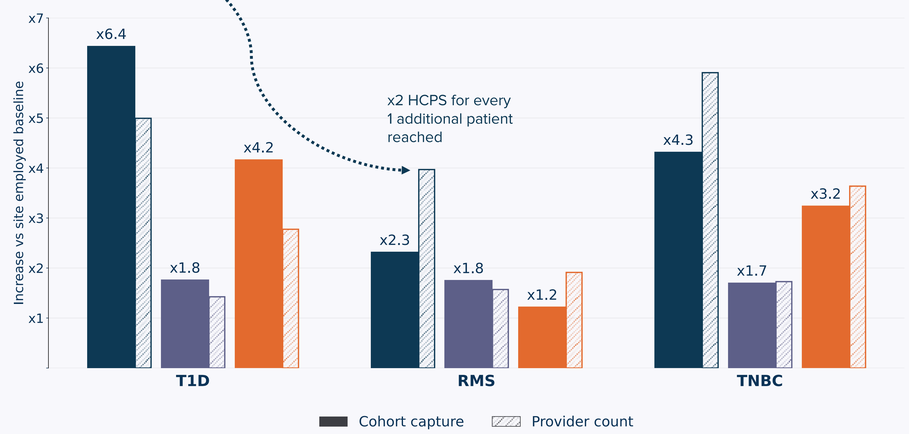
However, provider numbers increase at a greater rate within specialist-dependent TAs

Site Employed + Affiliated w/ Patient Encounter Overlap

Subset still achieves large increases in patient reach for T1D and TNBC
– but offers limited and inefficient expansion for RMS; 25% increase in HCP reach at the expense of doubling provider outreach.

Employed within Trial Site System

Modest increases for all TAs
Achieved with a lower increase in providers meaning improved patient/provider ratio compared to baseline

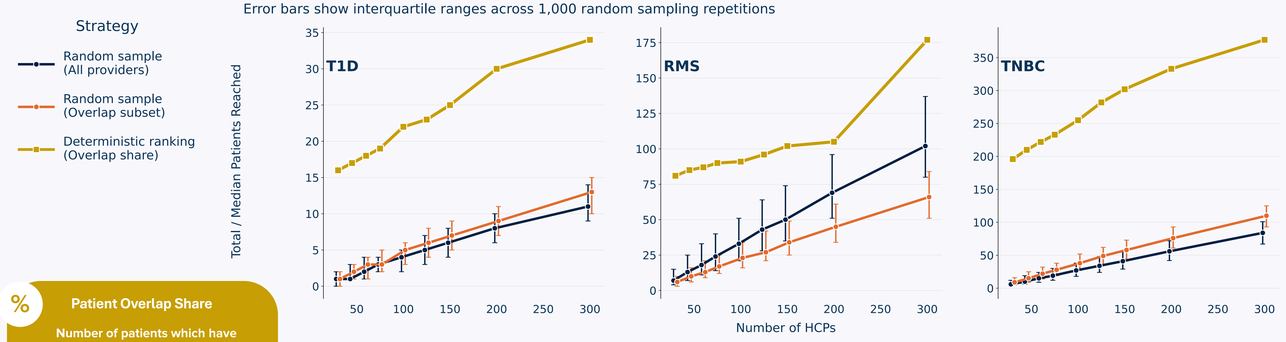


Lens 2: Efficient HCP Selection

How does patient reach vary across 3 HCP selection strategies using a finite numbers of providers which are trial site employed or affiliated?

Top-ranked HCP selection consistently captures more patients with fewer providers

Patients Reached by Number of HCPs and Recruitment Strategy
Error bars show interquartile ranges across 1,000 random sampling repetitions



Patient Overlap Share
Number of patients which have encountered both the provider and trial site
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Number of trial site patients
For encounters in claims occurring within a fixed 12-month period

Slightly higher median patient reach when sampling from patient overlap subset compared to all site employed/affiliated providers for T1D and TNBC
Overlapping interquartile ranges indicates this strategy is not reliably better than sampling from the wider network, particularly for T1D.

Higher numbers of RMS patients reached more frequently when sampling the unfiltered employed/affiliated provider set.
Slow incremental increase for RMS after high numbers of patients reached initially; continuing to sample from providers with historic patient overlap with trial sites has diminishing returns for this TA.

Lens 3: Probability of Target Reach

Using **100 providers**, probability of meeting patient targets via random selection:

Green = best probability of success, Gold = ranked HCPs required

TA	Target	Probability of Success: Employed and Affiliated	Probability of Success: Employed and Affiliated with Patient Overlap	Min Providers required using deterministic selection
T1D	10 pts	2.8%	3.2%	10 pts
RMS	50 pts	25.5%	11.9%	3 pts
TNBC	75 pts	0.9%	3.8%	13 pts

Probability of modest target reach is impractically low across the board – even with 100 providers
Not surprising; trial site network is expected to include many providers with no cohort encounters

TNBC and (to a lesser extent) T1D showed a higher probability of success using the patient overlap filtered network

★ **Targets are achieved with far fewer providers using deterministic selection**—where random sampling struggles even at 100 providers.

Conclusions and Strategic Implications

Expanding networks increases theoretical reach
Including affiliated or network-employed providers substantially increases eligible cohort size across all therapeutic areas, confirming affiliation data adds value beyond site employment alone.

Patient overlap shares enable an efficiency-reach trade-off
Filtering by patient overlap reduces provider pool size but concentrates patient opportunity. For T1D and TNBC, providers with patient encounter overlap to trial site yield a higher patient-per-provider ratio than

Therapeutic area context matters
RMS benefits from broad network sampling due to entrenched specialist care. TNBC benefits most from patient overlap network selection. T1D sits in between — a dispersed population where broad coverage remains important.

Ranked provider selection outperforms random
Prioritizing providers by descending facility-directed overlap reaches more individuals with fewer resources across all TAs— a 'more bang for your buck' strategy for operationally constrained recruitment.

Limitations
- Claims-based overlap metrics may understate care relationships where claims visibility is limited.
- Volume-based site selection may over-represent large academic centers versus community or rural settings.
- Only three TAs evaluated; findings may not generalize to rare or highly centralized disease areas.
- Random 10K-patient sampling per TA; results may vary with different cohort compositions.
- Outreach simulations do not model provider/patient willingness or geographic constraints.

Detailed Methodology: