Supplementary File S1

LAI-PrEP Bridge Period Quick Reference Card

One-Page Clinical Decision Guide

For Point-of-Care Use

Version 2.1 — October 2025

THE PROBLEM

47% of prescribed patients never receive their first injection

STEP 1: ASSESS RISK

Is patient currently on oral PrEP?

- **YES** → SUCCESS RATE: 85-90% — **ACTION: Priority for rapid transition**
- **NO** → Continue to population assessment

Population Category & Baseline Success Rates

Population	Success Rate	Risk Level
MSM	55%	Moderate
Cisgender women	45%	Moderate-High
Transgender women	50%	Moderate
Adolescents (16-24)	**35%**	**HIGH**
PWID	**25%**	**VERY HIGH**

Count Barriers (check all that apply)

Each barrier reduces success rate (multiplicative combination):

- ☐ Transportation
- ☐ Childcare
- ☐ Housing unstable
- ☐ Insurance delays
- ☐ Medical mistrust
- ☐ Privacy concerns
- ☐ Legal concerns
- ☐ No government ID

STEP 2: SELECT INTERVENTIONS

Priority One

If on oral PrEP + recent HIV test (<7 days):

- **SAME-DAY SWITCHING** (+35 points)
- Can inject today or within 3 days
- Eliminates bridge period entirely

If on oral PrEP (no recent test):

- **RAPID ORAL-TO-INJECTABLE TRANSITION** (+35 points)
- Schedule HIV test + injection for same week
- 88-90% success vs. 53% for new patients

If PWID:

- **HARM REDUCTION INTEGRATION** (+25-35 points)
- Partner with syringe service program
- ESSENTIAL - traditional clinic will fail

PRIORITY (Implement for At-Risk Patients)

Intervention	Impact	Best For
Patient Navigation	+12-20 pts	Adolescents, women, anyone <50%
Peer Navigation	+15-20 pts	PWID, transgender, complex barriers
Accelerated Testing	+15-20 pts	All new patients
Transportation Support	+10-15 pts	When barrier identified
Childcare Support	+8-12 pts	Parents
Expedited Insurance	+12-15 pts	When delays expected

PRIORITY

- Text message reminders: +10-15 points
- Telehealth counseling: +10-15 points
- Mobile delivery: +15-25 points (if available)

STEP 3: CALCULATE FINAL SUCCESS RATE

1. Start with baseline (population rate)
2. Apply barrier impact (multiplicative combination)
3. Select 3-5 evidence-based interventions addressing diverse mechanisms. **Combined effect calculation:** Algorithm applies 70% diminishing returns factor to sum of intervention effects (reflecting overlapping mechanisms and patient saturation), then caps final success at 95% maximum. This ceiling varies by baseline: low-baseline patients can improve more than high-baseline patients.

Success Rate Interpretation:

- >**70%**: Excellent - standard protocols OK
- **50-69%**: Good - navigation recommended
- **30-49%**: Concerning - multiple interventions needed
- <**30%**: Critical - intensive support required

Note: See Supplementary File S7 for complete mathematical formulas and two-stage model details.

STEP 4: IMPLEMENT & TRACK

What to Do (at prescription visit):

- ☐ Assign navigator (if high risk)
- ☐ Order HIV test (expedited processing)
- ☐ Provide transportation voucher (if needed)
- ☐ Schedule injection appointment
- ☐ Submit insurance authorization
- ☐ Set up text reminders
- ☐ Document barriers in chart

Follow-Up Timeline:

- **24 hours**: Navigator contacts patient
- **48 hours**: Text reminder before HIV test
- **7-14 days**: Target for first injection (oral PrEP transitions)
- **14-28 days**: Target for first injection (new patients)

QUICK DECISION MATRIX

Patient Type	First Action	Expected Success
Oral PrEP + recent test	Same-day inject	90%
Oral PrEP (any)	Rapid transition	88-90%
New MSM, minimal barriers	Standard + navigation	60-70%
New woman, 2-3 barriers	Navigation + support	50-60%
Adolescent, multiple barriers	Intensive navigation	30-45%
PWID, traditional clinic	**WILL FAIL**	<**10%**
PWID, harm reduction	SSP + peer nav	35-45%

RED FLAGS (System Failure Likely)

Don't just prescribe if you see:

- PWID without harm reduction partnership
- Adolescent without navigation support
- Multiple barriers without intervention plan
- Insurance issues without expedited process

These patients will NOT initiate without proactive intervention!

KEY TAKEAWAY

The bridge period is where we lose patients.
Proactive intervention prevents attrition.
Oral PrEP patients are your easiest wins - prioritize them!

Evidence Base: HPTN 083 (4,566 MSM), HPTN 084 (3,224 women), PURPOSE-1/2 (7,521 participants), real-world implementation studies. Computational validation at 21.2M patient scale.

Configuration: v3.1 — *Zenodo DOI:* 10.5281/zenodo.17429833

Reference: Demidont (2025). Computational Validation of LAI-PrEP Bridge Decision Support Tool. *Viruses*.

For complete methodology: See Supplementary File S7 (Intervention Library with mathematical formulas)