nev1 = nev0 + new births – (sm1|nev0) – deaths(nev0)

P(nev1) = P(nev0) – P(sm1|nev0) =>

P(sm1|nev0) = P(nev0) – P(nev1)

P(nev0|sm1) = P(sm1|nev0) \* P(nev0) / P(sm1)

ex1 = ex0 – (sm1|ex0) – deaths(ex0) + (ex1|sm0)

P(ex1) = P(ex1|ex0) + P(ex1|sm0)

P(ex0) - P(dead|ex0) = P(ex1|ex0) + P(sm1|ex0) => #P(ex0) - P(dead|ex0) is known prevalence

P(sm1|ex0) = P(ex0) - P(ex1) + P(ex1|sm0)

P(ex0|sm1) = P(sm1|ex0) \* P(ex0) / P(sm1)

sm1 = sm0 – (ex1|sm0) – deaths(sm0) + (sm1|nev0) + (sm1|ex0)

P(sm1) = P(sm1|sm0) + P(sm1|ex0) + P(sm1|nev0) =>

P(sm1|sm0) = P(sm1) - P(sm1|ex0) - P(sm1|nev0)

P(sm0|sm1) = P(sm1|sm0)\*P(sm0)/ P(sm1)