Supplemental Material

Hernandez I. Gabriel N, Guo J, Sepassi A, Gellad WF, Dickson S. Decomposition of Pharmaceutical Manufacturer Discounts into Voluntary and Mandatory Discounts for Glucagon-like peptide-1 Receptor Agonists

Estimation of Commercial Discounts and Medicaid Discounts

Our methodology relies on the relationship between commercial discounts and Medicaid discounts established by the Best price provision, as previously used in the peer-reviewed literature.[1]

First, we estimate Medicaid discounts as follows:

Medicaid discounts= number of Medicaid units * Medicaid discount per unit

Number of Medicaid units were obtained from the Centers for Medicare and Medicaid Services dashboard.

Medicaid discount per unit=base rebate + inflation penalty

- The inflation penalty was calculated for each product and year as the difference between the list price and the inflation-adjusted launch price, following a published method.[2] Launch price data is available at the national drug code level and our analyses were conducted at the product level. To estimate an inflation-adjusted launch price at the product level, we calculated the inflation-adjusted launch price for each national drug code every year, and weighted by the relative utilization of each national drug code every year.

- The base rebate is calculated as the greater of 23% discount or the Best Price offered to any purchaser. To estimate the base rebate, in the first iteration of our algorithm, we assumed that the commercial discount set Best Price. Therefore, we subtracted the inflation Medicaid and 340B inflation penalty discounts from the total discounts figure.

   Total discounts- Medicaid inflation penalty- 340B inflation penalty-coverage gap discounts=**x**

   We amortize the remaining discount **x** amount across the sum of group health plans, Part D, Medicaid, and 340B program units to generate the estimated commercial discount per unit. Then, the total commercial discount is estimated as the product of the commercial discount per unit and commercial units (group health insurance and Medicare Part D units).

   If the estimated commercial discount ⩾23.1% of list price, then the assumption that commercial discount set Best Price holds.

   If the estimated commercial discount < 23.1% of list price, then the commercial discount does not trigger the Best Price provision. In this case, we re-estimate Medicaid and 340B discounts as the sum of 23.1% of list price and inflation penalty. We subtract these re-calculated discounts to the Medicaid program and 340B discounts from the total discounts figure. The resulting estimate **y** represents commercial discounts.

   Total discounts- Medicaid units *(23% of list price + inflation penalty)- 340B units* (23% of list price + inflation penalty)-coverage gap discounts=**y**

Medicaid and 340B discounts are capped at 100% of the Average Manufacturer Price, in other words, the sum of the base discount and the inflation penalty cannot exceed the invoice price. We checked whether the sum of the estimated base rebate and inflation penalty exceeded the list price. For drug-year observations where it did, we recalculated the total amount of commercial discounts as follows, where **z** represents commercial discounts:

Total discounts- Medicaid units*list price-340B units * list price-coverage gap discounts=**z**

References

1. Dickson S, Gabriel N, Hernandez I. Estimated Changes in Price Discounts for Tenofovir-Inclusive HIV Treatments Following Introduction of Tenofovir Alafenamide. *AIDS 2022 doi: 101097/QAD0000000000003401*.

2. Dickson S, Gabriel N, Gellad W, Hernandez I. Reduction in Medicaid rebates paid by pharmaceutical manufacturers for outpatient injected, inhaled, infused, implanted, or instilled drugs: The 5i loophole. *J Health Polit Policy Law*. Published online July 14, 2022. doi:10.1215/03616878-10041219