1. D-separation still applies after intervention.

$(Cancer \perp\!\!\!\perp Asthma | Smoke)_{G_{\overline{X}}} \implies P(Cancer | do(Smoke), Asthma) = P(Cancer | do(Smoke))$

2. If there are no backdoor paths from X to Y then intervention$\equiv$observation.

$(\hat{X} \perp\!\!\!\perp Cancer | X, Poverty)_{G^{\dagger}} \implies P(Cancer | do(Smoke), Poverty) = P(Cancer | Smoke, Poverty)$

3. If there are only backdoor paths from X to Y then intervention doesn't change $P(Y)$.

$(\hat{X} \perp\!\!\!\perp Diet)_{G^{\dagger}} \implies P(Diet | do(Smoke)) = P(Diet)$

(a) $G^{\dagger}$ (b) $G_{\overline{X}}$