SUPPLEMENTAL APPENDIX

Model Formulation

$$\lambda = q * \frac{I_A + F_0F_1 + F_2F_3 + F_4 + DeCirr + HCC}{N} \quad (1.1)$$

$$\frac{dS}{dt} = c * S + \theta\rho I_A - (\lambda + \omega)S + \psi R \quad (1.2)$$

$$\frac{dI_A}{dt} = \lambda S - \big((1-\theta)\rho + \omega + \theta\rho\big)I_A \quad (1.3)$$

$$\frac{dF_0F_1}{dt} = (1-\theta)\rho I_A + (1-\gamma)\chi T_{DAA_{F0-F1}} \pm \alpha_1 F_0F_1 - (\omega+\beta)F_0F_1 \quad (1.4)$$

$$\frac{dF_2F_3}{dt} = \alpha_1 F_0F_1 + (1-\gamma)\chi T_{DAA_{F2-F3}} - (\omega+\beta)F_2F_3 - \alpha_2 F_2F_3 \quad (1.5)$$

$$\frac{dF_4}{dt} = \alpha_2 F_2F_3 - (\nu+o)F_4 + (1-\gamma)\chi T_{DAA_{F4}} - (\omega+\beta)F_4 \quad (1.6)$$

$$\frac{dHCVDe}{dt} = \mu HCC + \sigma DeCirr \quad (1.7)$$

$$\frac{dDeCirr}{dt} = \nu F_4 - (\sigma+\pi)DeCirr + (1-\gamma)\chi T_{DAA_{DeCirr}} - (\omega+\beta)DeCir \quad (1.8)$$

$$\frac{dHCC}{dt} = oF_4 + \pi DeCirr - \mu HCC + (1-\gamma)\chi T_{DAA_{HCC}} - (\omega+\beta)HCC \quad (1.9)$$

$$\frac{dT_{DAA_{F0-F1}}}{dt} = \beta F_0F_1 - (\omega+\gamma\chi)T_{DAA_{F0-F1}} - (1-\gamma)\chi T_{DAA_{F0-F1}} \quad (1.10)$$

$$\frac{dT_{DAA_{F2-F3}}}{dt} = \beta F_2F_3 - (\omega+\gamma\chi)T_{DAA_{F2-F3}} - (1-\gamma)\chi T_{DAA_{F2-F3}} \quad (1.11)$$

$$\frac{dT_{DAA_{F4}}}{dt} = \beta F_4 - (\omega+\gamma\chi)T_{DAA_{F4}} - (1-\gamma)\chi T_{DAA_{F4}} \quad (1.12)$$

$$\frac{dT_{DAA_{DeCirr}}}{dt} = \beta DeCirr - (\omega+\gamma\chi)T_{DAA_{DeCirr}} - (1-\gamma)\chi T_{DAA_{DeCirr}} \quad (1.13)$$

$$\frac{dT_{DAA_{HCC}}}{dt} = \beta HCC - (\omega+\gamma\chi)T_{DAA_{HCC}} - (1-\gamma)\chi T_{DAA_{DeCirr}} \quad (1.14)$$

$$\frac{dR}{dt} = \gamma\chi\big(T_{DAA_{F0-F1}} + T_{DAA_{F2-F3}} + T_{DAA_{F4}} + T_{DAA_{DeCirr}} + T_{DAA_{HCC}}\big) - (\omega+\psi)R \quad (1.15)$$

$$N = S + I_A + DeCirr + F_0F_1 + F_2F_3 + F_4 + T_{DAA_{F0-F1}} + T_{DAA_{F2-F3}} + T_{DAA_{F4}} + T_{DAA_{DeCirr}} + T_{DAA_{HCC}} + HCC + HCVDe + R \quad (1.16)$$

HCV Progression Rates

Transition rate from F0/F1to F2/F3 (a_1) and transition rate from F2/F3to F4 (a_2) were derived from transition probabilities with the formula (2), where t is cycle length, and r is the rate, P(t) is transition probability in the cycle length. Transition probabilities were sourced from a meta-analysis study referenced in Table 2.

$$P(t) = 1 - e^{rt}; \quad (2)$$

Cost-Effectiveness Analysis

Cost-effectiveness frontier is presented below where ICERs are calculated from non-dominated strategies in Table A.1

Table A1. Cost-effectiveness frontier of diagnosis-and-treatment coverage strategies among people who inject drugs (PWID) in Türkiye with 5% discounting (2020-2029)

	Total infections (2020-2029)	Total QALYs (2020-2029)	Total cost (2020-2029), $	Incremental cost prevented, $	Infections prevented	Incremental QALYs prevented	ICER infections prevented, $	ICER QALY, $	Status
No diagnosis-and-treatment	2,454,480	2,906,867	0						Reference
Low (25%)	997,403	3,196,115	7,420,163,380	7,420,163,380	1,457,077	289,248	5,092	25,653	Efficient
Medium (50%)	469,632	3,294,669	7,884,851,199	--	--	--	--	--	Dominated*
High (75%)	264,366	3,335,426	7,578,245,318	158,081,938†	733,037†	139,311†	216†	1,135†	Efficient

*: Dominated because the High diagnosis-and-treatment strategy provides more QALYs while incurring lower total costs.

†: Incremental values are calculated relative to the preceding non-dominated strategy (low diagnosis-and-treatment), consistent with standard cost-effectiveness analysis.

Table A2. Cost-effectiveness of diagnosis-and-treatment coverage strategies among people who inject drugs (PWID) in Türkiye with 0% discounting (2020-2029)

	Total infections (2020-2029)	Total QALYs (2020-2029)	Total cost (2020-2029), $	Incremental cost prevented, $	Infections prevented	Incremental QALYs prevented	ICER infections prevented, $	ICER QALY, $
No diagnosis-and-treatment	2,633,028	3,390,226						
Low	1,175,951	3,747,137	8,469,253,362	8,469,253,362	1,457,077	356,911	5,812	23,729
Medium	648,179	3,865,908	8,682,316,626	213,063,264	527,772	118,771	404	1,794
High	442,913	3,913,896	8,145,059,294	Cost saving	205,266	47,988	Cost saving	Cost saving

Table A3. Cost-effectiveness of diagnosis-and-treatment coverage strategies among people who inject drugs (PWID) in Türkiye with 5% discounting (2020-2029)

	Total infections (2020-2029)	Total QALYs (2020-2029)	Total Cost (2020-2029), $	Incremental cost prevented, $	Infections prevented	Incremental QALYs prevented	ICER infections prevented, $	ICER QALY, $
No diagnosis-and-treatment	2,633,028	2,640,061						
Low	1,175,951	2,893,035	6,832,921,413	6,832,921,413	1,457,077	252,974	4,689	27,010
Medium	648,179	2,980,611	7,424,689,186	591,767,773	527,772	87,576	1,121	6,757
High	442,913	3,017,390	7,241,903,604	Cost saving	205,266	36,779	Cost saving	Cost saving