$$P(T_1{}^+, T_2{}^+) = [Pr \cdot (Se_1 \cdot Se_2 + covs12) + (1 - Pr) \cdot ((1 - Sp_1) \cdot (1 - Sp_2) + covc12)]^{a_i}$$

$$P(T_1{}^+, T_2{}^-) = [Pr \cdot (Se_1 \cdot (1 - Se_2) - covs12) + (1 - Pr) \cdot ((1 - Sp_1) \cdot Sp_2 - covc12)]^{b_i}$$

$$P(T_1{}^-, T_2{}^+) = [Pr \cdot ((1 - Se_1) \cdot Se_2 - covs12) + (1 - Pr) \cdot (Sp_1 \cdot (1 - Sp_2) - covc12)]^{c_i}$$

$$P(T_1{}^-, T_2{}^-) = [Pr \cdot ((1 - Se_1) \cdot (1 - Se_2) + covs12) + (1 - Pr) \cdot (Sp_1 \cdot Sp_2 + covc12)]^{d_i}.$$